AGENDA

LOS ANGELES REGIONAL
INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

BOARD OF DIRECTORS MEETING
Thursday, October 5, 2017 • 9:00 a.m.
Los Angeles County Sheriff's Department
The Hertzberg Davis Forensic Science Center
1800 Paseo Rancho Castilla, Conference Room 223 through 227
Los Angeles, CA 90032

Los Angeles Regional Interoperable Communications System Authority (the "Authority")

AGENDA POSTED: September 28, 2017
Complete agendas are made available for review at the designated meeting location. Supporting documentation is available at the LA-RICS Office located at 2525 Corporate Place, Suite 100, Monterey Park, CA 91754 during normal business hours and may also be accessible on the Authority's website at http://www.la-rics.org.

Members:	Alternates:
1. **Sachi Hamai**, CEO, County of Los Angeles	**John Geiger**, General Manager, CEO, County of Los Angeles
2. **Daryl L. Osby**, Vice-Chair, Fire Chief, County of Los Angeles Fire Dept.	**Chris Bundesen**, Asst., Fire Chief, County of Los Angeles Fire Dept.
3. **Jim McDonnell**, Chair, Sheriff, Los Angeles County Sheriff's Dept.	**Dean Gialamas**, Division Dir., Los Angeles County Sheriff's Dept.
4. **Cathy Chidester**, Dir., EMS Agency, County of LADHS	**Kay Fruhwirth**, Asst., Dir., EMS Agency, County of LADHS
5. **Chris Donovan,** Fire Chief, City of El Segundo Fire Dept.	**Scott Haberle**, Fire Chief, City of Monterey Park Fire Dept.
6. **Joe Ortiz**, Chief of Police, City of Sierra Madre Police Dept.	**Donna Cayson**, Captain, City of Sierra Madre Police Dept.
7. **Mark R. Alexander**, City Manager, CA Contract Cities Assoc.	**Marcel Rodarte**, Executive Dir., CA Contract Cities Assoc.
8. **Mark Fronterotta**, Chief of Police, City of Inglewood Police Dept.	**Louis Perez,** Deputy Chief, City of Inglewood Police Dept.
9. **Chris Nunley**, Chief of Police, City of Signal Hill Police Dept.	**Richard Rocchi**, Captain, City of Signal Hill Police Dept.
10. **John Curley**, Chief of Police, City of Covina Police Dept.	**David Povero**, Captain, City of Covina Police Dept.

Officers:

Scott Edson, Executive Director
John Naimo, County of Los Angeles Auditor-Controller
Joseph Kelly, County of Los Angeles, Treasurer and Tax Collector
Priscilla Lara, Board Secretary

LA-RICS

NOTE: ACTION MAY BE TAKEN ON ANY ITEM IDENTIFIED ON THE AGENDA

I. CALL TO ORDER

II. ANNOUNCE QUORUM – Roll Call

III. APPROVAL OF MINUTES (A)

A. September 7, 2017 – Regular Meeting Minutes

Agenda Item A

IV. PUBLIC COMMENTS

V. CONSENT CALENDAR – (None)

VI. REPORTS (B-C)

B. Director's Report – Susy Orellana-Curtiss

- LTE Update
- LMR Update
- LA-RICS Grant Status
- Status of PSBN Agency Onboarding

Agenda Item B

C. Project Manager's Report – Chris Odenthal

Agenda Item C

VII. DISCUSSION ITEMS (D-G)

D. Verizon Presentation – Presentation by Verizon Wireless regarding plan in Los Angeles County to provide a public safety grade broadband network.

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E. Outreach Update

Agenda Item E

F. PSBN Onboarding Update

Agenda Item F

G. Quarterly Update on No-Cost Agreements

Agenda Item G

VIII. ADMINISTRATIVE MATTERS (H-I)

H. APPROVE AMENDMENT NO. 25 FOR AGREEMENT NO. LA-RICS 008 FOR LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM PUBLIC SAFETY BROADBAND NETWORK

It is recommended that your Board:

1. Approve Amendment No. 25 to Agreement No. LA-RICS 008 for the PSBN with Motorola, in substantially similar form to the Enclosure, which revises the Agreement to reflect the following:

    a. Revise Exhibit A (Statement of Work) and Exhibit B (PSBN Specifications) to reflect a reduction in the scope of certain Work related to Network Management System and Inventory Management System and a corresponding reduction in the cost in the amount of $316,767.

    b. Reflect a reduction in the scope of certain Work related to Documentation and a corresponding reduction in the cost in the amount of $68,515.

    c. Reflect a reduction in the scope of certain Work related to Additive Alternate No. 2 (Redundant Evolved Packet Core [EPC]) and a corresponding reduction in the cost in the amount of $1,061,704.

    d. Reflect the removal of the scope of all Work related to Additive Alternate No. 3 (Location Services) and a corresponding reduction in the cost in the amount of $2,592,246.

LA-RICS

e. Reflect a reduction in the scope of certain Work related to Cell on Wheels (COWs) and a corresponding reduction in the cost in the amount of $129,977.

f. Reflect a reduction in the scope of certain Work related to Site Construction Changes and a corresponding reduction in the cost in the amount of $14,046.

g. Decrease the Maximum Contract Sum by $4,183,255 from $137,331,906 to $133,148,651 when taking the cost decreases into consideration.

2. Delegate authority to the Executive Director to execute Amendment No. 25, in substantially similar form to the enclosed Amendment, and issue one or more Notices to Proceed (NTP) for this Work.

Agenda Item H

I. APPROVE A NO-COST AGREEMENT APPROVAL FOR MUTUALINK, INC.

It is recommended that your Board:

1. Delegate authority to the Executive Director to execute a No-Cost Agreement between the Authority and Mutualink, in substantially similar form to the Enclosure, to allow the Authority to accept the loan of certain equipment, goods, and/or services, on a gratis basis, for the purposes of testing and evaluating compatibility and functionality of the Loaned Resources on the PSBN and the LMR Early Deployment System until January 31, 2018.

2. Delegate authority to the Executive Director, or his designee, to approve and execute amendments to the No-Cost Agreement, provided that they are approved as to form by counsel to the Authority.

Agenda Item I

IX. MISCELLANEOUS – NONE

X. ITEMS FOR FUTURE DISCUSSION AND/OR ACTION BY THE BOARD

LA-RICS

XI. CLOSED SESSION REPORT

1. CONFERENCE WITH LEGAL COUNSEL – Anticipated Litigation (subdivision (d) of Government Code Section 54956.9) (1 cases)

XII. ADJOURNMENT and NEXT MEETING:

Thursday, November 2, 2017, at 9:00 a.m., at the Los Angeles Sheriff's Department, Scientific Services Bureau, located at 1800 Paseo Rancho Castilla, Los Angeles, CA 90032.

LA-RICS

BOARD MEETING INFORMATION

Members of the public are invited to address the LA-RICS Authority Board on any item on the agenda prior to action by the Board on that specific item. Members of the public may also address the Board on any matter within the subject matter jurisdiction of the Board. The Board will entertain such comments during the Public Comment period. Public Comment will be limited to three (3) minutes per individual for each item addressed, unless there are more than ten (10) comment cards for each item, in which case the Public Comment will be limited to one (1) minute per individual. The aforementioned limitation may be waived by the Board's Chair.

(NOTE: Pursuant to Government Code Section 54954.3(b) the legislative body of a local agency may adopt reasonable regulations, including, but not limited to, regulations limiting the total amount of time allocated for public testimony on particular issues and for each individual speaker.)

Members of the public who wish to address the Board are urged to complete a Speaker Card and submit it to the Board Secretary prior to commencement of the public meeting. The cards are available in the meeting room. However, should a member of the public feel the need to address a matter while the meeting is in progress, a card may be submitted to the Board Secretary prior to final consideration of the matter.

It is requested that individuals who require the services of a translator contact the Board Secretary no later than the day preceding the meeting. Whenever possible, a translator will be provided. Sign language interpreters, assistive listening devices, or other auxiliary aids and/or services may be provided upon request. To ensure availability, you are advised to make your request at least 72 hours prior to the meeting you wish to attend. (323) 881-8291 or (323) 881-8295

SI REQUIERE SERVICIOS DE TRADUCCION, FAVOR DE NOTIFICAR LA OFICINA CON 72 HORAS POR ANTICIPADO.

The meeting is recorded, and the recording is kept for 30 days.

BOARD OF DIRECTORS MEETING MINUTES

LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

September 7, 2017
The Hertzberg Davis Forensic Science Center
1800 Paseo Rancho Castilla, Conference Room 223 through 227
Los Angeles, CA 90032

Board Members Present:
Cathy Chidester, Dir., EMS Agency, County of LADHS
Chris Donovan, Fire Chief, City of El Segundo Fire Dept.
Mark Fronterotta, Chief of Police, City of Inglewood Police Dept.

Alternates For Board Members Present:
John Geiger, General Manager, CEO, County of Los Angeles
Chris Bundesen, Vice-Chair, Asst. Fire Chief, County of Los Angeles Fire Dept.
Dean Gialamas, Division Dir., Los Angeles County Sheriff's Dept.
Marcel Rodarte, Executive Dir., CA Contract Cities Assoc.

Officers Present:
Scott Edson, LA-RICS Executive Director
Priscilla Lara, LA-RICS Board Secretary

Absent:
Joe Ortiz, Chief of Police, City of Sierra Madre Police Dept.
Chris Nunley, Captain, City of Signal Hill Police Dept.
John Curley, Chief of Police, City of Covina Police Dept.

AGENDA ITEM A

NOTE: ACTION MAY BE TAKEN ON ANY ITEM IDENTIFIED ON THE AGENDA

I. CALL TO ORDER

Director Dean Gialamas called the Regular Meeting of the Board to order at 9:07 a.m.

II. ANNOUNCE QUORUM – Roll Call

Director Gialamas acknowledged that a quorum was present and asked for a roll call.

III. APPROVAL OF MINUTES FOR THE REGULAR MEETING

A. August 3, 2017 – Regular Meeting Minutes

Board Member Donovan motioned first, seconded by Board Member Chidester.

Ayes 6: Chidester, Donovan, Fronterotta, Geiger, Bundesen and Gialamas.

Abstained 1: Rodarte

MOTION APPROVED

IV. PUBLIC COMMENTS – (None)

V. CONSENT CALENDAR – (None)

VI. REPORTS (B-C)

B. Director's Report – Scott Edson

Executive Director Edson referred the Board to the Executive Summary Agenda Item B. Long Term Evolution (LTE) Cell-on-Wheels (COW) are completed. Power and final fiber is being tested for connectivity for all SCE COWs except for Southern California Edison Studebaker Self Storage (SCESTUD).

Executive Director Edson stated that the closeout document review is complete for all site closeout binders.

Executive Director Edson provided an update on the status of FirstNet and stated that multiple technical meetings are occurring with AT&T and FirstNet to determine how LA-RICS will be included in FirstNet solution and that LA-RICS is actively involved with the State of California in the state plan review process.

In regards to the LTE network, we continue to share with FirstNet our demands/requirements that the LA-RICS PSBN/LTE network be incorporated in the NPSBN deployment as it is built to "public safety grade" based on requirements

gathered by the FirstNet Public Safety Advisory Committee (PSAC) and with significant input from the National Public Safety Telecommunications Council (NPSTC).

The LA-RICS team continues to reiterate it will not accept anything less than the public safety grade network we have today, and that LA-RICS should be absorbed as part of any network, and will work with the State, FirstNet and AT&T to that end. We asked FirstNet/AT&T to identify current and future sites built to public safety grade and are awaiting response.

LA-RICS, along with the Sheriff and Fire Chief have asked the Governor to issue a Request for Proposal (RFP) as soon as possible so we have something to compare to the AT&T state plan, and requested he does not make a decision on whether to opt-in or opt-out without ensuring the assumption of our entire LA-RICS LTE network and our recommendation.

Additionally, since we are the largest 24/7 Band Class 14 network and a great test bed for FirstNet and AT&T when it comes to roaming between the networks, interoperability, credentialing, provisioning, and so much more; we continue to offer our knowledge and expertise to the State, FirstNet and AT&T during plan review and discussions. We have more Band Class 14 devices today than anyone does in the Nation; we have more experience to offer during this process.

Executive Director Edson stated in regards to Land Mobile Radio (LMR), that he would provide status on a high-level because Jacobs Project Manager Chris Odenthal will provide a detailed report. We have zoning Drawings for 19 Sites, eight (8) of which are approved to proceed to fifty percent (50%). We have fifty percent (50%) Construction Drawings for 23 Sites, 17 in development for seventy-five percent (75%). Seventy-five percent (75%) Construction Drawings for three (3) Sites, one (1) of which is approved to proceed to one-hundred percent (100%). Building Permits have been submitted for four (4) sites, two (2) of which have been submitted for Building Permit review. We have received a Building Permit for 12 Sites. Active Sites in Construction and/or Equipment Installs currently include FCCF, HPK, APC, CCB, MLM, LDWP243, BMT, CCT and LASDTEM. LMR is still on track for the 20/20/20/20 Plan, which is difficult because building a plan that meets the funding deadline period is very challenging. Executive Director Edson acknowledged staff and Motorola on their efforts.

As for the LA-RICS UASI grant status, were doing well with the management of the grant. It is important for us to perform in accordance with the plan because it shows the UASI region that we are completing tasks as expected and brings a lot of trust and faith amongst UASI Authority members.

The status of PSBN Agency Onboarding is provided in the Executive Summary Agenda Item B. Los Angeles County Sheriff's Department (LASD) has installed 506

routers and Fire (LACoFD) has installed 294; a significant increase since the last time we spoke and are still expanding the deployment through other agencies. We also have a meeting with the technical team and Signal Hill Police Department (PD) to discuss how we can get other agencies onboard with LTE and LMR.

Board Member Donovan asked what the deadlines are for the Governor to make a decision and what the timeline following looks like. Executive Director Edson stated on or around September 15, 2017, is when the final FirstNet updated plan should be back in our hands and should have all the answers to the questions that the state submitted. By early December the state has to make a decision on opting-in or opting-out. At that time or before then, the state can issue an RFP and they have six (6) months to review that RFP and to make a selection. Board Member Donovan asked if there is a trend in issuance of RFPs across the country with other states taking a position of opt out. Executive Director Edson stated 20 states have opted-in, New Hampshire has opted-out with no other indication from other states yet.

Director Gialamas stated on behalf of the Sheriff's Department they support and emphasize the issue of public safety grade, it is a great concern of ours that the system be built to that standard to ensure the network will withstand catastrophic events, such as what we have built here with LA-RICS. We appreciate the staff's efforts to make sure that the state, AT&T and FirstNet are aware of our concerns and our needs in order for us to obtain a valuable system.

C. Project Manager's Report – Chris Odenthal

Jacobs Project Manager Odenthal provided an update on PSBN and stated when the COWs are optimized, which are the nine (9) SCE COWs. At this point seven (7) of them are coming up and one (1) is waiting for SCE power to be turned-on.

Jacobs Project Manager Odenthal stated Executive Director Edson reported on the status of the closeout and documentation therefore, I will provide an LTE update.PSBN Round 1 we have a task to present at this Board in October/November that discusses the maintenance process reconciliation of all things in PSBN Round 1 with Motorola. Staff is currently working on outstanding issues with Motorola and the Authority to align the contract to the expected performance requirements.

Jacobs Project Manager Odenthal stated in regards to LMR update, that we were notified by the State of California and Federal Emergency Management Agency (FEMA) yesterday that we are approved to conduct Geotechnical activities in the US Forest Service at all 13 sites. Round 1 clearance for these sites to begin all the documentation necessary to provide a final special use permit for the use of those properties. It has taken us about three (3) and a half (1/2) years to get to a point where we found out yesterday approval by FEMA and California Office of Emergency Services (Cal OES) and will be receiving official notification in a couple of days.

From a US Forest Service perspective, Alternate Board Member Bundesen and Board Member Donovan, no one has built a program with the US Forest Service; this will be the first of its kind for LA-RICS and for the US Forest Service.

Jacobs Project Manager Odenthal stated we reached and obstacle and have progressed past it and will begin that process to determine all US Forest Service Sites. Congratulations to the environmental team and administration team who has been dealing with Cal OES and FEMA on all of the approvals.

Director Gialamas asked Project Manager Odenthal if this is the largest hurdle that you think we will overcome or is this the first of many large hurdles that we will have to overcome? Project Manager Odenthal stated it's one of many hurdles; our next tasks will be to perform our activities according to the restrictions from the Forest. One of their guiding principles is do not make it worse than it already is in general. We are going to be fitting our network into their parameters that they have set on those locations. Tower heights at certain sites will be an issue but the US Forest Service has been very cooperative with recommendations on how to move forward. The final hurdle with the US Forest Service is receiving the permit. Going forward we will present some unique solutions.

Jacobs Project Manager Odenthal stated Executive Director spoke about matching spending plans with sites. In the next week or so, we will be sending out a spending plan that lays out the entire program to the state based on what has been accomplished so far. UASI 8', 9', 10', 11' and 14', what we are doing with 13' and 16', and then programing out 17', 18' and 19'. The spending plan will go out to the state, FEMA and Cal OES for final approval.

We are utilizing UASI 11', 12', 13', 14' and 16' funding to build 23 sites with those allocated funds. In the next six (6) months, we will be constructing on 15 sites.

In regards to Site Access Agreements (SAA), we spoke about the US Forest Services and also had a good meeting with representatives from West Covina yesterday on site Landfill BBK. Landfill BKK, which is owned by West Covina, will be presented to your Board next month and Universal, UCLA etc., are progressing.

Jacobs Project Manager Odenthal displayed a PowerPoint Presentation of sites that have been under construction and referred to Agenda Item C, the Monthly Report, and the majority of which Executive Director Edson covered in his report.

Jacobs Project Manager Odenthal also provided a Construction/Implementation Update via the previously mentioned PowerPoint presentation that consisted of the following information:

Active Sites:

- Bald Mountain (BMT)
- Mir Loma Detention Center (MLM)
- Hauser Peak (HPK)
- FCCF
- PHN
- Los Angeles Department of Water and Power Aqueduct Cascades (LDPW243)
- Los Angeles Sheriff's Department Temple Station (LASDTEM)
- Airport Courthouse (APC)
- Compton Courthouse Building (CCB)
- Clara Shortridge Foltz Criminal Court (CCT)

Video:

- Drone Fly Over Tower Mir Loma Detention Center (MLM)

Next Sites:

- Monte Vista (MVS)
- Oat Mountain Nike (ONK)
- Verdugo Peak (VPK)
- Mount McDill (MMC)
- Tejon Peak (TPK) – Gorman

D. Joint Operations and Technical Committee Chairs Report – Ted Pao and Kyle Zuniga

Operations Committee Member Kyle Zuniga stated the Joint Operations and Technical Committee met twice in the last two months. The meetings have been very productive with collaborative work amongst its members in the identifying of polices required to operate the PSBN and deploy the LMR. Please refer to Agenda Item G; the purpose of this discussion item is to update your Board on LA-RICS policies enacted to date (Enclosure) as well as provide a list of policies projected for Committee(s) recommendation and subsequently Board consideration and approval. The table below provides a list of projected items staff identified as requiring future action by your Board. This list will be updated to reflect other items, as needed. Operations Committee Chair Zuniga stated as of now we are in the revision phase of special events policy which originated in February 2, 2017. Operations Committee Chair Zuniga stated Technical Committee Member Ted Pao would provide information on security policies on PSBN and LMR.

Technical Committee Chair Pao stated along with the Operations Committee we formed a security-working group to establish polices related to the PSBN and LMR network. The first meeting was held on August 22nd to go over the security policies of different agencies and trying to establish a baseline security policy for LA-RICS. In addition, we are working on a cyber-security plan in case there is a cyber-attack on our network. For example, who will receive notification what action will be taken. In

addition, the team is looking at revision to the existing policy of the deployment of LA-RICS assets, such rapid response vehicles, portable and mobile equipment that we can loan to an agency for special events. This is separate from emergency response because those requests will go through established mutual aid processes. In the next coming weeks we will work on finalizing a migration plan for agencies and how to bring them onto the LA-RICS Land Mobile Radio network. In addition, to establish a LMR working group System Management to ensure we have a procedures and processes in place prior to system acceptance.

Executive Director Edson stated Technical Committee Chair Pao has been with LA-RICS as the lead engineer for the past several years, has worked with ISD and Sheriff's Department as well. Operations Committee Chair Kyle Zuniga is new to LA-RICS replacing Battalion Chief Kirby Neese. Executive Director Edson wanted to acknowledge them for taking the lead as Chair of the Joint Operations and Technical Committee and for work on establishing working groups.

Board Member Donovan asked if the Joint Operations and Technical Committee are getting the necessary participation from the stakeholders that are involved. Operations Committee Chair Kyle Zuniga stated we are still soliciting names and will work with your board to achieve full committee participation. Director Gialamas stated as we move forward it is good to have policies in place because of the issues with the state, FirstNet and by having the Committees in place we can make informed decisions quickly based on Committee input and established relationships. Director Gialamas acknowledged the Chairs of the Joint Operations and Technical Committee for taking the lead role.

VII. DISCUSSION ITEMS (E-G)

E. Outreach Update

Executive Assistant Wendy Stallworth-Tait provided an update on the status of outreach activities pertaining to the LA-RICS Public Safety Broadband Network (PSBN) and Land Mobile Radio (LMR) project. There was no further discussion.

Director Gialamas stated he will put us in contact with the newly appointed executive director over the County of Los Angeles information system advisory body which works to share justice information across county departments.

F. PSBN Onboarding Update

Executive Assistant Stallworth-Tait provided an update your Board on the status of onboarding users, exercising the system, and other onboarding related activities pertaining to the Public Safety Broadband Network (PSBN) project. There was no further discussion.

G. LA-RICS Policies

Executive Director Edson stated the Committee chairs provided an update on LA-RICS Polices. There was no further discussion.

VIII. ADMINISTRATIVE MATTERS (H-I)

H. APPROVE AMENDMENT NO. 29 TO AGREEMENT NO. LA-RICS 007 FOR LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM – LAND MOBILE RADIO SYSTEM

Contracts Manager Jeanette Arismendez presented to the Board Agenda Item H and requested that the Board take the following actions:

1. Make the following findings:

   a. Find that the inclusion of one (1) LMR System Site (Pomona Courthouse [POM]) into Phase 2 (Site Construction and Site Modification), Phase 3 (Supply LMR Components), Phase 4 (LMR System Implementation), and exercising of the Unilateral Options to align with the updated LMR System Design is within the scope of the design, construction, implementation, operation and maintenance activities for the LMR System previously authorized at this one (1) site. The LMR activities at Site POM was previously found by your Board to be statutorily exempt from review under California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21080.25, the exemption adopted specifically for the Los Angeles Regional Interoperable Communications System (LA-RICS) project, and any leased circuit work that may occur outside of Site POM, if needed to provide network connectivity to the LMR System, were previously found by your Board to be categorically exempt under CEQA pursuant to Guidelines section 15301 (existing facilities), 15303 (new construction or conversion of small structures) and 15304 (minor alterations to land).

2. Approve Amendment No. 29 (Enclosure) to Agreement No. LA-RICS 007 for a LMR System with Motorola Solutions, Inc. (Motorola), which revises the Agreement to reflect the following:

   a. Inclusion of one (1) LMR System Site into the scope of Phase 2 (Site Construction and Site Modification), Phase 3 (Supply LMR Components), Phase 4 (LMR System Implementation), and exercising the Unilateral Options of the same, to align with the updated LMR System Design for a cost increase in the amount of $1,170,471.

b. Make changes necessary to incorporate LMR Change Order Modifications for a cost increase in the amount of $31,922.

3. Authorize an increase to the Maximum Contract Sum by $1,202,393 from $297,061,898 to $298,264,291 when taking the cost increases into consideration.

4. Allow for the issuance of one or more Notices to Proceed for the Work contemplated in Amendment No. 29.

5. Delegate authority to the Executive Director to execute Amendment No. 29, in substantially similar form, to the enclosed Amendment (Enclosure).

Alternate Board Member Gialamas motioned first, seconded by Alternate Board Member Bundesen.

Ayes 7: Chidester, Donovan, Fronterotta, Geiger, Bundesen, Gialamas and Rodarte.

MOTION APPROVED

I. APPROVE A SITE ACCESS AGREEMENT FOR LAND MOBILE RADIO SYSTEM SITE

Executive Assistant Stallworth-Tait presented to the Board Agenda Item I and requested that the Board take the following actions:

1. Find that the approval and execution of the SAA for the Pomona Courthouse (POM) site with the Judicial Council of California to allow all LMR System Work to occur at that site for the design, construction, implementation, operation and maintenance of the LMR System infrastructure, is within the scope of the activities previously authorized at the POM site on December 12, 2016, which your Board previously found statutorily exempt from review under the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21080.25, the exemption adopted specifically for the Los Angeles Regional Interoperable Communications System (LA-RICS) project, and further found that any leased circuit work that may occur outside of the site as needed to provide connectivity to the LMR System is categorically exempt under CEQA pursuant to CEQA Guidelines sections 15301, 15303 and 15304 for the reasons set forth in this letter and in the record of the project.

2. Authorize the Executive Director to finalize and execute a SAA with the Judicial Council of California, substantially similar in form to the agreement attached hereto.

Director Gialamas stated whether the ten (10) year term is a concern at all or is this a standard term. Executive Assistant Stallworth-Tait stated that is standard with the

Judicial Council. Counsel Truc Moore also added that it could be renewed with the Judicial Council if they approve, but the Judicial Council does only do terms in increments of ten (10) years.

Board Member Donovan motioned first, seconded by Board Member Chidester.

Ayes 7: Chidester, Donovan, Fronterotta, Geiger, Bundesen, Gialamas and Rodarte.

MOTION APPROVED

IX. MISCELLANEOUS – NONE

X. ITEMS FOR FUTURE DISCUSSION AND/OR ACTION BY THE BOARD

XI. CLOSED SESSION REPORT

The Board did not enter into Closed Session.

XII. ADJOURNMENT and NEXT MEETING:

Thursday, October 5, 2017, at 9:00 a.m., at the Los Angeles Sheriff's Department, Scientific Services Bureau, located at 1800 Paseo Rancho Castilla, Los Angeles, CA 90032.

Executive Summary

October 5, 2017

LTE Update

Below are the remaining activities associated with PSBN

- SCE COW completion – Power and final fiber is being tested for connectivity for all SCE COWs. Final meter placement is expected on 10/4.
- Closeout documents – Review complete on site close-out binders. Authority has determined final documentation and worked with MSI to finalize payment.
- Multiple technical and network inclusion meetings occurring with AT&T and FirstNet. Talks also began with Verizon.
- We are actively involved with the State of California FirstNet process and are participating in the State review of the FirstNet plan.
- Our LTE network is built to "public safety grade" based on requirements gathered by the FirstNet Public Safety Advisory Committee (PSAC) and with significant input from the National Public Safety Telecommunications Council (NPSTC).
- The LA-RICS team is continuing to communicate that it will not accept nothing less than the public safety grade data network we have today, and that the LA-RICS should be absorbed as part of any network, and will work with the State, FirstNet and AT&T to that end. We asked FirstNet/AT&T to identify current and future sites built to public safety grade. AT&T provided information on the number of sites in LA County that have generators.
- We asked the Governor to issue a RFP as soon as possible so we have something to compare to the AT&T plan, and we requested he make no opt in decision without ensuring assumption of our entire LTE network and our recommendation.
- Additionally, since we are the largest 24/7 Band 14 network and a great test bed for FirstNet and AT&T when it comes to roaming between the networks, interoperability, credentialing, provisioning, and so much more; we continue to offer our knowledge and expertise to the State, FirstNet and AT&T during this plan review and discussions.

LMR Update

- Zoning Drawing – 18 Sites, 8 of which are approved to proceed to 50%
- 50% Construction Drawings – 21 Sites, 15 in development for 75%
- 75% Construction Drawings – 1 Site and is approved to proceed to 100%
- 100% Construction Drawings (Building Permit Submitted) – 8 sites, 7 of which have been submitted for Building Permit review
- Building Permit Received – 12 Sites
- Active Sites (Construction and/or Equipment Installs) & Locations
    - FCCF - 1320 Eastern Ave.
    - HPK - (Northern Angeles, overlooking Palmdale)
    - Airport - Courthouse (APC) – (Junction of I-105 and I-405)
    - Compton Courthouse Building (CCB) – Compton
    - MLM – Mira Loma Detention Facility - Lancaster
    - LDWP243 - (Junction of I-5 and CA-14)
    - BMT - (Angeles, overlooking CA-138 and I-5)
    - Foltz Criminal Courthouse (CCT) – Downtown
    - LASD Temple Station (LASDTEM) – Temple City
- Sites Complete through Phase 2 (constructions and modification complete) = 10

LA-RICS GRANT STATUS					
Grant	**Award**	**Costs Incurred/NTP Issued**	**Invoiced / Paid**	**Remaining Balance**	**Performance Period**
UASI 12	$18,263,579	$18,263,579	$18,263,579	$-	3/31/17
UASI 13	$13,744,067	$13,057,621	$-	$686,446	3/31/18
UASI 14	$4,997,544	$4,997,544	$4,997,544	$-	7/31/17
UASI 16	$5,240,456	$3,691,186	$-	$1,549,270	5/31/19
UASI 17	$34,763,780	$-	$-	$-	Not yet awarded
UASI 18	$35,000,000	$-	$-	$-	Not yet awarded
UASI 19	$35,000,000	$-	$-	$-	Not yet awarded
BTOP	$120,117,137	$-	$112,239,117	$7,878,020	9/30/20

STATUS OF PSBN AGENCY ONBOARDING		
Agency	**Onboarding Status**	**Number of Units Installed/Demo Kit/SIM cards Received**
LASD	Installations in progress.	589
LACoFD	Installations in progress.	327
Inglewood PD	Private Access Point Name (APN) configuration in progress.	8
Claremont PD	Private Access Point Name (APN) configuration in progress.	2
Bell PD	Private Access Point Name (APN) configuration in progress.	2
Covina PD	2 VML routers configured, provisioned, delivered and installed.	2
UCLA Health	Private Access Point Name (APN) configuration in progress.	1
Health Services / EMS	Portable hotspot kits are tested, final packaging needed for delivery underway.	2
El Segundo Fire & PD	ELFD installing two routers.	2
Signal Hill PD	Additional routers requested from AT&T. AT&T has indicated that they will provide additional routers with AT&T priority service	0
La Verne PD & FD	Planning for the delivery of 2 VML routers underway.	
Azusa PD	No longer interested in Demo Kit	0
Irwindale	Coverage test conducted that shows good coverage	1
Sierra Madre PD & FD	Demo Kits picked up and results reviewed. Follow up in mid-September to determine if they want to install LA-RICS routers.	2

Los Angeles Regional Interoperable Communications System

PROJECT DESCRIPTION

Events of September 11, 2001 highlighted the need for first responders to be able to communicate with each other. Emergency communications primarily address local jurisdictional needs and most agencies utilize separate radio towers, equipment, and radio frequencies. LA-RICS is designed to address each of these concerns.

Currently, there is duplication of costs and first responders cannot communicate with each other. Many legacy systems around the County are obsolete and well beyond their useful life. The LA-RICS Project vision is to provide innovative solutions for the public safety community by removing barriers to interoperable voice and data communications and allow individuals and agencies to focus on accomplishing their mission with the tools necessary to provide excellent service to their communities. To accomplish this vision, the program will establish a County-wide public safety wireless voice and data radio system for all first and secondary responders. Existing radio frequencies will be pooled and the current infrastructure utilized wherever practical. New FCC licensed broadband spectrum will be utilized.

Design, construction, and deployment of two County-wide systems (1) Land Mobile Radio (LMR) voice network utilizes 61 sites in its System Design and (2) Long Term Evolution (LTE) broadband data network is deployed at 76 sites. Both systems comply with CEQA and NEPA standards.

Project and Construction Management Services will provide network, infrastructure, project, and advisory services across four of the five program phases (Phase 5 – Maintenance is excluded) for each of the LMR and LTE projects:

- **Phase 1 - System design**
- **Phase 2 - Site construction and modification**
- **Phase 3 - Supply telecommunication system components**
- **Phase 4 - Telecommunications system implementation**
- **Phase 5 - Telecommunications system maintenance**

Location:
2525 Corporate Place, Suite 100
Monterey Park, CA 91754

Authority:
Los Angeles Regional Interoperable Communications System

Management:
LA-RICS Project Team

Consultant:
Jacobs Program Management Company

Communications Vendor:
LMR - Motorola Solutions, Inc.
LTE - Motorola Solutions, Inc.

LA-RICS

Monthly Report No. 66
For September, 2017
Submitted September 28, 2017

AGENDA ITEM C

LTE-1 UPDATES

Site/Civil/Closeout

- The remaining nine (9) SCE COW's are in civil construction including fiber connectivity which is completed and awaiting final power delivery at Studebaker sub-station (SCESTUD) to be delivered end of September. The SCE engineers have completed the fiber ring testing for 7 of the 9 COW's. The remaining two (2) sites will resume testing once the meter is delivered and final power is available at SCESTUD. MSI has initiated router configuration and end to end testing for the initial seven (7) sites, final commissioning and integration of all nine (9) sites is scheduled for completion by October. The Office of The Statewide Health and Planning Department (OSHPD) issued the permit to MSI and their contractor earlier this year. The Authority is awaiting the preliminary construction schedule as well as the method of procedure (MOP) the date set for Late September. The scope of work (SOW) or redesign of the two (2) sectors of antennas including coax and cable trays is to provide a more efficient use of the roof top at the hospital. Construction for this re-design is expected to start in mid-October.
- Each of the 63 sites has received the Close-out books which are required to meet the documentation requirements of the Contract. MSI also has provided to the Authority all 75 required site books, submitted on 7-3-17. The project management team has completed their review of all documentation. The Authority informed MSI of all missing or inadequate documentation and the remaining collection of documents was received by the Authority from MSI on September 15th. The system book an addition to all the site close out books has been delivered by MSI to the Authority and is currently under review. Final documentation monetization is incorporated into an Amendment for this Board to consider.

Network/Acceptance Test Plans (ATPs)

- The Network is completing final Acceptance Test Plans (ATPs) after the completion of the R11 upgrade. Now that we have received the permit from Cal Trans and the power construction has been completed MSI will begin the site commissioning and integration process in late September for all 9 SCE COWs. These 9 sites will provide the benefits of RF coverage and capacity in these key locations for the PSBN Network.

Operations/Governance

The LA-RICs Operations team is holding meetings three (3) times a week to focus on the following:

1. Manage and Govern MSI
2. Ensure PSBN operational performance
3. Ensure internal LA-RICS operational aspects are in place
4. Develop and Implement Policies
5. Govern Change Management

The weekly Operations meetings are scheduled as follows:

- **Tuesdays - Network Fault and Performance:** (Joint LA-RICs and MSI meeting) The session provides updates and resolutions for Network deficiencies, trouble tickets including system alarms occurring throughout the Radio Access Network (RAN) as well as the Core. This one (1) hour meeting focuses on reviewing and examining all incidents identified during the past week that affect and determine Service Level Agreements (SLAs) and KPIs. Areas of operational performance governance include trouble identification, sectionalization, resolution including processes and activities MSI could improve to effectively manage the network.
- **Wednesday - Internal Operations Meeting:** This internal meeting encompasses a pool of objectives formulated to address internal functional and resource structures, assignments, process and procedures as well as strategies to govern MSI and work through their deficiencies. Included are progress reports on daily functions, change management as well as updates on assigned action items.
- **Thursday - Process Improvements, Policy and Governance:** The team (Joint LA-RICS and MSI meeting) meets once a week to discuss Governance and resources focused on improving MSI processes specifically targeted towards alarms, trouble ticketing including Radio Access Network (RAN) and Core upgrades and functionality.

Special Events

The current events the team is focused on includes (Halloween Carnival located in West Hollywood and the New Year's day parade located in Pasadena. Aka (Rose Parade) A host of activities play an important role allowing the techs and engineers to monitor and better target areas within the system for quality assurance providing first responders the highest quality service through the LTE PSBN.

Current preparations and activities:

- Testing
  - ◊ ATT – Priority
  - ◊ 75 phones
  - ◊ 25 Routers
  - ◊ ATT Sims (LASD connections only)
  - ◊ Verizon Sims and Mobile cards
- Devices
  - ◊ Antennas for testing
  - ◊ Camera/video placement
  - ◊ Testing scenarios
    - ♦ Video comparison
    - ♦ UL & DL

LTE-1 SITES

Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Data USGS
Data LDEO-Columbia, NSF, NOAA

LMR UPDATES

Environmental Update

- Attended teleconference with FEMA and CalOES on September 5.
- Submitted additional visual analysis for Group 5 sites to FEMA on September 1 (Site DPW38)and September 8. (Coastal Zone sites LACF072 WWY).
- Submitted a revision to the Angeles National Forest Plan for LMR Geotech to the USFS on 19 September.
- Continued to review Pyramid's and FCS's pre-construction forms and weekly and daily compliance reports
- Continued visits to LMR sites.

Permitting Support

- Jacobs continues to review MSI's work and meet weekly with MSI to support MSI's developing and adhering to a P6 schedule for individual coastal development permit (CDP) submittal packages for sites included in the Santa Catalina Island, Santa Monica Mountains, and City of Malibu Local Coastal Plans (LCPs). This effort includes review of MSI-submitted zoning and construction parameters (e.g., proposed tower heights and other site design features) to verify these are consistent with Authority requirements and compliant with each applicable LCP, and directing MSI to modify design drawings as appropriate to meet program needs.
- Jacobs continues to drive the submittal of the Proposal and SF 299 application (SUP) packages for proposed construction and operations of LMR sites on the ANF. Jacobs continues to meet weekly with MSI to drive MSI in completing an LMR system design compliant with the ANF's Land Management Plan that meets system needs, and is working with MSI in developing a P6 schedule associated with successful Proposal and SUP submissions. Jacobs and Authority staff continue to meet with key ANF staff on a twice-monthly basis.

Budget

- Jacobs and MSI are currently working through contractual True-up for all remaining sites Phases 2-4.

Site/Civil

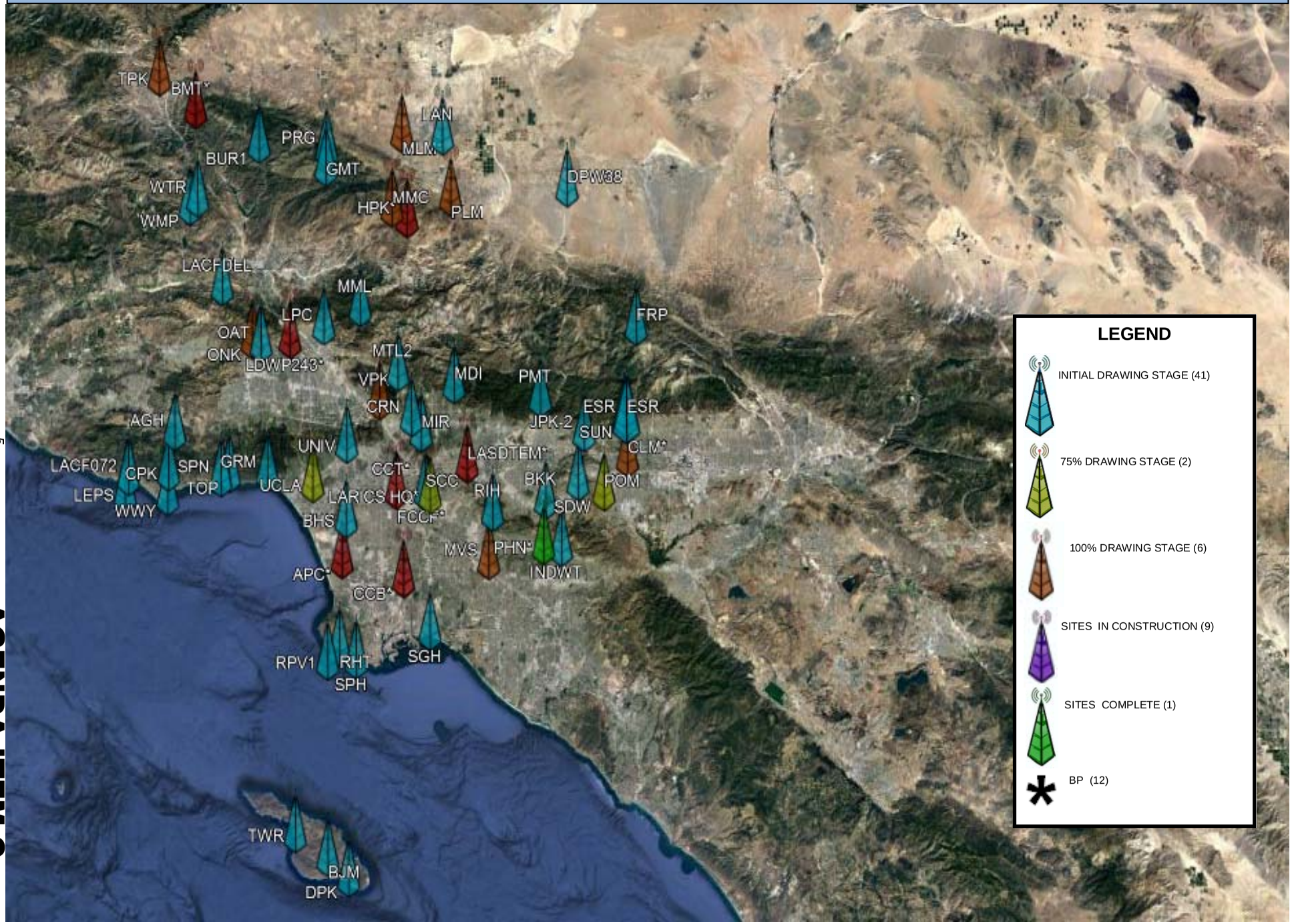
Construction efforts are complete on a handful of LMR sites. Construction for the eight (8) UASI13 sites are expected to begin in mid-October and will be complete by March 2018. Additional sites in UASI16 & UASI17 will also begin during this period. The Authority and MSI are currently waiting for those submitted permits to be approved for construction. The two teams, the Authority and MSI, have settled on a drawing review process that addresses some of the time delay and quality issues previously encountered. We will continue to do everything possible to expedite review, approval, and submission of quality drawing sets to the appropriate jurisdictions for approval.

The LMR Radio Frequency (RF) System Design is on-going and at times very dynamic with updates and changes supporting the network microwave design. The base RF Voice layers are complete from a design perspective although there may be tweaks to individual sites based on tower heights. MSI initial review of the Backhaul design including all field path studies have been completed except for San Pedro Hill (SPH). All gathered data is currently under review by MSI engineers. MSI and the Authority met to review findings and any lingering issues. Several sites are still under consideration for exact location due to backhaul availability.

MSI efforts to complete drawings and submit sites into the jurisdiction for building permits are on-going. Eighteen (18) building permit applications (PHN, BMT, HPK, LDWP243, LASDTEM, FCCF, APC, CCB, CCT, PLM, MLM, MVS, ONK, TPK, MMC, VPK, LARICSHQ, and CLM) have been submitted and approvals have been received for twelve (12) of the eightenn sites. Below is an update of the remaining LMR sites and the status or phase of which the drawings are in. As of 09/20/2017 twelve LMR Building Permit Applications have been approved and construction is underway on ten sites.

- 51 each 50% CD's have been received for review and approval by the authority as of 09/20/2017.
- 23 each 75% CD's have been received for review and approval by the authority as of 09/20/2017.
- 18 each 100% CD's have been received for review and approval by the authority as of 09/20/2017 . All have been submitted to respective jurisdictional agencies for review and Building Permit issuance.
- As of 09/20/2017 twenty five (25) executed SAA's are in place.

LMR SITES



AGENDA ITEM C

JACOBS

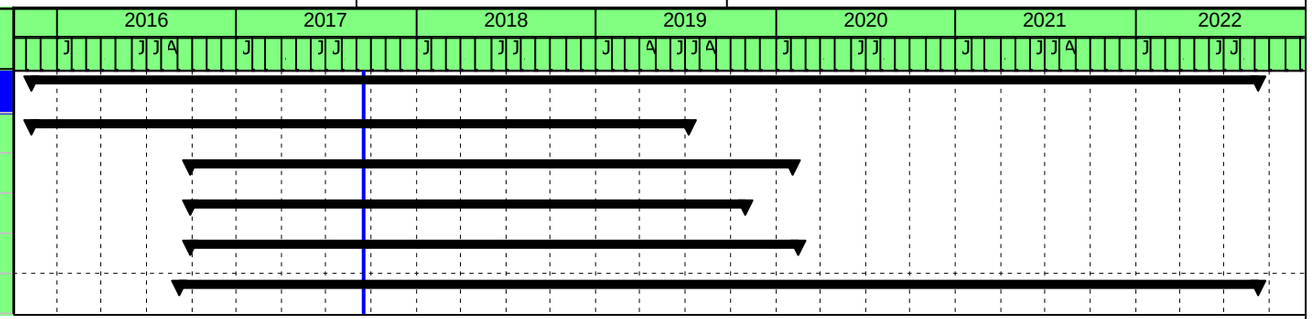
LA-RICS

LMR Summary Schedule by Phase

Data Date 16-Sep-17

Summary

Activity ID	Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish
Total		1966	1293	34.23%	09-Nov-15 A	06-Sep-22
LMR Phase 1		1140	467	59.04%	09-Nov-15 A	08-Jul-19
LMR Phase 2		861	618	28.22%	29-Sep-16 A	04-Feb-20
LMR Phase 3		792	549	30.68%	29-Sep-16 A	30-Oct-19
LMR Phase 4a (Site)		870	627	27.93%	29-Sep-16 A	17-Feb-20
LMR Phase 4b (SI)		1552	1293	16.69%	07-Sep-16 A	06-Sep-22



AGENDA ITEM C

Monthly Report #49

Reporting Period: 8/24/17 thru 9/20/17

Los Angeles Regional Interoperable Communications System (LA-RICS) - Land Mobile Radio System

Motorola Solutions, Inc.

Table of Contents

1. Executive Summary

The Los Angeles Regional Interoperable Communications System Land Mobile Radio (LA-RICS LMR) program consists of the following five (5) phases; Phase 1 LMR System Design, Phase 2 LMR Site Construction and Site Modification, Phase 3 Supply LMR System Components, Phase 4 LMR System Implementation, and Phase 5 LMR System Maintenance. Phases 1-4 span over a five (5) year period which includes one (1) year of system warranty. Phase 5 provides the Authority with fifteen (15) one year options for Motorola Solutions Inc. (MSI) to provide system monitoring and maintenance services.

The LA-RICS LMR program is currently in Phase 1 LMR System Design. Notices-To-Proceed numbers 1 through 16 have been issued authorizing distinct work for system Design services, the design and implementation of the initial deployment of the LMR system elements termed "Early Equipment", "Specified Equipment and System on Wheels", and "Station B Equipment", "Frequency Licensing", "UPS System", and "Portable Radios, Consolettes and Consoles", "Portable Radio Equipment", alternate sites "Project Descriptions", "Frequency Licensing for the Base System", "Bridge Warrant for Early", "Retuning of SOW & Station B UHF Frequencies", "Project descriptions for Nine Potential Replacement Sites" and "LMR System Redesign and Relocation of Core 2".

On April 25 the Authority executed **Amendment 17** to make necessary changes to Phase 1 for additional project descriptions, to make changes to reflect the Work in the applicable Phases for the change in the number of sites in the LMR system, to exercise the Unilateral Options for all Work pertaining to Phases 2-4.

On April 27, 2016 the Authority issued **NTP17** authorizing specific Work related Phases 2, 3, and 4 for ten (10) LMR sites.

On May 4, 2016 the Authority executed **Amendment 18** to make necessary changes to Phase 1 for additional project descriptions and to make adjustments to Phase 1 services to accommodate additional sites.

On May 5, 2016 the Authority Board of Directors approved **Amendment 19** to remove one (1) site from the system and to reconcile equipment quantities for certain LMR sites. **Amendment 19** was executed with an effective date of May 5, 2016.

On June 2, 2016 the Authority issued **NTP18** authorizing Work to develop Project Descriptions for two LMR sites.

On September 8, 2016 the Authority Board of Directors approved **Amendment 20** to reconcile nine (9) LMR Sites to reflect the updated LMR System Design, inclusion of 3D modeling drawings, and remove certain Site Lease Exhibits from the contract.

On October 6, 2016 the Authority Board of Directors approved **Amendment 21** to reconcile ten (10) LMR sites to reflect the updated LMR System Design, replace one (1) LMR site with a new site, remove five (5) Project Descriptions from the contract, and make administrative cost changes to one (1) LMR site.

On October 11, 2016 the Authority issued **NTP 19** authorizing specified Work related to Phases 2-4 for nine (9) LMR sites.

On November 3, 2016 the Authority Board of Directors approved **Amendment 22** to reconcile three (3) LMR sites to reflect the updated LMR System Design and to make administrative changes to Exhibit F (Administration of Agreement).On December 12, 2016 the Authority issued **NTP 20** authorizing specified Work related to Phases 2-4 for two (2) replacement LMR sites along with Special Operations Testing for DTVRS, ACVRS, LARTCS, and NMDN.

On December 12, 2016 the Authority Board of Directors approved **Amendment 23** to authorize specified Work related to Phases 2-4 for ten (10) LMR sites.

On December 2, 2016 the Authority issued **NTP 20** authorizing Phase 2-4 work at two (2) sites; and specified pre-installation acceptance testing for DTVRS, ACVRS, LARTCS, NMDN, and final core staging and SOT Prep.

On December 19, 2016 the Authority issued **NTP 21** authorizing specified Work related to Phases 2-4 for Six (6) LMR sites; all remaining work in Phase 2-4 at one (1) site; and all work related to ACVRS equipment in Phase 3 for six (6) sites.

On January 12, 2017 the Authority Board of Directors approved **Amendment 24** reconciling the following five (5) LMR System Sites (CLM, LACFDEL, LARICSHQ, WMP, WTR) to align with the updated System Design.

On March 2, 2017 the Authority Board of Directors approved **Amendment 25** reconciling the following six (6) LMR System Sites (AGH, VPK, BMT, CRN, MVS, and ONK) to align with the updated System Design. This Amendment also acknowledges three (3) sites (BHS, DPW38, and RPV1) into the scope of Phases 2, 3, and 4 to align with the updated LMR System Design.

On March 31, 2017 the Authority issued a Supplemental **NTP 21** authorizing specified Work related to Phases 2-4 for Seven (7) LMR sites (AGH, CRN, MVS, ONK, TPK, VPK, and LDWP243).

On April 6, 2017 Authority Board of Directors approved **Amendment 26** reconciling the following seven (7) LMR System Sites (BUR1, JPK2, LPC, MDI, MML, MTL2, and PRG) to align with the updated System Design. This Amendment also acknowledges one (1) site (LAN) into the scope of Phases 2, 3, and 4 to align with the updated LMR System Design.

On June 1, 2017 Authority Board of Directors approved **Amendment 27** reconciling the following two (2) LMR System Sites (FRP and PLM) to align with the updated System Design. This Amendment also includes two (2) sites (BKK and UCLA) into the scope of Phases 2, 3, and 4 to align with the updated LMR System Design.

On June 29, 2017 the Authority issued **NTP 22** authorizing specified Work related to work for Task A.1.9.1 (Mitigation Monitoring and Reporting Plan (MMRP)).

On August 3, 2017 Authority Board of Directors approved **Amendment 28** reconciling one (1) LMR System Site (BMT) to align with the updated System Design.

On September 7, 2017 Authority Board of Directors approved **Amendment 29** reconciling one (1) LMR System Site (POM) to align with the updated System Design and to make changes necessary to reflect LMR Change Order Modifications.

On September 14, 2017 the Authority issued **NTP 23** authorizing specified Work related to Phases 2-4 for Five (5) LMR sites.

This report covers the period from 8/24/17 thru 9/20/17

During this reporting period associated Phase 1 tasks were performed to include A&E activities, site and network design, frequency planning, site scope reviews, Site Access Agreement drawings, backhaul/microwave path surveys, and Environmental Reviews. A&E activities included site walks, site sketch development, site surveys, and development of the Zoning Drawings, geotechnical plans, and Construction Drawings.

The primary Phase 1 activities for this period include:

LMR System Design
System design activities for this period included frequency identification and planning, backhaul network design, narrowband mobile data network design, fleet mapping, Spectrum Fingerprinting and Noise Floor Monitoring process review, and incorporation of system design parameters into the construction drawing process. MSI is utilizing the Design of Record dated 9/6/16 to support the site True-Up process as well as information as it is refined and determined weekly. MSI and the Authority continue to refine the backhaul design and have identified areas of concern and their corresponding solutions.

Site Design Activities
Site design activities for this period included continued site evaluation walks, site sketch development and submittals, site survey walks, project description development and submittals for additional sites, Site Access Agreement exhibits, Zoning Drawing development and submittal, and Construction Drawing development and submittal for Authority review. Additional activities included power load studies, evaluation of as-built drawings and tower mapping, tower structural analysis for the applicable sites, submittal of applicable geotechnical drilling plans, and review of electrical one-line drawing designs.

LA-RICS Deliverables - Authority Site Access Agreements
Authority's efforts to develop and execute the applicable Right of Entry and Site Access Agreements for the required sites in the LMR design are ongoing. This activity is primarily being driven by the Authority's Site Access Team in conjunction with LA County CEO Real Estate Division. As of this reporting period 25 (out of 60) Site Access Agreements have been executed.

The Authority continues to work with FEMA to obtain independent site environmental approvals which are required prior to the start of construction at a site.

The following table provides a dashboard snapshot of the projects' health signs.

LMR Project Dashboard			
Category	**Rating**	**Change**	**Comments**
Schedule			Revisions to the baseline schedule for all phases (1-4) are reviewed weekly. A&E drawing progress is still slow but is being followed and tracked on a weekly basis. MSI and the Authority continue to see slips in individual site schedules that impact its overall Program schedule due to delays in Site Access Agreement, A&E drawings, Building Permit Submissions, and construction starts and Change Order approvals. Individual site environmental approvals may impact geotechnical investigations. These delays continue to negatively impact the schedule.
Quality			The construction drawing, review, and approval process continues to be challenging. Corrective actions continue to be put into place. The Authority and MSI will continue to work together to identify additional means to shorten this process. MSI will continue with improvements to its quality control processes and cycle times.
Risk			Risk items have been identified regarding: Spectrum, Site Access Agreements, and Site Conditions. FEMA independent site environmental approvals required.
Scope			Scope is well defined, although there may be increased scope associated with the design enhancement recommendations and in construction once geotechnical investigations are complete. Change Order processes are in place and being discussed and reviewed weekly with MSI, Jacobs, and the Authority.
Budget			Current budget reflects contract pricing and include the sites that have gone through the true-up review. Revised budgets for each site will be determined at the completion of each true-up.

2. Project Status

The following sections identify task activities during the reporting period and the planned activities for the next reporting period.

2.1 Tasks In Progress or Completed

The following depict the task activity that occurred during the current reporting period.

Activity Name	Activity Status

Activity Name	Activity Status
LA-RICS Deliverables	
Lease Negotiations & Site Access Use Agreements	In Process
FEMA Environmental Site Approvals & Construction Waivers	In Process
Notice To Proceed for applicable sites	In Process
LMR System Design	
Design baseline site parameters & Design development	In Process
Contract True-up of site designs and equipment for each site	In Process
Site Design, Zoning and Permitting	
Site Walks and Site Sketch Development & Approvals (PLM, VPK, SDW,SGH)	In Process
Site Surveys	In Process
Develop Zoning Drawings & Approvals	In Process
Geotechnical Boring (applicable sites)	In Process
Develop Construction Drawings & Approvals	In Process
Submit Permits Drawings and Approvals	In Process
Pre- Construction	
Pre- Construction Plans in review (MMC, TPK, SDW, VPK,PLM,MVS,ONK, POM)	In Process
Construction	
Construction (PHN/BMT/HPK/FCCF/LDWP243/LASDTEM/APC/CCB/CCT/MLM)	In Process

2.2 Tasks Planned for Next Period

The following depict the task activity that is planned for the next reporting period.

Activity Name	Planned Status
LA-RICS Deliverables	
Lease Negotiations & Site Access Use Agreement	On Going
Access to Core Sites	On Going
FEMA Environmental Site Approvals & Construction Waivers	In Process
Review and Approve Zoning and Construction Drawings	In Process
Notice To Proceed for applicable sites	In Process
Environmental Review & Documentation (Authority)	
Additional Sites for Consideration Environmental Reviews	In Process
LMR System Redesign	
Redesign baseline site parameters & redesign development	In Process
Contract True-up of site designs and equipment for each site	In Process
Site Design	
Site Walks and Site Sketch Development & Approvals	In Process
Site Surveys	In Process
Develop Zoning Drawings & Approvals	In Process
Submittal of Zoning Drawings	In Process
Geotechnical Boring – USFS Sites	In Process

Activity Name	Planned Status
Develop Construction Drawings and Approvals	In Process
Submit Permits Drawings and Approvals	In Process
Pre-Construction	
Pre- Construction Packages & Site Monitoring (where applicable)	In Process

Activity Name	Activity Status
Site Construction	
Outreach to Neighborhoods for Applicable Sites	On Going
Pre- Construction Packages Review & Approval	On Going
Site Construction & Site Monitoring (where applicable)	On Going
Site Construction Inspection Approvals	On Going
Site Construction – (ONK,SDW,VPK,TPK, MVS,POM,PLM,MMC)	On Going

2.3 Authority Look-Ahead Tasks (120-Day)

For the Authority planning purposes the following table provides a one hundred twenty (120) Day look-ahead of the Authority-specific activities to conduct coordination, inspections, approvals, consents, and or provide decisions necessary from the Authority to facilitate Contractor's progress.

Activity Name	Activity Status
LA-RICS Deliverables	
Lease Negotiations & Site Access Use Agreement	On Going
LA-RICS Provides Access to Core Sites	On Going
FEMA Environmental Site Approvals & Construction Waivers	On Going
Review and Approve Zoning and Construction Drawings	On Going
Notice To Proceed for applicable sites	On Going
Environmental Review & Documentation (Authority)	
Additional Sites for Consideration Environmental Reviews	On Going
LMR System Redesign	
Review and Approve design baseline site parameters & design sections	On Plan to Finish
Contract True-up of site designs and equipment for each site	On Going
Site Design	
Schedule Access for the Development A&E Activities at Selected Sites	On Going
Review and Approve Site Sketches	On Going
Review and Approve Zoning Drawings	On Going
Review and Approve Geotechnical Boring Plans	On- Going
Review and Approve Construction Drawings	On Going
Review and Approve Building Permit Packages	On Going
Site Construction	

Activity Name	Activity Status
Outreach to Neighborhoods for Applicable Sites	On Going
Pre- Construction Packages Review & Approval	On Going
Site Construction & Site Monitoring (where applicable)	On Going
Site Construction Inspection Approvals	On Going
Site Construction - (ONK,SDW,VPK,TPK, MVS,POM,PLM,MMC)	Started

3. Project Risk Register

Title	Assigned	Impact	Risk Description	Status
Site Parameters	Authority	High	Site parameters (e.g. tower heights, RF equipment configurations) are different from the baseline agreement and may impact System performance.	Active
Environmental Process	Authority	Medium	The individual determination of environmental impacts or mitigation may impact the schedule for site work (e.g., bird nesting season). Individual environmental releases from FEMA are required to start work at sites.	Active
Delayed Drawings and Permit Release	Motorola & Authority	High	Delay in permit submission and release has impacted the construction schedule and ability to meet grant spending guidelines. Site changes and System redesign elements are impacting drawing progress for certain sites. The Authority and MSI continue to struggle to incorporate Authority comments, creating a quality control issue which requires additional rounds of review. This has inhibited the submission of drawings for permit.	Active
Site Access Agreements	Authority	High	Lease holders approvals are needed in order to implement LA-RICS improvements.	Active
Project Schedule	Authority & Motorola	High	Overall project schedule and individual site permit submissions/work starts impacted by implementation of LMR System redesign enhancements, slow A&E construction development progress, and individual site true-ups.	Active

4. Areas of Concern

This section describes any events and or circumstances of which the Contractor is aware that has delayed or may delay project activities and what corrective or remedial actions was taken or will be taken to resolve the issue. Outstanding Issues Log (the "OIL Log") entries are also tabulated and monitored in this section. "Oil Log" items include, for example, sequencing, infrastructure, site access, coordination issues, congestion of workers and equipment, time requirements for design, procurement, and installation.

ID	Event / Circumstance	Remedial Action Taken or Required
02-02	System Design impacts due to changes in site conditions	Motorola and the Authority have analyzed probable site changes and suitable site replacement candidates. Adjusted tower heights and undetermined site parameters at several of the sites will impact the coverage. System redesign efforts will determine system impacts. Impact includes, microwave backhaul, equipment reconfigurations, channel plan changes, system coverage, licensing, and site design and permitting.

5. Disputes and Claims

This section describes any disputes, potential claims, and claims made during the reporting period.

Dispute / Claim / Potential Claim	Status / Actions	Resolution Date
None at this time		

6. Financial Status

The following represents the invoice payments that were completed during the reporting period and the remaining amount to be invoiced and paid.

Invoice Payment Category	Invoice Payment Totals
Contract Sum Full Payable Amount (Amendment 25)	$167,711,336
Cumulative Invoice Payments from Last Report	$ 63,160,431
Total Invoice Payments This Period	$ -
Remaining Amount to be Paid	$104,550,905

7. LA-RICS Master Schedule

Schedule review meetings are held weekly. The project schedule includes the latest list of sites and the Authority's actual and projected dates for Site Access Agreements, FEMA independent site

environmental approvals, FEMA construction waivers, and site Notice to Proceeds. An exported file (XER) of the master project schedule is delivered on a weekly basis.

(See attached LMR Executive Project Summary Snapshots)

JACOBS

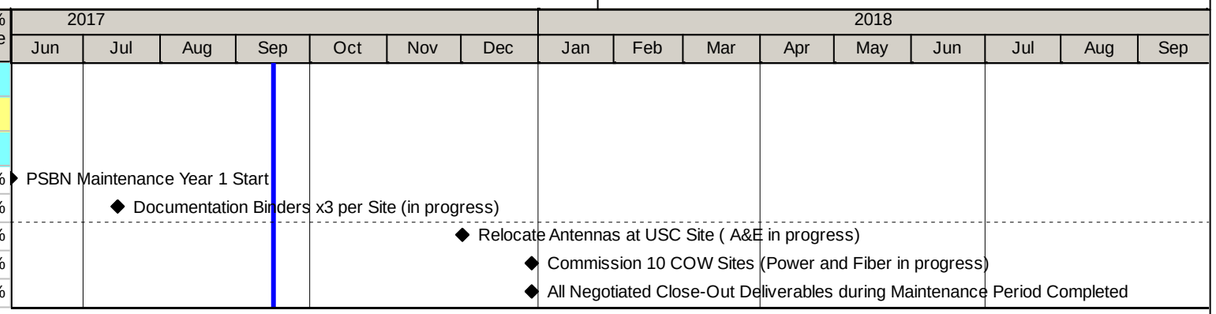
LA-RICS

LA RICS LTE Close Out Schedule
All Activities

Data Date 16-Sep-17

Actual Work
Remaining Work
Critical Remaining
Milestone

Activity Name	Start	Finish	Physical % Complete
Total	01-Jun-17 A	29-Dec-17	
LA-RICS PSBN Close-Out during Maintenance period	01-Jun-17 A	29-Dec-17	
Close Out Deliverables during Maintence Period	01-Jun-17 A	29-Dec-17	
PSBN Maintenance Year 1 Start	01-Jun-17 A		100%
Documentation Binders x3 per Site (in progress)		14-Jul-17 A	100%
Relocate Antennas at USC Site (A&E in progress)		01-Dec-17	0%
Commission 10 COW Sites (Power and Fiber in progress)		29-Dec-17	0%
All Negotiated Close-Out Deliverables during Maintenance Period Completed		29-Dec-17	0%



AGENDA ITEM C

Monthly Report - #43

Reporting Period: 8/24/17 thru 9/20/17

Los Angeles Regional Interoperable Communications System (LA-RICS) – Public Safety Broadband Network

Motorola Solutions, Inc.

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1. Executive Summary

The Los Angeles Regional Interoperable Communications System - Public Safety Broadband Network (LA-RICS PSBN) project is a 700 MHz Long Term Evolution (LTE) public safety mobile broadband network that will provide broadband services across the County of Los Angeles for the Authority's Member Agencies.

The LA-RICS Authority was awarded a Comprehensive Community Infrastructure (CCI) Broadband Technology Opportunity Program (BTOP) grant by Department of Commerce's National Telecommunications and Information Administration (NTIA) to deploy the LA-RICS PSBN system. The BTOP grant program requires that the LA-RICS PSBN system be compatible with the future Nationwide Public Safety Broadband Network (NPSBN) currently being designed and developed by FirstNet, an independent authority within the NTIA. Additionally the Authority executed a Spectrum Manager Lease Agreement (SMLA) with FirstNet for spectrum usage rights to operate on the 700 MHz public safety broadband spectrum (D-Block). The LA-RICS-PSBN system provides the Authority with the opportunity to work cooperatively with FirstNet, while participating in testing and providing input in what will ultimately form the National Public Safety Broadband Network (NPSBN).

The LA-RICS PSBN program consists of the following five (5) phases; Phase 1 PSBN System Design, Phase 2 PSBN Site Construction and Site Modification, Phase 3 Supply PSBN Components, Phase 4 PSBN System Implementation, and Phase 5 PSBN Maintenance. Phases 1-4 must have construction activities substantially completed by September 30, 2015 to be in compliance with the BTOP grant funding program. The cost for all Work performed that is not covered by the BTOP grant program will be the sole responsibility of the Authority. Phase 5 provides the Authority with the first five (5) years of one year options for Motorola to provide system monitoring and maintenance services.

On March 10, 2014 the Authority issued **NTP 1** authorizing Motorola to begin all work in Phase 1 for System Design services. Phase 1 primary activities include:

- LA-RICS Deliverables
- Project Management Plans
- System Design
- Site Design
- RF Emissions Report
- Inventory and Management System

On April 7, 2014 the Authority issued **NTP 2** for **Amendment 2** to add detailed design services to Phase 1 for Additive Alternate No. 1, a Home Subscriber Server (HSS), and Additive Alternate No. 2, a Redundant Evolved Packet Core (EPC).

On June 20, 2014 the Authority issued **Amendment 3** to exercise the Unilateral Options for all Work pertaining to Phase 2, Site Construction and Site Modification, and Phase 3, Supply PSBN Components.

On June 20, 2014 the Authority issued **NTP 3** to begin limited work related to Phase 2 and Phase 3. Microwave equipment was excluded from NTP 3 until the Authority approves the backhaul design and issues a separate NTP. NTP 3 also authorized Motorola to proceed with all planning and non-site mobilization work related to Phase 2, Site Construction and Site Modification, however, no construction work at a specific project site location will be conducted until the Authority has received all required NEPA and/or any other applicable Federal and State Environmental approvals for each specific location.

On July 10, 2014 the Board of Directors approved **Amendment 4** for Phase 2, Site Construction and Site Modification, and Phase 3, Supply PSBN Components of Additive Alternate No. 1, a Home Subscriber Server (HSS) and Additive Alterative No. 2, a Redundant Evolved Packet Core (EPC).

On September 8, 2014 the Authority issued **NTP 4** to proceed with work related to Phase 3 Supply PSBN Components for Additive Alternate No. 1, a Home Subscriber Server (HSS). Phases 2 and 4 were excluded from NTP 4 as they relate to Additive Alternative No. 1. Per NTP 4, authorization to design and purchase the HSS have been issued but installation and implementation have been excluded.

On September 17, 2014 the Authority issued **NTP 5** authorizing Motorola to proceed with Work related to Site Construction and Site Modification under Phase 2 for Additive Alternate No. 1, Home Subscriber Server (HSS). With respect to Phase 2, Site Construction and Site Modification, the services to be performed for Additive Alternate No. 1 involve minor site preparation activities in order to receive applicable equipment racks within the existing communications rooms at the Fire Command and Control Facility.

On September 25, 2014 the Authority issued **NTP 6** authorizing Motorola to proceed with ordering 40 additional standard equipment packages. As of NTP 6, Motorola is not authorized to proceed with ordering any equipment that is dependent on final design approval from the Authority, including for microwave and backhaul, until such time as the Authority has approved the final design for such sites and issues an NTP. The final site and backhaul design will be completed within 60 days of the Authority finalizing site locations and tower configurations.

On September 26, 2014 the Authority issued **NTP 7** authorizing Motorola to proceed with Phase 4, PSBN Implementation Work. The work related to the installation of the Primary EPC at FCCF consists of installing, optimizing, testing, commissioning, and deploying all of the Authority-authorized portion of the PSBN including, without limitation, all hardware, software, physical and network infrastructure, data, and all other deliverables and other work necessary to implement the full functionality of the PSBN and training staff on the use of the PSBN. NTP 7 excludes installation of the System Management Monitoring Servers (SMMS - the servers required to manage and monitor the PSBN).

On October 1, 2014 the Authority approved **Amendment 6** for the removal of three (3) PSBN Sites and to make the changes necessary to reflect the replacement of undisguised antenna support structures to disguised antenna support structures at 32 PSBN Sites. Amendment 6 increases the Maximum Contract Sum by $2,613,300 from $175,583,275 to $178,196,575.

On October 10, 2014 the Authority issued **NTP 8** authorizing Motorola to modify the existing order of 40 sites contemplated in NTP No. 6 (standard antenna support structures - 70 foot undisguised monopoles) to order 40 sites worth of equipment considering any mix of antenna support structures (undisguised and/or disguised, with disguised antenna support structures limited to 31 sites pursuant to Amendment No. 6) that Motorola deems necessary to commence construction activities. As of this NTP, construction activities remain prohibited pending the Authority receiving FONSI and SHPO approvals.

On October 22, 2014 the Authority issued **NTP 9** authorizing Motorola to proceed with all Phase 4 Work related to the installation of the System Management and Monitoring Subsystem (SMMS) at the County of Los Angeles' Fire Department's Fire Command and Control Facility (FCCF). The NTP included the statement: “Motorola Solutions has agreed to provide a fully geo-redundant SMMS configuration (to

begin implementation in November, 2015)." Motorola provided clarification that the agreement was still under negotiation for cost and schedule delivery and that the deployment of the geo-redundant SMMS was predicated on the NTP for the redundant Evolved Packet Core (EPC).

On November 4, 2014 the Authority issued **NTP 10** authorizing Motorola to begin construction on 94 sites provided within the NTP.

On December 2, 2014 the Authority issued **NTP 11** authorizing Motorola to proceed with all Work necessary for ordering and installing site routers and core routers at FCCF, LAPDVDC, and all sites for Phase 3, Supply PSBN Components. NTP also authorized Motorola to proceed with all Work related to Phase 3 for Additive Alternate 2 Redundant EPC to be located at LAPDVDC.

On December 2, 2014 the Authority issued **NTP 12,** authorizing Motorola to proceed with ordering an additional 75 PSBN Sites worth of standard equipment, such as antenna support structures Evolved Packet Core (EPC) components, eNodeB components, antennas, and associated accessories for all sites that are not dependent on final design approval. Additionally, Motorola is authorized to proceed with the ordering of all Work related to Phase 3, Supply PSBN Components, and Phase 4, PSBN Implementation, for TMR Cabinets and TMR battery backup components for 75 PSBN Sites.

On December 30, 2014 the Authority issued **NTP 13,** authorizing Motorola to begin construction on 31 City of Los Angeles Sites listed in NTP.

On December 31, 2014 the Authority approved **Amendment 7** to make changes necessary to reflect the replacement of undisguised antenna support structures with various types of antenna support structures at eight PSBN Sites.

On January 22, 2015 the Authority issued **NTP 14,** authorizing Motorola to proceed with ordering 25 vehicular routers.

On January 28, 2015 the Authority issued **NTP 15,** authorizing Motorola to begin construction on the two sites VEFD001 and VEFD003

On February 5, 2015 the Authority approved **Amendment 8** for the removal of thirty-six (36) PSBN Sites, include six (6) new PSBN Sites and to make the changes necessary to reconcile the hose tower installation costs for twenty-eight (28) PSBN Sites. Amendment 8 decreases the Maximum Contract Sum from $178,196,575 to $166,254,679.

On March 3, 2015 the Authority issue **NTP 16**, authorizing Motorola to begin construction on the four sites; ARCPD01, AZPD001, ELMNTPD, LACF159.

On March 4, 2015 the Authority issue **NTP 17**, authorizing Motorola to proceed with ordering and implementing TMR cabinets for seventy-five (75) sites.

On March 3, 2015 the Authority and Motorola presented its project status report to the NTIA and NOAA representatives. The meeting highlighted the equipment procurement plan and implementation plan to deploy 182 sites by August 15, 2015. Motorola presented the updated PSBN system coverage maps based on the 182 sites.

On March 5, 2015 the Authority approved **Amendment 9** for the removal of twenty-four (24) PSBN Sites, include six (6) new PSBN Sites and to make the changes necessary to accommodate various changes in civil construction scope at applicable sites.. Amendment 9 decreases the Maximum Contract Sum from $166,254,679, to $158,930,274.

On March 10, 2015 the Authority issue **NTP 18**, authorizing Motorola to proceed with ordering the necessary microwave radio equipment and accessories to implement the PSBN microwave paths identified in the approved PSBN backhaul design.

On March 18, 2015 the Authority issue **NTP 19**, authorizing Motorola to proceed with all Work related to Phase 4 (PSBN implementation) for Additive Alternate 2, Redundant Evolved Packet Core (EPC) at the Los Angeles Police Department Valley Dispatch Center (LAPDVDC).

On April 2nd, 2015 the Authority issued a formal **Suspension Order**, directing Motorola to halt the procurement equipment.

On April 3rd, 2015 the Authority received a **Stop Work Notice** for all work and was issued a Corrective Action Plan (CAP) from NOAA to be submitted by April 13, 2015. Between 3/3/15 and 3/13/15 Motorola produced numerous supporting coverage scenarios for the Authority to include within the CAP response.

On April 16, 2015 the Authority issued a letter to Motorola requesting a plan for reduced scope and an analysis of cost impact. A Schedule was released on 5/07/15 and is updated on a weekly basis.

On May 7, 2015 the Authority issued **NTP 20**, authorizing Motorola to proceed with ordering the necessary microwave radio equipment and accessories to implement the PSBN microwave paths remaining as part of the CAP site list.

On May 7, 2015 the Authority issued **NTP 21**, partially cancelling the Suspension Order that was issued on April 3, 2015 and authorized construction to resume at the 69 sites identified in the Corrective Action Plan.

On May 7, 2015 the Authority issued **NTP 22**, directing Motorola to 1) look at options are returning Additive Alternate No. 1, the Redundant Evolved Packet Core (EPC), assigned to the Los Angeles Police Department Valley Dispatch Center (LAPDVDC) to Ericsson; (2) recover the redundant EPC for Motorola's use in other projects or (3) resell the Redundant EPC to a secondary market. Motorola is evaluating the cost impacts and the legal possibilities with the directive issued in this NTP.

On May 12, 2015 the Authority issued **NTP 23**, authorizing Motorola to order fiber optic equipment and provide services via contract between Fujitsu and Motorola in order to create a link between the FCCF and the City fiber ring. NTP 23 was limited to the County portion of the design.

On May 15, 2015 the Authority issued **NTP 24**, authorizing Motorola to order leased fiber services from AT&T, Verizon, and Time Warner to provide connections between the applicable CAP sites and the FCCF EPC site.

On May 15, 2015 the Authority issued **NTP 25**, directing Motorola to 1) return the excess PSBN equipment to its manufacturers, 2) recover the excess equipment for Motorola's use in other projects,

or 3) resell the excess PSBN equipment to a secondary market, in accordance with the list of equipment in the NTP. Motorola is evaluating the list of equipment provided in the NTP and the cost impacts and the legal possibilities with the directive issued in this NTP.

On May 20, 2015 the Authority issued **NTP 26** Authorizing Motorola to order fiber optic equipment and provide services via contract between Fujitsu and Motorola to create a link between the EPC located at the Los Angeles County Fire Department's FCCF facility and the City Los Angeles fiber ring. NTP 26 expands upon the products and services in NTP 23 to include the City portion of the fiber scope.

On June 18, 2015 the Authority approved **Amendment 10** for the Inclusion of 15 Cell-On-Wheels and the Construction Restoration Work at 30 PSBN Sites.

On June 25, 2015 the Authority issued **NTP 27** Authorizing Motorola to proceed with all Phase 1 (System Design) Work for fifteen (15) Cell-On-Wheels (COWs) sites.

On June 30, 2015 the Authority issued **NTP 28** Authorizing Motorola to proceed with all Work related to construction restoration for thirty (30) PSBN Sites that have been removed from the program.

On June 30, 2015 the Authority issued **NTP 29** Authorizing Motorola to proceed with ordering nine hundred and seventy-five (975) VML-750 in-vehicle router units.

On July 16, 2015 the Authority approved **Amendment 11** to add 15 Cell-On-Wheels (COWs) and the PASDNPD site to the PSBN program.

On July 16, 2015 the Authority issued **NTP 30** Authorizing Motorola to proceed with all Phase 2 (Site Construction and Site Modification), Phase 3 (Supply PSBN components), and Phase 4 (PSBN Implementation) Work for fifteen (15) Cell-On-Wheels (COWs).

On August 13, 2015 the Authority approved **Amendment 12** to remove forty-two (42) sites from the PSBN system, authorize the removal of seven (7) tower foundations at the applicable restoration sites, to purchase 5,000 Universal Integrated Circuit Cards (UICC), purchase of five (5) CISCO routers and five (5) corresponding units of data services, and approvals for applicable change orders.

On August 13, 2015 the Authority issued **NTP 31** Authorizing Motorola to proceed with ordering five thousand (5,000) standalone universal Integrated Circuit Cards (UICCs)

On September 1, 2015 the Authority issued **NTP 32** authorizing Motorola to proceed with ordering five (5) CISCO routers and five (5) corresponding units of data and related Work that are capable of operating a 4G cellular aircard on a commercial carrier that will allow Motorola and the Authority to temporarily test eNodeB sites in the event that the permanent backhaul solution is not available at the time of site commissioning.

On September 4, 2015 the Authority approved **Amendment 13** to confirm the prior removal of 77 additional sites.

On September 23, 2015 the Authority issued **NTP 33** authorizing Motorola to proceed with replacing the security certificates at the EPC core.

On October 9, 2015 the Authority approved **Amendment 14** to adjust the contract for scope changes to tower sites.

On October 15, 2015 the Authority issued **NTP 34** instructing Motorola to provide a portion of the training plan for 9 classes.

On December 17, 2015 the Authority Approved **Amendment 15** to: (a) Settle and resolve all outstanding claims with the Contractor, including all claims from Contractor's subcontractors, and including all known and all potential future claims through the completion of the work under the Agreement, with the exception of changes to the Work directed in writing by the Authority;
(b) Approve payment to the Contractor of $15,764,246 in the specific amounts for the specific claims identified in tab C.16 of Exhibit C (Schedule of Payments) attached to the Amendment; (c) Approve the reduction of project management fees payable to the Contractor in the Agreement for sites not constructed, for a total reduction in project management fees of $5,078,774, as reflected in tabs C.3, C.4 and C.5 of Exhibit C (Schedule of Payments) attached to the Amendment; and (d) Authorize an increase to the Maximum Contract Sum by the net amount of $10,685,472 from $132,899,485 to $143,584,957.

On December 3, 2015, the Authority issued a Suspension Order for Waterway Coverage Testing, Special Operations Testing (SOT), and the Public Safety Broadband Network (PSBN) Burn-in Testing (Burn-in).

On December 21, 2015 the Authority and Motorola executed **Amendment 15** as described above.

On February 23, 2016, the Authority issued a Termination for Convenience for the Wide Area Coverage Testing.

On March 9, 2016 the Authority issued Motorola a **Termination for Convenience** for all Waterway Coverage Testing, Special Operations Testing (SOT), Public Safety Broadband Network (PSBN) Burn-in Testing (Burn-in) Testing, and for Freeway Coverage Testing.

On March 9, 2016 the Authority approved **Amendment 16** to include all Work related to additional Radio Frequency (RF) Emissions testing at twelve (12) PSBN sites to include six (6) indoor emission tests at identified sites.

On March 16, 2016 the Authority issued **NTP 35** authorizing Motorola to conduct additional RF Emissions Testing at twelve (12) PSBN Sites.

On May 4, 2016 the Authority approved **Amendment 17** to remove all Work related to Coverage, Stress, and Burn-in testing. On May 5, 2016 MSI submitted a claim for the portion of Work completed on the terminated scope. The Authority is currently reviewing MSI's submission.

On August 31, 2016 the Authority and MSI executed **Amendment 18** to extend the warranty period until 12/31/16, reconciliation of excess equipment and spare equipment, corrected construction costs associated the with the LASDCVS site, and correction of administrative errors in Exhibit C.

On December 12, 2016, the Authority and MSI executed **Amendment 19** to extend the warranty period until 3/31/17; make changes necessary to upgrade the Authority's Deployable Vehicle to support upcoming special events; reflect the reduction in certain training; reflect a reduction in Wide Area Coverage Testing; reflect an increase in Optimization Work,; authorize the Authority to release the ten

(10) percent Holdback for certain completed, accepted, invoiced, and paid work; and identify a net decrease in the Maximum Contract Sum by $1,567,382.

On December 23, 2016 the Authority issued **NTP 36** authorizing Motorola to upgrade the Authority's Deployable Vehicle, System on Wheels (SOW) to support upcoming events.

On March 20, 2017, the Authority and MSI executed **Amendment 20** to reflect the relocate of certain equipment (towers, generator fuel tanks, tower hardware, etc) from the SCE Mesa Substation to the County of Los Angeles Fire Department's Del Valle Training Facility.

On March 20, 2017, the Authority and MSI executed **Amendment 21** to extend the Warranty Period on a month-to-month basis, at no additional cost; with the first month commencing on April 1, 2017 and expiring on April 30, 2017.

On March 23, 2017 the Authority issued **NTP 37** authorizing Motorola to relocate certain equipment (towers, generator fuel tanks, tower hardware, etc) from the SCE Mesa Substation to the County of Los Angeles Fire Department's Del Valle Training Facility.

On April 13, 2017, the Authority and MSI executed **Amendment 22** to create one (1) Access Point Name (APN) for a minimum of four (4) agencies.

On April 13, 2017, the Authority and MSI executed **Amendment 23** to extend the Warranty Period until May 31, 2017, at no additional cost.

On April 18, 2017 the Authority issued **NTP 38** authorizing Motorola to create one (1) Access Point Name (APN) for four (4) of the Authority's member agencies from a pool of six (6) member agencies.

On May 18, 2017, the Authority and MSI executed **Amendment 24** to exercise the first one-year Option Term for Maintenance Work under Phase 5 (PSBN Maintenance), commencing on June 1, 2017 and expiring on May 31, 2018; replace Exhibit A (Statement of Work), in particular Task 9 (Public Safety Enterprise Network Services) with new verbiage .

On May 31, 2017 the Authority issued **NTP 39** authorizing Motorola to proceed with one-year of Maintenance Work under Phase 5 (PSBN Maintenance), commencing on June 1, 2017, and expiring on May 31, 2018, unless sooner terminated or extended, in whole or in part.

On August 2, 2017 the Authority issued **NTP 40** authorizing Motorola to perform additional Access Point Name (APN) and Public Safety Enterprise Network (PSEN) Work for four (4) of the Authority's member agencies (Bell PD, Claremont PD, Inglewood PD, UCLA Health Dept.)

This report covers the period from 8/24/17 thru 9/20/17.

The following table provides a dashboard snapshot of the projects' health signs.

PSBN Project Dashboard			
Category	**Rating**	**Change**	**Comments**
Schedule			The project schedule is complete (other than the closeout items Motorola has agreed to complete during the maintenance phase).
Quality			No quality issues at this time.
Risk			Maintenance Agreement payments rejected. The Authority and MSI are bringing an amendment to this Board to ratify changes to the contract that addresses the issue.
Scope			Nothing new to report.
Budget			Authority has not yet authorized payment for excess equipment that was ordered by Authority and delivered prior to any stop work notices.

2. Project Status

The following sections identify task activities during the reporting period and the planned activities for the next reporting period.

2.1 Tasks In-Progress and Completed

The following depict the task activity that occurred during the current reporting period.

Activity Name	Activity Status
LA-RICS Deliverables	
Construction, Power & Fiber for 9 SCE COW Sites	In Progress
Site Construction & Site Modification (Phase 2)	In Progress
Permit Clear for Applicable LTE Sites (1 LACUSC)	
Reconfiguration of Antennas at LACUSC	In Planning
System Implementation (Phase 4)	
COW Sites Install, Configuration, Commissioning / Test	In Progress
Complete re-installation of all equipment at LACUSC	In Planning
Overall Project Closeout	
Completion of documentation submissions (Fixed Sites)	Complete
Completion of documentation submissions (COW Sites)	In Progress
Warranty - Start of Maintenance	
Year One Maintenance Agreement	In Progress

2.2 Tasks Planned for Next Period

The following depict the task activities that are planned for the next reporting period.

Activity Name	Planned Status
LA-RICS Deliverables	
Construction, Power & Fiber for 9 SCE COW Sites	In Progress

2.3 Authority Look-Ahead Tasks (120-Day)

Activity Name		Start
LA-RICS Deliverables		
	Construction, Power & Fiber for 9 SCE COW Sites	In Progress
	Construction, Power & Fiber for 9 SCE COW Sites	In Progress
MSI Deliverables		
	Completion of documentation submissions (COW Sites)	In Progress
	Reconfiguration of Antennas at LACUSC	In Progress

3. Project Risk Register

For this monthly report, the following items are at risk.

Title	Assigned	Impact	Risk Description	Status
None				

4. Areas of Concern

This section describes any events and/or circumstances of which the Contractor is aware that has delayed or may delay project activities and what corrective or remedial actions were taken or will be taken to resolve the issue. Outstanding Issues Log (the "OIL Log") entries are also tabulated and monitored in this section. "Oil Log" items include, for example, sequencing, infrastructure, site access, coordination issues, congestion of workers and equipment, time requirements for design, procurement, and installation.

ID	Event / Circumstance	Remedial Action Taken or Required
M1-1	Missed Payment for 1st Month of Maintenance Agreement	Authority and MSI have agreed to capture maintenance scope changes in a change order, formalize/execute the change order. MSI to resubmit invoice which the Authority has agreed to pay.
M1-2	Missed Payment for 2nd Month of Maintenance Agreement	Authority and MSI have agreed to capture maintenance scope changes in a change order, formalize/execute the change order. MSI to resubmit invoice which the Authority has agreed to pay.
M1-3	Missed Payment for 3rd Month of Maintenance Agreement	Authority and MSI have agreed to capture maintenance scope changes in a change order, formalize/execute the change order. MSI to resubmit

ID	Event / Circumstance	Remedial Action Taken or Required
		invoice which the Authority has agreed to pay.

5. Disputes and Claims

This section describes any disputes, potential claims, and claims made during the reporting period.

Dispute / Claim / Potential Claim	Status / Actions	Resolution Date
Missed Payment for 3 Months of Maintenance Agreement	Authority and MSI have agreed to capture maintenance scope changes in a change order, formalize/execute the change order. MSI to resubmit invoices which the Authority has agreed to pay.	10/5/2017

6. Financial Status

The following table represents the invoice payments that have been completed to date. The revised Contract Sum amount based on the Corrective Action Plan is being reviewed by the Authority and Motorola. For this reporting period the Contract Sum is based on Amendment 18.

PSBN Invoice Payment Category	Invoice Payment Totals
PSBN Contract Sum Full Payable Amount (Phases 1-4)	$ 102,159,509
Cumulative Invoice Payments from Last Report	($ 82,972,716)
Total Invoice Payments This Period	($ 0)
Remaining Amount to be Paid	$ 19,186,793

7. LA-RICS PSBN Project Schedule

No project schedule as this project is completed and in the one-year maintenance period.

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SCOTT EDSON
EXECUTIVE DIRECTOR

October 5, 2017

To: LA-RICS Authority Board of Directors

From: Scott Edson
Executive Director

OUTREACH UPDATE

The purpose of this discussion item is to update your Board on the status of outreach activities pertaining to the LA-RICS Public Safety Broadband Network (PSBN) and Land Mobile Radio (LMR) project. The below meetings occurred since our last report to you:

Municipality	Meeting Date
Meeting with representatives from Comcast/NBC Universal	August 31, 2017
Meeting with representatives from AT&T	September 7, 2017
Meeting with FirstNet	September 13, 2017
Meeting with Board of Supervisors Justice Deputies	September 20, 2017
Meeting with Verizon Wireless	September 27, 2017
Meeting with Los Angeles County Sanitation District 18	September 27, 2017
Meeting with City of Inglewood and LA Stadium Officials	September 28, 2017

Members of the LA-RICS Team met with representatives from Comcast/NBC Universal to discuss site acquisition for the Universal Studios (UNIV) site.

Executive Director Edson and members of the LA-RICS Team met with representatives from AT&T to discuss device and customer migration strategy.

Executive Director Edson and members of the LA-RICS Team met with representatives from FirstNet to discuss the Spectrum Management Lease Agreement (SMLA) Notification Letter.

AGENDA ITEM E

Executive Director Edson, Administrative Deputy Susy Orellana-Curtiss and Program Manager Chris Odenthal attended the Los Angeles County Board of Supervisors Cluster Agenda Review (CAR) Justice Deputy Briefing to provide an update on LA-RICS project.

Member of the LA-RICS Team met with representatives from Verizon to discuss test equipment and upcoming events and future of communications for public safety.

Jacobs Program Manager Odenthal met with representatives from the Los Angeles County Sanitation District No. 18, to discuss site acquisition for the Puente Hills Landfill (RIH) site.

Lastly, Jacobs Program Manager Odenthal and members of the LA-RICS Team with representatives from the Inglewood Police Department and LA Stadium Officials to discuss communication needs at the stadium project in Inglewood.

WST:pl

LA-RICS

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SCOTT EDSON
EXECUTIVE DIRECTOR

October 5, 2017

To: LA-RICS Authority Board of Directors

From: Scott Edson
Executive Director

PSBN ONBOARDING UPDATE

The purpose of this discussion item is to update your Board on the status of onboarding users, exercising the system, and other onboarding related activities pertaining to the Public Safety Broadband Network (PSBN) project. The below activities have occurred:

STATUS OF PSBN AGENCY ONBOARDING		
Agency	**Onboarding Status**	**Number of Units Installed/Demo Kit/SIM cards Received**
LASD	Installations in progress.	589
LACoFD	Installations in progress.	327
Inglewood PD	Private Access Point Name (APN) configuration in progress.	8
Claremont PD	Private Access Point Name (APN) configuration complete.	2
Bell PD	Private Access Point Name (APN) configuration in progress.	2
Covina PD	2 VML routers configured, provisioned, delivered and installed.	2
UCLA Health	Private Access Point Name (APN) configuration complete.	1
Health Services / EMS	Portable hotspot kits are tested, final packaging needed for delivery underway.	2
El Segundo Fire & PD	ELFD installing two routers.	2
Signal Hill PD	Additional routers requested from AT&T. AT&T has indicated that they will provide additional routers with AT&T priority service.	0
La Verne PD & FD	Planning for the delivery of 2 VML routers underway.	
Azusa PD	No longer interested in Demo Kit.	0
Irwindale	Coverage test conducted that shows good coverage	1
Sierra Madre PD & FD	Demo Kits picked up and results reviewed. Follow up in mid-September to determine if they want to install LA-RICS routers.	2

AGENDA ITEM F

Active engagement continued with an emphasis on connecting agency applications through a private Access Point Name (APN) thus replacing the use of the generic LA-RICS APN. Configurations were completed Claremont and UCLA Health, while Inglewood and Bell Police Departments remain in progress. Engagement also continues for interested agencies via demonstrations, providing test Demo Kits, and technical coordination meetings with the participation of the Los Angeles County Sheriff's Department (LASD) and the County of Los Angeles Fire Department (LACoFD).

Motorola has completed the end to connection of the APN for UCLA Health. UCLA Health is now completing tests internal to their network. A joint DHS/EMS, LA-RICS and UCLA Health meeting is planned for October to discuss the Mobile Stroke Unit and other opportunities to collaborate.

Lastly, the LA-RICS Team continued weekly engagement with all Member agencies to facilitate their use of the PSBN and planning is underway for the West Hollywood Carnival and Rose Parade activities including test plans for AT&T and Verizon priority services performance.

WST:pl

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SCOTT EDSON
EXECUTIVE DIRECTOR

October 5, 2017

To: LA-RICS Authority Board of Directors

From: Scott Edson
Executive Director

QUARTERLY UPDATE ON NO-COST AGREEMENTS

On June 1, 2017, your Board approved the No-Cost Agreement, which authorized the Authority to enter into No-Cost Agreements for the loan of certain equipment, goods, and/or services on a gratis basis. Your Board also requested that Authority staff brief your Board on a quarterly basis regarding the entrance of any such agreements.

The purpose of this discussion item is to update your Board on the status of any No-Cost Agreements between the Authority and outside entities. To date, the Authority has not entered into any No-Cost Agreements as reflected in the table below.

NO-COST AGREEMENTS QUARTERLY REPORT			
Entity	**Execution Date**	**Total Dollar Value**	**Description of Equipment/Goods/Services**
2017 – QUARTER 3			
N/A	N/A	N/A	N/A

The Authority will report back to the JPA BOD following the end of the fourth quarter of 2017 on the status of any executed No-Cost Agreements.

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AGENDA ITEM G

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SCOTT EDSON
EXECUTIVE DIRECTOR

October 5, 2017

LA-RICS Board of Directors
Los Angeles Regional Interoperable Communications System Authority (the "Authority")

Dear Directors:

APPROVE AMENDMENT NO. 25 FOR AGREEMENT NO. LA-RICS 008 FOR LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM PUBLIC SAFETY BROADBAND NETWORK

SUBJECT

Board approval is requested to authorize the Executive Director to execute Amendment No. 25 to Agreement No. LA-RICS 008 for the Public Safety Broadband Network (PSBN) to reconcile the Agreement to reflect a reduction to certain Work and corresponding costs resulting in a decrease to the Maximum Contract Sum in the amount of $4,183,255.

RECOMMENDED ACTIONS

It is recommended that your Board:

1. Approve Amendment No. 25 to Agreement No. LA-RICS 008 for the PSBN with Motorola, in substantially similar form to the Enclosure, which revises the Agreement to reflect the following:

    a. Revise Exhibit A (Statement of Work) and Exhibit B (PSBN Specifications) to reflect a reduction in the scope of certain Work related to Network Management System and Inventory Management System and a corresponding reduction in the cost in the amount of $316,767.

    b. Reflect a reduction in the scope of certain Work related to Documentation and a corresponding reduction in the cost in the amount of $68,515.

AGENDA ITEM H

c. Reflect a reduction in the scope of certain Work related to Additive Alternate No. 2 (Redundant Evolved Packet Core [EPC]) and a corresponding reduction in the cost in the amount of $1,061,704.

d. Reflect the removal of the scope of all Work related to Additive Alternate No. 3 (Location Services) and a corresponding reduction in the cost in the amount of $2,592,246.

e. Reflect a reduction in the scope of certain Work related to Cell on Wheels (COWs) and a corresponding reduction in the cost in the amount of $129,977.

f. Reflect a reduction in the scope of certain Work related to Site Construction Changes and a corresponding reduction in the cost in the amount of $14,046.

g. Decrease the Maximum Contract Sum by $4,183,255 from $137,331,906 to $133,148,651 when taking the cost decreases into consideration.

2. Delegate authority to the Executive Director to execute Amendment No. 25, in substantially similar form to the enclosed Amendment, and issue one or more Notices to Proceed (NTP) for this Work.

BACKGROUND

On May 4, 2017, your Board authorized the Authority to exercise the first one-year Option Term for Maintenance Work under Phase 5 (PSBN Maintenance), which commenced on June 1, 2017 and slated to expire on May 31, 2018.

Although we are in the Maintenance period, certain payments from the initial buildout of the PSBN require reconciliation to close out the PSBN Round 1 activities. This Amendment No. 25 serves to reduce the scope of certain Work and corresponding costs, reconciling the Agreement such that payments associated with the initial buildout can be made, and the contract Deliverables closed out for these particular activities.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

Approval of the recommended actions will authorize the Executive Director to execute Amendment No. 25 to reconcile the PSBN Agreement to reflect a reduction to certain Work and corresponding costs resulting in a decrease to the Maximum Contract Sum in the amount of $4,183,255 as further described below.

The Authority, in concert with its internal technical team, its Broadband Engineering Consultant (Televate), its Project Management team (Jacobs), and its System Contractor

(Motorola) have worked closely to reconcile the Agreement contemplated in Amendment No. 25.

The Authority is recommending the reduction to the scope of certain Work associated with Network Management System and Inventory Management System to reflect the level of service and functionality appropriate for the PSBN network and a corresponding cost reduction in the amount of $316,767.

With respect to Documentation, the Authority is recommending a cost reduction in the amount of $68,515 to reflect the waiving of certain non-critical documentation at certain sites.

Amendment No. 25 also contemplates the reduction to the scope of certain Work associated with Additive Alternate No. 2 (Redundant EPC), in particular Phase 2 (Site Construction and Site Modification Work for the Redundant EPC) and Phase 4 (PSBN Implementation Work for Redundant EPC) as this Work is no longer necessary. To account for this reduction in Work, a cost reduction in the amount of $68,515 will be applied.

With respect to Additive Alternate No. 3 (Location Services) Work, the Authority is recommending removing the scope of this Work and corresponding costs in its entirety as this Work as not been exercised nor does the Authority intend to exercise this Work. This reduction would result in a cost savings in the amount of $2,592,246.

Additionally, the Authority is recommending the reduction in to the scope of certain Work related to Cell on Wheels, in particular Phase 2 (Site Construction and Site Modification Work) and Phase 4 (PSBN Implementation Work) Work at the California Highway Patrol Newhall (CHPNWHLL) COW site as this Work is no longer necessary. To account for this reduction in Work, a cost reduction in the amount of $129,977 will be applied.

Lastly, the Authority is recommending a minor reduction to certain Site Construction Work, in particular certain structural analysis and tower mapping Work for certain sites that was not necessary, resulting in a cost reduction in the amount of $14,046.

In consideration of foregoing, the Authority, its internal technical team, Televate, and Jacobs have vetted the scope of the reduction of Work and corresponding cost, with all parties including Motorola, in support of executing Amendment No. 25.

FISCAL IMPACT/FINANCING

The activities contemplated in Amendment No. 25 result in a decrease to the Maximum Contract Sum by $4,183,255 from $137,331,906 to $133,148,651.

All remaining contract costs related to initial buildout of the PSBN that will be reconciled under Amendment No. 25 will be reimbursable under the Broadband Technology Opportunities (BTOP) grant.

FACTS AND PROVISIONS/LEGAL REQUIREMENT

The Authority's counsel has reviewed the recommended actions.

CONCLUSION

Upon the Board's approval of the recommended action, on behalf of the Authority, the Executive Director will have authority to execute Amendment No. 25 with Motorola, substantially similar in form to the enclosed.

Respectfully submitted,

SCOTT EDSON
EXECUTIVE DIRECTOR

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Enclosure

c: Counsel to the Authority

AMENDMENT NUMBER TWENTY-FIVE

TO AGREEMENT NO. LA-RICS 008
FOR
LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM – PUBLIC SAFETY BROADBAND NETWORK

Recitals

This Amendment Number Twenty-Five (together with all exhibits, attachments, and schedules hereto, ("Amendment No. 25") is entered into by and between the Los Angeles Regional Interoperable Communications System Authority ("Authority") and Motorola Solutions, Inc. ("Contractor"), effective as of October _____, 2017, based on the following recitals:

WHEREAS, Authority and Contractor have entered into that certain Agreement No. LA-RICS 008 for Los Angeles Regional Interoperable Communications System ("LA-RICS") – Public Safety Broadband Network (PSBN), dated as of March 6, 2014 (together with all exhibits, attachments, and schedules thereto, all as amended prior to the date hereof, the "Agreement").

WHEREAS, the Agreement has been previously amended by Amendment Number One, effective as of March 6, 2014, to exercise the Unilateral Option for all Work pertaining to Phase 1.

WHEREAS, the Agreement has been previously amended by Amendment Number Two, effective April 7, 2014, to (a) make changes necessary to reflect the Authority's exercise of the Unilateral Option for all Work pertaining to Phase 1 for Additive Alternate No. 1, System Design Work for the Home Subscriber Server ("HSS"), and all Work pertaining to Phase 1 for Additive Alternate No. 2, System Design Work for the Redundant Evolved Packet Core ("EPC"), and (b) to make other changes as reflected in Amendment No. 2.

WHEREAS, the Agreement has been previously amended by Amendment Number Three, effective June 20, 2014, to exercise the Unilateral Option for all Work pertaining to Phase 2, Site Construction and Site Modification, and Phase 3, Supply PSBN Components.

WHEREAS, the Agreement has been previously amended by Amendment Number Four, effective July 16, 2014, to exercise the Unilateral Option for all Work pertaining to (i) Phase 2 for Additive Alternate No. 1, Site Construction and Site Modification for the HSS, (ii) Phase 3 for Additive Alternate No. 1, Supply PSBN Components Work for the HSS, (iii) Phase 2 for Additive Alternate No. 2, Site Construction and Site Modification Work for the Redundant EPC, and (iv) Phase 3 for Additive Alternate No. 2, Supply PSBN Components Work for the Redundant EPC.

WHEREAS, the Agreement has been previously amended by Amendment Number Five, effective September 24, 2014, to exercise the Unilateral Option for all

Work pertaining to Phase 4, PSBN Implementation, including Phase 4 Work for Additive Alternate 1 (Home Subscriber Server) and Additive Alternate 2 (Redundant Evolved Packet Core), to install, optimize, test, commission, and deploy all or such portion of the PSBN as authorized by the Authority via notices to proceed, and to make other certain changes as reflected in Amendment No. 5.

WHEREAS, the Agreement has been previously amended by Amendment Number Six, effective October 3, 2014, to (a) make changes necessary to reflect the removal of three (3) PSBN Sites and all the Work and equipment associated with these PSBN Sites; (b) to make the changes necessary to reflect the replacement of undisguised antenna support structures to disguised antenna support structures at 32 PSBN Sites and all of the Work and equipment affected by these replacements; (c) to make other certain changes; and (d) to increase the Maximum Contract Sum by $2,613,300 from $175,583,275 to $178,196,575.

WHEREAS, the Agreement has been previously amended by Amendment Number Seven, effective December 31, 2014, to (a) make changes necessary to reflect the replacement of undisguised antenna support structures with various types of antenna support structures at eight PSBN Sites and all of the Work and equipment affected by these replacements; (b) reconcile hose tower designs for 28 sites in Phase 2; and (c) to make other certain changes as reflected in Amendment No. 7.

WHEREAS, the Agreement has been previously amended by Amendment Number Eight, effective February 13, 2015, to (a) make changes necessary to reflect the removal of thirty-six (36) PSBN Sites and all the Work and equipment associated with the removal of these sites (b) make changes necessary to reflect the addition of six (6) PSBN Sites and all the Work and equipment associated with the addition of these sites and exercise the Unilateral Options for all Work pertaining to Phase 1 (System Design), Phase 2 (Site Construction and Site Modification), Phase 3 (Supply PSBN Components), and Phase 4 (PSBN Implementation) for these six (6) PSBN Sites; (c) reconcile hose tower installation and associated foundation costs for twenty-eight (28) PSBN Sites in Phase 2; (d) to reduce the Maximum Contract Sum by $11,941,896 from $178,196,575 to $166,254,679; and (d) to make other certain changes reflected in Amendment No. 8.

WHEREAS, the Agreement has been previously amended by Amendment Number Nine, effective March 23, 2015, to (a) make changes necessary to reflect the removal of twenty-four (24) PSBN Sites and all the Work and equipment associated with the removal of these sites; (b) make changes necessary to reflect the addition of six (6) PSBN Sites and all the Work and equipment associated with the addition of these sites and exercise the Unilateral Options for all Work pertaining to Phase 1 (System Design), Phase 2 (Site Construction and Site Modification), Phase 3 (Supply PSBN Components), and Phase 4 (PSBN Implementation) for these six (6) PSBN Sites; (c) make changes necessary to reflect Phase 1 Work, site design visit for one (1) potential PSBN System Site; (d) to reduce the Maximum Contract Sum by $7,324,405 from $166,254,679 to $158,930,274; and (e) to make certain other changes reflected in Amendment No. 9.

WHEREAS, the Agreement was previously amended by Amendment Number Ten, effective June 25, 2015, to (a) make changes necessary to remedy certain miscalculations reflected in Amendment No. 9 resulting in a reduction in the amount by $280,622; (b) make changes necessary to reflect the inclusion of Phase 1 (System Design) Work for fifteen (15) Cell-on-Wheels (COWs) as set forth in Exhibit C (Schedule of Payments) attached to Amendment No. 10, and exercise the Unilateral Option for all Work Pertaining to Phase 1 (System Design) for the COWs in the amount of $411,981; (c) make changes necessary to reflect construction restoration Work for thirty (30) PSBN Sites to return the sites to preconstruction conditions in the amount of $2,321,257; (d) make changes necessary to reflect the inclusion of fiber optic equipment and related Work for the County of Los Angeles and the City of Los Angeles to allow for interconnectivity among the agencies and the PSBN in the amount of $1,275,000; (e) to increase the Maximum Contract Sum by $3,727,616 ($4,008,238 - $280,622) from $158,930,274 to $162,657,890; and (f) to make certain other changes as set forth in Amendment No. 10.

WHEREAS, the Agreement was previously amended by Amendment Number Eleven, effective July 16, 2015, to (a) make changes necessary to reflect the inclusion of one (1) PSBN Site and all Work and equipment associated with the addition of this site in the amount of $336,081 as set forth in Exhibit C (Schedule of Payments) attached to this Amendment No. 11; (b) make changes necessary to reflect the inclusion of Phase 2 (Site Construction and Site Modification), Phase 3 (Supply PSBN Components), and Phase 4 (PSBN Implementation) Work for fifteen (15) COWs in the amount of $3,244,880 as set forth in Exhibit C (Schedule of Payments) attached to this Amendment No. 11; (c) exercise the Unilateral Options for all Work Pertaining to Phase 1 (System Design) for one (1) PSBN Site (PASDNPD) and Phase 2 (Site Construction and Site Modification), Phase 3 (Supply PSBN Components), and Phase 4 (PSBN Implementation) for the one (1) PSBN Site and the fifteen (15) COWs; and (d) to increase the Maximum Contract Sum by $3,580,961 from $162,657,890 to $166,238,851. The parties acknowledged that the Maximum Contract Sum would be adjusted down accordingly in future amendments reducing the scope of the PSBN Project.

WHEREAS, the Agreement was previously amended by Amendment Number Twelve, effective August 13, 2015, to (a) account for the removal of forty-two (42) sites from the scope of the PBSN; (b) make changes necessary to reflect the removal of tower foundations from seven (7) PSBN Sites as part of construction restoration Work to return the sites to preconstruction conditions in the amount of $37,607; (c) make changes necessary to include construction restoration Work for one (1) PSBN Site (LASDCVS) to return the site to preconstruction conditions in the amount of $19,800; (d) make changes necessary to reflect the inclusion and purchase of 5,000 Universal Integrated Circuit Cards (UICC) in the amount of $245,000; (e) make changes necessary to reflect the inclusion and purchase of five (5) CISCO routers and five (5) corresponding units of data service in the amount of $17,500; (f) make changes necessary to reflect site construction changes in the amount of $150,740 (g) make changes necessary to remedy certain miscalculations in cost in the amount of

$165,422; (h) make the changes necessary to reflect a cost reduction for forty-two (42) terminated PSBN Sites in the amount of $12,989,223; (i) resulting in a reduction in the Maximum Contract Sum by $12,353,154 ($12,989,223 – $636,069 when taking the above cost increases into consideration) from $166,238,851 to $153,885,697; and (j) to make other certain changes as set forth in Amendment No. 12.

WHEREAS, the Agreement was previously amended by Amendment Number Thirteen, effective September 4, 2015, to (a) account for the removal of seventy-seven (77) PSBN Sites from the scope of the PBSN; (b) account for the replacement of one (1) PSBN Site (LAPP001 replacing LAFD049) and the equipment and Work associated with the replacement of this site with an increased amount of $404,053; (c) reconcile microwave equipment to align with the final backhaul design with an increased amount of $813,381; (d) identify equipment for PSBN Sites that have since been dropped from the PSBN design where such equipment had already been ordered, manufactured and/or delivered and installed with an increased amount of $10,727,207; (e) make changes necessary to reflect site construction changes with an increased amount of $482,923; (f) make changes necessary to remedy certain miscalculations resulting in a cost reduction of $25,854; (g) make changes necessary to reflect various site reconciliations and corresponding adjustments resulting in a cost reduction of $6,304,207; (h) make changes necessary to reflect a cost reduction for seventy-seven (77) terminated PSBN Sites in the amount of $30,511,394; (i) all actions decreasing the Maximum Contract Sum by $24,413,891 ($36,841,455 – $12,427,564 when taking the above cost increases and reductions into consideration) from $153,885,697 to $129,471,804; and (j) to make other certain changes as set forth in Amendment No. 13.

WHEREAS, the Agreement was previously amended by Amendment Number Fourteen, effective October 9, 2015, to (a) reconcile spare equipment required for the continued operation and support of the PSBN for an increased amount of $1,214,021; (b) reconcile equipment necessary for the fifteen (15) Cell-On-Wheels (COWs) for an increased amount of $2,157,669; (c) make changes necessary to reflect site construction changes for an increased amount of $80,220; (d) reconcile excess equipment for a decreased amount of $24,229; and (e) all actions increasing the Maximum Contract Sum by $3,427,681 ($1,214,021 + $2,157,669 + $80,220 - $24,229) from $129,471,804 to $132,899,485; and (e) to make other certain changes as set forth in the Amendment No. 14.

WHEREAS, the Agreement was previously amended by Amendment Number Fifteen, effective December 21, 2015, to settle the Contractor Claims, including the dispute over the project management fees and any and all other claims for additional compensation above the current Maximum Contract Sum that Contractor or its subcontractors may have against the Authority relating to any Work that has been performed or is required to be performed under the PSBN Agreement, increasing the Maximum Contract Sum by $10,685,472 from $132,899,485 to $143,584,957.

WHEREAS, the Agreement was previously amended by Amendment Number Sixteen, effective March 15, 2016, to include all Work related to additional Radio

Frequency (RF) Emissions testing at twelve (12) PSBN Sites increasing the Maximum Contract Sum by $3,300 from $143,584,957 to $143,588,257.

WHEREAS, the Agreement was previously amended by Amendment Number Seventeen, effective May 4, 2016, to make the changes necessary to reflect the termination of Waterway Coverage Testing, Freeway Coverage Testing, Special Operational Testing, and PSBN Burn-In Testing, which decreased the Maximum Contract Sum by $931,936, from $143,588,257 to $142,656,321.

WHEREAS, the Agreement was previously amended by Amendment Number Eighteen, effective August 31, 2016, to make changes necessary to (a) extend the Warranty Period until December 31, 2016, at no additional cost; (b) reflect the reconciliation of excess equipment for a decreased amount of $600,502; (c) reflect the reconciliation of spare equipment for a decreased amount of $768,027, (d) make changes necessary to reconcile the cost of LASDCVS to reflect costs for that were inadvertently omitted for construction Work performed that was not included as part of restoration and has not been paid to date for an increased amount of $62,969, (e) make changes necessary to correct certain administrative errors for an increased amount of $25,964; (f) to make other certain changes as set forth in the Amendment No. 18; and (g) decrease the Maximum Contract Sum by $1,279,596, [(-$600,502) + (-$768,027) + $62,969 + $25,964)], when taking the above cost increases and reductions into consideration from $142,656,321 to $141,376,725.

WHEREAS, the Agreement was previously amended by Amendment Number Nineteen, effective December 21, 2016, to make changes necessary to (a) extend the Warranty Period until March 31, 2017, at no additional cost; (b) make changes necessary to upgrade the Authority's Deployable Vehicle (System on Wheels), which includes the requisite services, equipment, material, configuration, installation, provide backup power, antenna storage and mounts, fiber connectivity and backhaul services, and related Work to support Special Events for an increase in the amount of $235,768; (c) reflect a reduction in Training as certain Training courses will not be provided to the Authority for a decrease in the amount of $200,000; (d) reflect a reduction in Wide Area Coverage Testing as it is no longer necessary for a decrease in the amount of $2,153,150; (e) reflect Optimization Work necessary to account for extended Optimization efforts for an increase in the amount of $550,000; (f) to make other certain changes as set forth in this Amendment No. 19; and (g) decreasing the Maximum Contract Sum by $1,567,382 ($235,768 - $200,000 - $2,153,150 + $550,000), when taking the cost increases and decreases into consideration, from $141,376,725 to $139,809,343.

WHEREAS, the Agreement was previously amended by Amendment Number Twenty, effective March 20, 2017, to make changes necessary to (a) reflect the relocation of certain equipment (towers, generator fuel tanks, tower hardware, etc.) from the Southern California Edison (SCE) Mesa Substation site to the County of Los Angeles Fire Departments Del Valle Training Facility as the original storage site is no lo longer available after April 15, 2017, for an increase in the amount of $208,338; (b)

make other certain changes as set forth in Amendment No. 20; and (c) increase the Maximum Contract Sum by $208,338 from $139,809,343 to $140,017,681.

WHEREAS, the Agreement was previously amended by Amendment Number Twenty-One, effective March 20, 2017, to make changes necessary to (a) extend the Warranty Period on a month-to-month basis, at no additional cost; (b) with the first month commencing on April 1, 2017, and expiring on April 30, 2017; and (c) agree and acknowledge that subsequent month-to-month Warranty Period extensions, if any, will be mutually agreed upon by both parties.

WHEREAS, the Agreement was previously amended by Amendment Number Twenty-Two, effective April 13, 2017, to make changes necessary to (a) revise Exhibit A (Statement of Work) to allow the Contractor to create Access Point Names (APNs) for the Authority's member agencies at a cost of $977 per member agency, with a minimum of four (4) agencies to be deployed at a time, for a cost increase in the amount of $3,908; (b) increasing the Maximum Contract Sum by $3,908 from $140,017,681 to $140,021,589; and (c) make other certain changes as set forth in Amendment No. 22.

WHEREAS, the Agreement was previously amended by Amendment Number Twenty-Three, effective April 13, 2017, to (a) make changes necessary to extend the Warranty Period until May 31, 2017, at no additional cost; and (b) make other certain changes as set forth in Amendment No. 23.

WHEREAS, the Agreement was previously amendment by Amendment Number Twenty-Four, effective May 18, 2017, to make changes necessary to (a) extend the Initial Term of the Agreement by exercising the first one-year Option Term for Maintenance Work under Phase 5 (PSBN Maintenance), commencing on June 1, 2017 and expiring on May 31, 2018, unless sooner terminated or extended, in whole or in part, in the amount of $2,991,000 resulting in a cost decrease in the amount of $2,964,683, when taking the currently contemplated first year Maintenance cost of $5,955,683 into consideration; (b) exercise the Unilateral Option for the first one-year Option Term for Maintenance Work under Phase 5 (PSBN Maintenance); (c) revise Exhibit A (Statement of Work) to increase the scope of PSEN Work to allow the Contractor to assist the Authority with connecting its member agencies to the PSBN for a not-to-exceed cost increase in the amount of $275,000; (d) decrease the Maximum Contract Sum by $2,689,683 from $140,021,589 to $137,331,906 when taking the cost increases and decreases into consideration; and (e) make other certain changes as set forth in Amendment No. 24.

WHEREAS, the Authority and Contractor desire to further amend the Agreement to make changes necessary to (a) revise Exhibit A (Statement of Work) and Exhibit B (PSBN Specifications) to reflect a reduction in the scope of certain Work related to Network Management System and Inventory Management System and a corresponding reduction in the cost in the amount of $316,767; (b) reflect a reduction in the scope of certain Work related to Documentation and a corresponding reduction in the cost in the amount of $68,515; (c) reflect a reduction in the scope of certain Work related to

Additive Alternate No. 2 (Redundant Evolved Packet Core [EPC]) and a corresponding reduction in the cost in the amount of $1,061,704; (d) reflect the removal of the scope of all Work related to Additive Alternate No. 3 (Location Services) and a corresponding reduction in the cost in the amount of $2,592,246; (e) reflect a reduction in the scope of certain Work related to Cell on Wheels (COWs) and a corresponding reduction in the cost in the amount of $129,977; (f) reflect a reduction in the scope of certain Work related to Site Construction Changes and a corresponding reduction in the cost in the amount of $14,046; (g) decrease the Maximum Contract Sum by $4,183,255 from $137,331,906 to $133,148,651 when taking the cost decreases into consideration; and (h) make other certain changes as set forth in this Amendment No. 25.

WHEREAS, this Amendment No. 25 is authorized under Section 2 (Changes to Agreement) of the Agreement.

NOW THEREFORE, in consideration of the foregoing recitals, all of which are incorporated as part of this Amendment No. 25, and for other valuable consideration, the receipt and sufficiency of which are acknowledged, Authority and Contractor hereby agree as follows:

1. Capitalized Terms; Section References. Capitalized terms used herein without definition (including in the recitals hereto), have the meanings given to such terms in the Base Document. Unless otherwise noted, section references in this Amendment No. 25 refer to sections of the Base Document and its Exhibits, as amended by this Amendment No. 25.

2. Reduction in Network Management System and Inventory Management System Work: Both parties agree and acknowledge that the Contractor will not be required to provide certain Work associated with Network Management System and Inventory Management System in order to complete this Deliverable. To account for this reduction of Work, both parties further agree and acknowledge that certain requirements of Exhibit A (Statement of Work) and Exhibit B (PSBN Specifications) will be revised accordingly as contemplated in this Amendment No. 25 for a cost reduction in the amount of $316,767 as reflected in the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.5 (Phase 4 – PSBN Implementation), attached to this Amendment No. 25.

3. Reduction in Documentation Work: Both parties agree and acknowledge that the Contractor will not be required to provide certain Work, in particular the waiving of certain non-critical documentation at certain sites, as agreed to by both parties in order to complete this Deliverable. To account for this reduction in Work, the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.5 (Phase 4 – PSBN Implementation), will be revised accordingly to reflect a cost reduction in the amount of $68,515 as attached to this Amendment No. 25.

4. Reduction in Additive Alternate No. 2 (Redundant Evolved Packet Core) Work: Both parties agree and acknowledge that the Contractor will not be required to provide certain Work associated with Additive Alternate 2 (Redundant EPC), in

particular Phase 2 (Site Construction and Site Modification Work for the Redundant EPC) and Phase 4 (PSBN Implementation Work for Redundant EPC) Work. To account for this reduction in Work the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.7 (Additive Alternates) will be revised accordingly to reflect a cost reduction in the amount of $68,515 as attached to this Amendment No. 25.

5. Removal of Additive Alternate No. 3 (Location Services) Work: Both parties agree and acknowledge that the Contractor will not be required to provide any Work related to Additive Alternate No. 3 (Location Services) in its entirety. To account for this removal of Additive Alternate No. 3 Work, both parties further agree and acknowledge that Exhibit B (PSBN Specifications) will be revised accordingly as contemplated in this Amendment No. 25 for a cost reduction in the amount of $2,592,246 as reflected in the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.7 (Additive Alternates), attached to this Amendment No. 25.

6. Reduction in Cell on Wheels (COW) Site Work: Both parties agree and acknowledge that the Contractor will not be required to provide certain Work associated with Cell on Wheels), in particular Phase 2 (Site Construction and Site Modification Work) and Phase 4 (PSBN Implementation Work) Work at the California Highway Patrol Newhall (CHPNWHLL) COW site. To account for this reduction in Work, the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.12 (Cell on Wheels), will be revised accordingly to reflect a cost reduction in the amount of $129,977 as attached to this Amendment No. 25.

7. Reduction in Site Construction Changes Work: Both parties agree and acknowledge that the Contractor will not be required to provide certain Work associated with Site Construction Changes, in particular certain structural analysis and tower mapping Work for certain sites. To account for this reduction in Work, the relevant portions of Exhibit C (Schedule of Payments), in particular Exhibit C.15 (Site Construction Changes) will be revised accordingly to reflect a cost reduction in the amount of $14,046 as attached to this Amendment No. 25.

8. Amendment to Base Document.

    8.1 Section 8.1.1 within Section 8 (Maximum Contract Sum and Contract Sum) of the Base Document is deleted in its entirety and replaced with the following:

        8.1.1. The "Maximum Contract Sum" under this Agreement is One Hundred Thirty-Three Million, One Hundred Forty-Eight Thousand, Six Hundred Fifty-One Dollars ($133,148,651) which includes the Contract Sum and all Unilateral Option Sums, as set forth in Exhibit C (Schedule of Payments).

8.2 Section 24.4.1 within Section 24.4 (limitation of Liability) of the Base Document is deleted in its entirety and replaced with the following:

24.4.1 Except for liability resulting from personal injury, harm to tangible property, or wrongful death, Contractor's total liability to the Authority, whether for breach of contract, warranty, negligence, or strict liability in tort, will be limited in the aggregate to direct damages no greater than One Hundred Sixty-One Million, Thirty-Six Thousand, Four Hundred Eighty-Four Dollars ($161,036,484). Notwithstanding the foregoing, Contractor shall not be liable to the Authority for any special, incidental, indirect, or consequential damages.

9. Amendments to Agreement Exhibits.

9.1 Exhibit A (Statement of Work), Section 2.5.6.2.14 and Section 2.5.6.2.15, of Section 2.5.6.1 (As-Built Documentation) are deleted in their entirety and replaced with the following:

2.5.6.2.14 Access to installation manuals through ALEX database;

2.5.6.2.15 Access to installation manuals through ALEX database;

9.2 Exhibit A (Statement of Work), Section 7.3.35 of Subtask 7.3 (Maintenance) is deleted in its entirety and replaced with the following:

7.3.35 A Severity Level 2 problem is a minor Deficiency with the PSBN or any Component thereof and is defined as, one in which some PSBN features are inoperative but Authority and its Members are able to conduct their business as usual. Minor Deficiencies include, but are not limited to:

9.3 Exhibit B (PSBN Specifications) is deleted in its entirety and replaced with Exhibit B (PSBN Specifications) to reflect revised requirements, which is attached to this Amendment No. 25 and incorporated herein by this reference.

9.4 Exhibit C.1 (PSBN Payment Summary) of Exhibit C (Schedule of Payments) is deleted in its entirety and replaced with Exhibit C.1 (PSBN Payment Summary) to reflect cost reductions, which is attached to this Amendment No. 25, and is incorporated herein by this reference.

9.5 Exhibit C.5 (Phase 4 – PSBN Implementation) of Exhibit C (Schedule of Payments) is deleted in its entirety and replaced with Exhibit C.5 (Phase 4 – PSBN Implementation) to reflect cost reductions, which is attached to this Amendment No. 25, and is incorporated herein by this reference.

9.6 Exhibit C.7 (Additive Alternates) of Exhibit C (Schedule of Payments) is deleted in its entirety and replaced with Exhibit C.7 (Additive Alternates) to reflect cost reductions, which is attached to this Amendment No. 25, and is incorporated herein by this reference.

9.7 Exhibit C.12 (Cell on Wheels [COWS]) of Exhibit C (Schedule of Payments) is deleted in its entirety and replaced with C.12 (Cell on Wheels [COWS]) to reflect cost reductions, which is attached to this Amendment No. 25, and is incorporated herein by this reference.

9.8 Exhibit C.15 (Site Construction Changes) of Exhibit C (Schedule of Payments) is deleted in its entirety and replaced with C.15 (Site Construction Changes) to reflect cost reductions, which is attached to this Amendment No. 25, and is incorporated herein by this reference.

9.9 Exhibit F (Administration of Agreement) is deleted in its entirety and replaced with Exhibit F (Administration of Agreement) to reflect updated administration personnel, which is attached to this Amendment No. 25, and incorporated herein by this reference.

10. This Amendment No. 25 shall become effective as of the date identified in the recitals, which is the date upon which:

10.1 An authorized agent of Contractor has executed this Amendment No. 25;

10.2 Los Angeles County Counsel has approved this Amendment No. 25 as to form;

10.3 The Board of Directors of the Authority has authorized the Executive Director of the Authority to execute this Amendment No. 25; and

10.4 The Executive Director of the Authority has executed this Amendment No. 25.

11. Except as expressly provided in this Amendment No. 25, all other terms and conditions of the Agreement shall remain the same and in full force and effect.

12. Contractor and the person executing this Amendment No. 25 on behalf of Contractor represent and warrant that the person executing this Amendment No. 25 for Contractor is an authorized agent who has actual authority to bind Contractor to each and every term and condition of this Amendment No. 25, and that all requirements of Contractor to provide such actual authority have been fulfilled.

13. This Amendment No. 25 may be executed in one or more original or facsimile counterparts, all of which when taken together shall constitute one in the same instrument.

* * *

AMENDMENT NUMBER TWENTY-FIVE
TO AGREEMENT NO. LA-RICS 008
FOR
LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM – PUBLIC SAFETY BROADBAND SYSTEM

IN WITNESS WHEREOF, the parties hereto have caused this Amendment No. 25 to be executed on their behalf by their duly authorized representatives, effective as of the date first set forth above.

LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

By: _____

Scott Edson
Executive Director

MOTOROLA SOLUTIONS, INC.

By: _____

Howard Chercoe
MSSSI Vice President

APPROVED AS TO FORM FOR THE LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY:

MARY C. WICKHAM
County Counsel

By: _____

Truc L. Moore
Principal Deputy County Counsel

PSBN SPECIFICATION

Table of Contents

1. General Performance Criteria Applicable to All Portions of the System

1.1 General Performance Criteria

1.1.1 The Contractor will provide a Public Safety Broadband Network (as further defined in the Base Document, "PSBN"), capable of providing secure and reliable connectivity between mobile and portable computing devices and network services infrastructure.

1.1.2 The PSBN will be compliant with the Long Term Evolution (as further defined in the Base Document, "LTE") Release 10 3GPP standards and future releases when available and tested by the Contractor.

1.1.3 The PSBN will be backwards compatible with Release 9 and earlier LTE release features provided by the Contractor.

1.1.4 All infrastructure equipment will be capable of seamless operations over the entire public safety broadband 700 MHz spectrum allocated to public safety in the "Middle Class Tax Relief and Job Creation Act of 2012."

1.1.5 The PSBN will satisfy all requirements specified in the National Public Safety Telecommunications Council (NPSTC) Launch Requirements Statement of Requirements (SoR). All references to SoR in this Exhibit are subject to the Contractor response to the NPSTC SoR, January 13, 2015 version.

1.1.6 Contractor will comply with the LA-RICS Authority Broadband Technology Opportunities Program (BTOP) grant award.

1.1.7 The PSBN will use all 20 MHz of the 700 MHz spectrum leased to LA-RICS Authority by FirstNet unless such use causes harmful interference or is otherwise prohibited by the Federal Communications Commission (FCC).

1.1.8 The PSBN and the Contractor will be compliant with the Spectrum Manager Lease Agreement in accordance with Section 4.2 (FirstNet Participation) of the Base Document.

1.1.9 The PSBN will be capable of utilization of less than 20 MHz of spectrum should interference, border issues, or other factors limit the total usable spectrum on one or more cells (i.e., customizable for individual sectors).

1.1.10 The Contractor will be responsible for providing all necessary PSBN Components and Work to achieve the results required by this Exhibit B (PSBN Specifications), Exhibit A (Statement of Work) and the Base Document, unless otherwise specifically stipulated in Section 2.1.2 (Authority Responsibilities) of Exhibit A (Statement of Work) or in this Exhibit B (PSBN Specifications) or Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement) that the Authority, or its Members, will provide the required work or components.

1.1.11 The PSBN will support dual-stack Internal Protocol (IP) Version 6 and IP-Version 4 Packet Data Networks (PDN) types defined in 3rd Generation Partnership Project (3GPP) TS 23.401. The IP Version 6 implementation will comply with FirstNet and other Federal government requirements and mandates. The PSBN will provide wireless broadband transport for LA-RICS Member applications that remain on IPv4 and those that migrate to IPv6.

1.1.12 The Contractor will not be permitted to charge fees associated with number of users, usage, and the number of sites other than those specifically identified in Section 3 (Detailed Breakdown of Pricing for Delivery of the Base PSBN) of Contractor's Response to Appendix H (Pricing Requirements – Scored) contained in Exhibit C (Schedule of Payments).

1.1.13 The PSBN must provide end-to-end IP transport services for all IP based applications operated by the Authority, its Members, and authorized visitors to the network. The Authority reserves the right to test the PSBN's capability to provide transport with any application to demonstrate compliance with this requirement.

1.1.14 As directed by the Authority, the PSBN will allow Users to connect to local Public Safety Enterprise Network when visiting other public safety networks.

1.1.15 The Contractor will provide a description of how long the product or the technology will be supported, including the length of time replacement parts and software will remain available after the Component has been discontinued.

1.1.16 All software licenses will be a one-time cost.

1.1.17 All PSBN Components will be new and unused at the time of installation.

1.1.18 Firmware and software will be the same for all like devices at the time of Final PSBN Acceptance.

1.1.19 All PSBN Components will be of current design and manufacture. The PSBN will not contain any Components not in current production or that is scheduled for discontinuance within ten (10) years of the Effective Date of the Agreement.

1.1.19.1 At the time of Final System Acceptance, the Contractor will verify that all PSBN System Components are of current design and manufacture. The Contractor will not provide any Components out of current production. If a Component is scheduled for discontinuation within ten (10) years of the date of the Agreement it must be identified by the Contractor.

1.1.19.2 The Contractor will identify the Components that are not currently in production or commercially available for purchase.

1.1.19.3 The Contractor will provide an estimate of the overall lifecycle of the PSBN, excluding subscriber equipment, and estimate lifecycle costs for operating and maintaining the PSBN and will provide the recommended replacement rate (in years) for all products provided, based upon the installation environment including, not limited to, recommended upgrades for software and hardware, system support, and features/functionality of the PSBN.

Table 1 - LTE System Anticipated Component Lifecycle

Equipment	Life Expectancy	Product Lifecycle	Component Obsolescence
LTE Major Components	**The information in this column is Contractor's estimate and does not constitute any form of guaranty or warranty to the customer**	**No Current End of Production Notice**	**Contractor will use commercially reasonable efforts to provide replacement parts, firmware, and software support for Contractor manufactured fixed infrastructure equipment for the noted years indicated below from the date of last manufacture but not less than ten years from the Effective Date.**
Evolved Packet Core (EPC)			
Mobility Management Entity (MME)	5 years	See above note	7 years

Equipment	Life Expectancy	Product Lifecycle	Component Obsolescence
Evolved Packet Gateway (EPG) -Serving Gateway / Packet Data Gateway	5 years	See above note	7 years
Home Subscriber Service (HSS)	5 years	See above note	7 years
Policy Control Rules Function (PCRF)	5 years	See above note	7 years
Core Networking Equipment			
Network Switches/ Routers	5 years	See above note	5 years
Operation and Support System Radio and Core (OSS-RC)			
OSS Hardware Platform	5 years	See above note	7 years
Radio Access Network			
Evolved NodeB (eNodeB)	9-11 years	See above note	7 years
Microwave Major Components			
Radio Unit	12-15 years	See above note	7 years
Site Networking Equipment	7-10 years	See above note	7 years

1.1.20 The PSBN will be scalable, both upwards and downwards, in order to meet the capacity and coverage needs of the Authority.

1.1.21 The PSBN will be designed so that, at the time of Final PSBN Acceptance, no more than 80% of any device's capacity (excluding UEs) is utilized (e.g., if 11 of 12 ports of a router are used, a larger router will be furnished) unless a more stringent requirement is specified in this Agreement for specific PSBN Components.

1.1.22 The PSBN will comply with Maximum Permissible Exposure and other FCC requirements.

1.1.23 Contractor's System Design, Site Design Document, and performance of all other Work will comply with California Assembly Bill 1486, chaptered as Section 21081.25 of the California Public Resources Code.

1.1.24 The PSBN will provide first responders, emergency response support and all other mutual aid responders access to the Public Safety Enterprise Networks and LA-RICS Authority network to carry out incident objectives.

1.1.25 Land Mobile Radio Gateway Devices - Contractor will provide Association of Public Safety Officials (APCO) Project 25 Land Mobile Radio connection and operation of IP-based voice interoperability gateways using open Inter Subsystem Interface (ISSI) interfaces.

1.1.26 Field-Based Server Applications - The PSBN will support field-deployed server applications (e.g., static IP address).

1.1.27 The PSBN will be capable of providing public safety subscribers with access to the global Internet via Public Safety Enterprise Networks as directed by the Authority.

1.1.28 The PSBN will allow the devices outside of LA-RICS service area to connect to a local packet data network and to the LA-RICS packet data network to carry out incident objectives.

1.1.29 The Contractor's PSBN will enable local entities the ability to install, update and manage their own applications. This may include security, transport and local APN provisioning.

1.1.30 The software systems that comprise the PSBN will provide published and version-controlled subscriber provisioning interfaces to enable end-to-end subscriber provisioning by the local entities. These interfaces will be verified during interoperability testing.

1.1.31 If there is a conflict between codes, ordinance, regulations, standards, and this Performance Criteria the most stringent requirement will govern. If there is a conflict within this Performance Criteria, the most stringent requirement will govern.

1.2 Reliability and Fault Tolerance

1.2.1 The PSBN will have a high level of reliability, fault tolerance with corresponding levels of redundancy, and failover options. Single points of failure will be limited to:

1.2.1.1 eNodeB DUL, Ethernet interface, and power distribution unit

1.2.1.2 SP415 unless the Authority elects to purchase redundant solution.

1.2.1.3 Metro Ethernet lease circuit

1.2.1.4 Satellite lease circuit

1.2.1.5 If changes to the PSBN are made during design review, Contractor will identify any additional single points of failure.

1.2.2 PSBN sites using microwave backhaul will be connected to each other via a Contractor provided redundant transport network wherever possible. The network may be part of the LA-RICS Members existing networks.

1.2.3 All PSBN Components, except eNodeB's and those listed in Section 1.2.1, will be backed up by additional Components or internal redundancy that will automatically and immediately restore the PSBN to full functionality if any primary Component fails.

1.2.4 All PSBN NOC, System Management and Monitoring, and non-spur microwave Components that support more than one site or the PSBN as a whole will be geographically redundant in that there must be redundant Components at a different site such that a complete failure at one site will allow continued operations. The EPC Components that support more than one site or the PSBN as a whole will be geographically redundant in that there must be redundant Components at a different site such that a complete failure at one site will allow continued operations, provided that the Authority exercises Additive Alternate 2, Redundant EPC

1.2.5 All PSBN Components that may support the entire PSBN as a whole will be configured for separate ingress/egress cabling paths such that a cut (or similar disruption) in an entire cable bundle will not impact PSBN performance or function.

1.2.6 PSBN Component software parameters will be stored in non-volatile memory, and be locally available without re-download in the event of reset or interruption of power.

1.2.7 The PSBN subsystems must be available as noted across the LA-RICS service area (geographic area covered by the PSBN) measured on a monthly basis.

1.2.7.1 Single EPC: 99.99%

1.2.7.2 Geo redundant EPC: 99.999%

1.2.7.3 Microwave backhaul subsystem: as noted in 3.16

1.2.7.4 eNodeB: 99.9986%

1.2.8 The PSBN will perform at 100% of its stated capacity. The PSBN will not suffer a hard system crash when in overcapacity situations (e.g., system rebooting, disconnection of all attached users, eNodeB disconnection)

1.2.9 The Contractor will establish that the PSBN in the Basin Zone will meet the PSBN pre-launch Key Performance Indicators (KPIs) as set forth below in Table 2below. KPI measurements in the Basin Zone will be conducted within the coverage footprint of the uplink geographic percentage (column 4) of Table 3in Section 1.7.1.5 of this Exhibit B. The Contractor will also establish that the PSBN meet the PSBN pre-launch median throughput KPIs for the respective zones as set forth in Table 2below. KPI measurements for median throughput for each zone will be conducted within the coverage footprint of the uplink geographic percentage (column 4) of Table 3in Section 1.7.1.5 of this Exhibit B. In the event that the applicable target values for the KPIs are not achieved, the Contractor will take the following remedial actions, and other reasonable remedial actions:

1.2.9.1 Verify that the installed equipment is functioning properly

1.2.9.2 Verify that the equipment is configured properly

1.2.9.3 Verify that the equipment is optimized to achieve coverage, throughput, and KPI targets to the extent possible

1.2.9.4 During the site commissioning and RAN optimization process, the Contractor will measure and use the following pre-launch KPIs to tune the PSBN:

1.2.9.4.1 Attach Delay

1.2.9.4.2 RRC Drop

1.2.9.4.3 DL and UL peak physical layer throughput

1.2.9.4.4 DL and UL median physical layer throughput

1.2.9.4.5 Packet latency (round trip delay)

1.2.9.4.6 End-to-End user plane one-way latency

1.2.9.4.7 User plane packet delay variation

1.2.9.5 The Contractor will include the following pre-launch KPI measurements during the wide area Coverage Acceptance Test Plan (CATP) within the guaranteed coverage area:

Table 2 - LTE System Pre-Launch Key Performance Indicators

Key Performance Indicators	Required Value	Testing Scope
RRC Setup Connection Failure Rate	2.0%	Cell Cluster
Attach Failure Rate	2.50%	Cell Cluster
Service Request Failure Rate	2.50%	Cell Cluster
Service Request Delay	1 sec	Cell Cluster
The PSBN will have end-to-end user plane latency (one way) not to exceed the latency contained in Table 6.1.7 in 3GPP TS 23.203, excluding sites connected via satellite or leased circuits.	50 ms	System
DL Median Physical Layer Throughput		
Basin	8.5 Mbps	Zone
Northern Desert	9.0 Mbps	Zone
Santa Monica	10.0 Mbps	Zone
Foothills	10.0 Mbps	Zone
Foothills Developed	10.0 Mbps	Zone
CA-14	10.0 Mbps	Zone
Angeles National Forest	7.0 Mbps	Zone
Waterway	7.5 Mbps	Zone
UL Median Physical Layer Throughput		
Basin	5.0 Mbps	Zone
Northern Desert	2.0 Mbps	Zone
Santa Monica	1.5 Mbps	Zone
Foothills	2.5 Mbps	Zone
Foothills Developed	3.5 Mbps	Zone

Key Performance Indicators	Required Value	Testing Scope
CA-14	2.0 Mbps	Zone
Angeles National Forest	1.5 Mbps	Zone
Waterway	4.0 Mbps	Zone
Key Performance Indicators	**Target Value**	**Testing Scope**
X2 HandOver Failure Rate	Report only	Cell cluster
MME Tracking Area Unit Failure Rate	Report only	System
Paging Failure Rate	Report only	Tracking Area
Bearer Drop Rate	Report only	Cell cluster

Note 1: KPI measurements will be conducted within the coverage footprint of the uplink geographic percentage (column 4) of Table 3.

1.2.9.5.1 If any of the measured KPIs of a cell, cell cluster or tracking area is twice the target value set forth above, the Contractor will collect or provide additional data demonstrating compliance and take remedial actions and retest that cell or cluster if necessary.

1.2.9.5.2 The parties will mutually agree on KPIs that do not have specific target values in the table above prior to the optimization process that identify instances where end-user Quality of Service (QoS) experiences would be poor and address with reasonable remedial actions.

1.2.9.5.3 The Contractor and the Authority will mutually agree, during Design Review, on the test plan, including the number of test samples required to give statistical significance to each of the KPIs. If statistical significance cannot be achieved during the CATP test route and schedule then the values will only be reported, however Section 1.2.9.5.2 will still apply. If statistical significance cannot be achieved in the testing scope identified in Table 2 the testing scope will be increased, for example from cell to site.

1.2.9.5.4 In all of the zones outside of the Basin Zone, during the wide area CATP, Contractor will measure the pre-launch PSBN KPIs in Table 2 within the coverage footprint of both the uplink and downlink geographic percentages in (columns 1 and 4) of Table 3 in Section 1.7.1.5 of this Exhibit B. After the optimization process, the parties will mutually agree on pre-launch KPI levels that would indicate instances where end-user Quality of Service (QoS) experiences would be poor, and address with reasonable remedial actions. The term "poor" for the purposes of this

Subsection 1.2.9.5.4 will be determined by the parties in the context of the PSBN System Design including for example the predicted coverage in test areas included in the KPI measurements.

1.2.10 During the Warranty Period, the following KPIs will be measured and collected and the parties will establish a baseline for such KPIs that will be used as one of the tools to monitor the performance of the PSBN:

1.2.10.1 RRC Setup Failure Rate

1.2.10.2 Attach Failure Rate

1.2.10.3 Service Request Failure Rate

1.2.10.4 Bearer Activation Failure Rate

1.2.10.5 Bearer Drop Rate

1.2.10.6 Context Drop

1.2.10.7 DL Mean PDCP Layer Throughput

1.2.10.8 UL Mean PDCP Layer Throughput

1.2.10.9 RLC ARQ/HARQ Retransmission Rate

1.2.10.10 X2 Handover Failure Rate

1.2.10.11 S1 Handover Failure Rate

1.2.10.12 MME TAU Failure Rate

1.2.10.13 Paging Failure Rate

1.2.10.14 Cell Availability

1.3 Security

1.3.1 General Security Requirements

1.3.1.1 Local Area Networks (LAN), Wide Area Networks (WAN), or any other IP-based network that is part of the PSBN will meet the minimum LA-RICS network security performance criteria as follows:

1.3.1.2 Sub-network(s) will be an isolated sub-net to ensure security.

1.3.1.3 The PSBN's IP network(s) will be completely isolated from non-PSBN IP networks except that a limited number of secure entry points to the network will be permitted.

1.3.1.4 Entry points will be protected by firewalls, intrusion detection systems and all other appropriate security measures.

1.3.1.5 Networks will meet the DOJ CLETS Technical Guide Requirements, which can be found in Attachment 3 (DOJ CLETS Technical Guide) to Exhibit J (Confidential Supplement).

1.3.1.6 The IP addressing design and plan will conform to Internet Engineering Task Force (IETF) best practices document RFC-3513, RFC-3879 and RFC-4193.

1.3.1.7 The PSBN must transport secure Virtual Private Networking (VPN) sessions administered individually by LA-RICS Member agencies.

1.3.1.8 The Authority and the Contractor will jointly coordinate every aspect of the integration of additional networks (e.g., CAD, Commercial Data Network) into the PSBN.

1.3.1.9 The PSBN will be resistant to jamming and denial of service (DoS) attacks.

1.3.1.10 The PSBN will report on any suspected incidents of jamming and denial of service to the System Management and Monitoring Subsystem.

1.3.1.11 The PSBN will meet the following security requirements:

1.3.1.12 The PSBN will utilize secure, standards-based, user authentication techniques.

1.3.1.13 The PSBN will comply with NPSTC security requirement section 5.5 "User Authentication for User Services and Hosted Applications Access."

1.3.1.14 The PSBN will provide end-to-end encrypted transmissions.

1.3.1.15 The PSBN will comply with NPSTC SoR security requirements section 5.14 "Encryption, Certificates, and Keys."

1.3.1.16 The PSBN will utilize mechanisms to detect rouge units or unauthorized usage on the network.

1.3.1.17 The PSBN will comply with all NPSTC SoR section 5.0 security requirements for monitoring, detecting, and disabling unauthorized users.

1.3.1.18 The PSBN will have auditing capability, to track Users and usage will be included within the network management system.

1.3.1.19 The PSBN will comply with NPSTC SoR security requirements section 5.12 Network Monitoring, Logging, and Analytics.

1.3.1.20 The PSBN will use FirstNet approved nationwide common security profile for user plane and control plane traffic between User Equipment (UE), eNodeBs and Mobility Management Entities (MMEs), in accordance with 3GPP LTE Network Access Domain protocols.

1.3.1.21 The PSBN will comply with 3GPP Technical Specification 33.310 as the authentication framework for Public Key Infrastructure to authenticate network interfaces.

1.3.1.22 To enable interoperable authentication, the Universal Subscriber Identity Module (USIM) and Home Subscriber Server (HSS) will be capable of supporting the same key derivation functions identified by FirstNet when they become available.

1.3.1.23 The PSBN will be protected with a FirstNet-approved security mechanism if available as of Phase 1 NTP date. In the absence of FirstNet approved security mechanism, the PSBN will be protected as per the requirements in NPSTC SoR for security section 5.0 per Exhibit B.3 (NPSTC SoR Compliance Assessment).

1.3.1.24 The User Domain Security will be implemented in accordance with 3GPP TS 33.102, TS 31.101, and TS 22.022 and NPSTC SoR for security section 5.17 "UE Security" per Exhibit B.3 (NPSTC SoR Compliance Assessment)..

1.3.1.25 In such cases where the user is allowed to control the security parameters or their usage, the PSBN will comply with 3GPP TS 33.102 and TS 22.101.

1.3.1.26 The PSBN will enable the compliant transmission of highly secure public safety applications such as NCIC and HIPPA.

1.3.1.27 PSBN will comply with NPSTC SoR security requirements section 5.3 "Information Assurance" per Exhibit B.3 (NPSTC SoR Compliance Assessment).

1.3.1.28 The PSBN will support Virtual Private Networking (VPN) sessions administered individually by LA-RICS Member agencies.

1.3.1.29 The security mechanism included in the proposed PSBN will not inhibit interoperability for Users visiting from outside of the PSBN.

1.3.1.30 It will comply with NPSTC SoR security requirements, section 5.14 "Encryption, Certificates, and Keys" and section 5.18 "Transport Security Requirements" per Exhibit B.3 (NPSTC SoR Compliance Assessment).The PSBN will support the cipher suites AES-256, AES-128, AES-192, 3DES, DES for the interconnection between the National Public Safety Broadband Network and public safety agencies.

1.3.1.31 The PSBN will comply with NPSTC SoR security requirements section 5.18 "Transport Security", section 5.19 "Physical Security", and section 5.3 "Information Assurance" per Exhibit B.3 (NPSTC SoR Compliance Assessment).

1.4 Encryption

1.4.1.1 The PSBN will provide end-to-end encryption. Decryption and re-encryption will only occur at Authority controlled locations or the Contractor's NOC.

1.4.1.2 Cryptographic modules will be compliant with Federal Information Processing Standards Publications 140 (FIPS-PUB-140) or latest version.

1.4.1.3 The use of encryption will not delay the transmission or receipt of any communications beyond 3GPP TS 23.203 latency specifications.

1.5 Maintainability Requirements

1.5.1 All PSBN Components will have a modular architecture and must be hot-swappable Field Replaceable Units (FRU).

1.5.2 The PSBN must automatically reinitialize both the software and configuration settings of the new FRU without interruption of services after replacing faulty FRUs.

1.5.3 The PSBN must automatically reinitialize both the software and configuration settings of all Components upon the restoration of power after a power failure.

1.5.4 The PSBN will allow modification or replacement of software and firmware in any Component with minimal interruption of services. Components requiring interruption of service for software or firmware updates are:

1.5.4.1 Non-Geo-Redundant EPC: HSS, PCRF, MME, EPG

1.5.4.2 Geo-Redundant EPC: EPG

1.5.4.3 eNodeB

1.5.4.4 MPLS routers – Upgrade of an MPLS router will not impact other MPLS routers. MPLS routers on a ring or spur may impact eNodeB's on downstream spur sites that depend on the MPLS router for connectivity to the ring.

1.5.4.5 For Additive Alternate Scenarios where EPC components are not under the control of LA-RICS, coordination of the third-party network operator (FirstNet, BTOP entity, Third Party) will determine interruption of service behavior.

1.5.5 The PSBN will include Components and software that enable remotely deploying software and firmware upgrades, rollbacks, updates, and fixes and other PSBN Updates for all PSBN Components containing software or firmware.

1.5.6 All PSBN Components provided by the Contractor will be suitable for the environment in which it will be installed, with the exception of COW site locations where the environment may be changing due to COW mobility. For example, Components installed at antenna sites will be resistant to electromagnetic fields and will perform properly in a high RF environment. This requirement includes operating temperature and humidity, altitude, electromagnetic compatibility, primary power voltage, backup power voltage, frequency and phase.

1.6 Network Compatibility and Interfaces

1.6.1 All infrastructure deployed on the PSBN will be included in the FirstNet-required First Office Application (FOA) process if available.

1.6.2 The Contractor will provide any Work necessary, for the PSBN to comply with FirstNet mandated requirements, consistent with Section 4.2 (FirstNet Participation) of the Base Document.

1.7 Coverage Performance Criteria

1.7.1.1 The PSBN will provide Mobile Broadband Coverage based on the following performance criteria: Delivers minimum throughput of 768 kbps downlink and 256 kbps uplink at the IP layer (i.e., throughput available to users at Layer 3 in the OSI model). The minimum uplink throughput shall be tested in unloaded conditions as specified in the Table 3 in Section 1.7.1.5 of this Exhibit B.

1.7.1.2 The coverage will be modeled and tested in a manner consistent with the functionality of the eNodeB scheduler and according to the modeled load level.

1.7.1.3 All sectors will have 25% loading with a uniform User distribution (location based) to simulate expected interference levels.

1.7.1.4 Mobile Broadband Coverage is defined as achieving at least the minimum performance as specified in Section 1.7.1.1 of this Exhibit B, while using a Vehicular Router or equivalent, with a roof mounted external antenna.

1.7.1.5 Coverage performance criteria vary by zone. The Authority has divided Los Angeles County geographically into zones (LA-RICS Coverage Zones). GIS files delineating the boundaries of each LA-RICS Coverage Zone are provided in Attachment 5 (Coverage Zone Boundaries) of Exhibit J (Confidential Supplement). The Contractor will meet or exceed the Portable Outdoor Coverage requirement for each LA-RICS Coverage Zone (defined as a percentage of the zone covered) per the table below at 95% covered area reliability:

Table 3 - LTE System Coverage and Data Rates

LA-RICS Coverage Zones	25% Load 95% Covered Area Reliability		Uplink Unloaded 95% Covered Area Reliability	
	1. Geo % Downlink (768 kbps)	2. Geo %Uplink (256 kbps)	3. UDP Data Rate (kbps)	4. Geo % Uplink
LA Basin	96.5	91.7	320	91.8
Santa Monica Mts.	62.6	36.2	320	36.1
Angeles Nat. Forest	35.0	11.6	320	11.9
Foothills	70.4	43.2	320	43.8
Foothills - Developed	91.2	76.8	320	76.8
CA-14 Corridor	42.2	16.9	288	16.9
Northern Desert	90.9	73.7	320	73.2
Waterway	70.8	66.0	480	66.9

1.7.1.6 The PSBN will exceed or achieve the guaranteed geographic coverage percentage for each of the LA-RICS Coverage Zones. In the Basin Zone, downlink and uplink coverage testing will be conducted within the coverage footprint of the uplink geographic percentage (column 4) of Table 3. In the other zones, uplink and downlink coverage will be conducted within the coverage footprint of the respective test, i.e., for the uplink test, the geographic listed in column 4 of Table 3 will be used for the downlink test,

column 1 of Table 3 will used. As with other Deficiencies, any Deficiency in coverage will be corrected at the Contractor's sole expense.

1.7.1.7 The Contractor will identify and specify coverage percentage for any LA-RICS Member agency located in the Basin LA-RICS Coverage Zone that does not meet the 95% percent coverage requirement. GIS files delineating the geographical boundaries of each Member agency are provided in Attachment 6 (City Boundaries) of Exhibit J (Confidential Supplement).

1.7.1.8 Contractor will provide detailed coverage, interference, and throughput studies based on the RF performance parameters in Section 1.7.1.1 at a vehicle speed of 80 mph and below.

1.7.1.9 Contractor will provide separate coverage prediction maps based on the Performance Criteria and will include the following maps:

1.7.1.9.1 Mobile Broadband Coverage depicting prescribed reliability, uplink (talkback, field-to-base);

1.7.1.9.2 Mobile Broadband Coverage depicting prescribed reliability, downlink (talk-out, base-to-field);

1.7.1.9.3 Uplink throughput; and

1.7.1.9.4 Downlink throughput.

1.7.1.10 Each prediction map provided by the Contractor will be provided to the Authority in the following formats:

1.7.1.10.1 One paper copy in American National Standards Institute (ANSI) E size;

1.7.1.10.2 An Adobe Acrobat (.pdf) file of sufficient resolution and quality to print in ANSI E size;

1.7.1.10.3 A shape file in ESRI format, including an attribute table containing the latitude, longitude and signal strength for each predicted point. The data will be in:

1.7.1.10.3.1 Format: GRID

1.7.1.10.3.2 Cell size (X, Y): 30 meters, 30 meters

1.7.1.10.3.3 Pixel Type: Floating Point

1.7.1.10.3.4 Pixel Depth: 32 Bit

1.7.1.10.3.5 Projected Coordinate System: State Plane, California Zone V

1.7.1.10.3.6 Projection: Lambert Conformal Conic

1.7.1.10.3.7 Linear Unit: Foot US

1.7.1.10.3.8 Geographic Coordinate System: GCS North American 1983

1.7.1.10.3.9 Datum: North American 1983

1.7.1.10.3.10 Signal Strength in dBm

1.7.1.10.3.11 Reference LA-RICS Coverage Zone shape files

1.7.1.10.3.12 State the coordinate system used if different from above.

1.7.1.10.3.13 Output Format - .csv, .txt or ESRI shapefile format.

1.7.1.10.3.14 A Google Earth© KMZ file (.kmz);

1.7.1.11 The Contractor will provide throughput, overall, and per sector statistics, from multiple Monte Carlo simulations using the loading expressed in Section 1.7.1.1.

1.7.1.12 All PSBN coverage modeling, simulation, and verification will be performed according to the most current Telecommunications Industry Association (TIA) Technical Service Bulletin (TSB) TSB-88 recommendations.

1.8 Capacity and Performance

1.8.1 The PSBN will have sufficient capacity to meet identified needs of public safety, including day to day activities and during times of emergency.

1.8.2 The PSBN will have the capacity and throughput to support Next Generation wireless data application as identified in the SAFECOM Statement of Requirements for Public Safety Wireless Communications & Interoperability, in addition to the capacity and throughput performance criteria of this Section.

1.8.3 The PSBN will meet the end-to-end capacity performance criteria of the Authority, as specified in this document.

1.8.4 The PSBN EPC will provide service to 100,000 idle or active mode Users simultaneously.

1.8.5 The PSBN EPC will provide service to 50,000 active Users simultaneously transmitting or receiving data.

1.8.6 The active User distribution will only be constrained by the capacity limitations of the individual sites or sectors. The physical limitation is 3,000 UEs per site or 100 UEs per cell in RRC connected mode.

1.8.7 **Amended and restated under Amendment No. 25** – The Evolved Packet Core (EPC) will have the licensed capacity of 125 eNodeBs and 5,000 Mbps.

1.8.8 Such capacity and licensing shall cover scenarios whereby a system failure causes all traffic and sites to be homed by a single EPC location.

1.8.9 Any costs associated with increased sites, usage, or throughput will only be accepted if the Contractor clearly indicated in its response to Section 3 (Detailed Breakdown of Pricing for Delivery of the Base PSBN) of Contractor's Response to Appendix H (Pricing Requirements – Scored) that such cost may apply and has included such costs in response to Section 15.1 of Contractor's Response to Appendix I (Pricing Requirements – Unscored Options), both responses are contained in Exhibit C (Schedule of Payments).

1.8.10 The Contractor will provide automated monthly reports that provide number of Users and total system usage (traffic and number of successful connections) per agency.

1.8.11 The PSBN will deliver sufficient system capacity, as allowable by the 10 Mbps leased fiber services chosen by the Authority, based on both the day-to-day and disaster scenarios in terms of the numbers of Users and types of applications used.

1.8.12 The PSBN will manage capacity and priority in high eNodeB or system utilization (e.g., by terminating or queuing non-critical User traffic) using ARP and QCI parameters defined in 3GPP TS 23.203.

1.8.13 The PSBN will deliver median sector throughput as set forth in Section 1.2.9.

1.8.14 The PSBN capacity modeling will include, for each LA-RICS Coverage Zone, the User data modeling will clearly identify the average User data consumption per shift/day, User traffic profile, number of concurrent Users per coverage zone, average cell edge data rate and average peak data rate.

1.9 Network Priority and Quality of Service (QoS)

1.9.1 The PSBN will prioritize data traffic by User Equipment (UE) as well as by application and various application situations (e.g., emergency trigger associated with a video application). Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.2 The PSBN will apply User Equipment (UE), and application priority and Quality of Service (QoS) end-to-end (from the User Equipment (UE) to the Public Safety Enterprise Network (PSEN)). Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.3 The PSBN will support multiple levels of priorities that can be separately assignable to User Equipment or applications on an agency-by-agency basis. Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.4 The PSBN will support all 9 Quality of Service Class Identifier (QCI) classes specified in table 6.1.7 of 3GPP 23.203 v9.11 or future equivalents.

1.9.5 The PSBN will ensure that higher priority User Equipment (UE) and/or applications retain their demanded flow rates to include pre-emption of other traffic even as many critical and non-critical UE attempt to use the network and the network becomes saturated. Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.6 The PSBN will support the Allocation and Retention Priority (ARP) pre-emption capability and vulnerability functions as defined in 3GPP 23.203.

1.9.7 The PSBN will support the usage of all 15 ARP values defined in 3GPP 23.203.

1.9.8 The PSBN will ensure that critical UEs are able to connect to and send data over the network, regardless of use or saturation even if non-critical UEs must be disconnected or limited.

1.9.9 The PSBN will ensure high priority UEs and/or applications retain their demanded flow rates as they change point of attachment from cell to cell.

1.9.10 The PSBN will notify any Authority designated Users from the Network Operations Center (NOC) of network saturation events and, in the event of saturation, provide any Authority designated Users the appropriate information to quickly assess the saturating usage and modify the appropriate policy controls (UEs and/or application) to optimize the Quality of Service for the incident.

1.9.11 The PSBN will enforce LA-RICS Authority defined policies for priority and pre-emption based on cell ID-based location.

1.9.12 The PSBN must, if so configured by LA-RICS Authority, assign different priorities to visiting UEs through a coordinated plan approved by the Authority for QCI/ARP assignments. This includes visiting LA-RICS Authority UEs who are not the local responders. For example, if an incident occurs in LA-RICS Member jurisdiction A, LA-RICS Authority will have the capability to prioritize Member A UEs above those of other LA-RICS Members UEs. The PSBN can enable an entirely different set of priorities for visiting UEs from non-LA-RICS Member agencies per the coordinated QCI/ARP assignment plan.

1.9.13 The PSBN will provide an Application Programming Interface (API) that allows dynamic modification of user priority levels from third party applications (e.g.,

from Computer Aided Dispatch systems). The Contractor will support the 3GPP defined Rx interface to enable third party application control of user priorities.

1.9.14 The PSBN will support Quality of Service (QoS), IPv6 network addressing, preemption, and partitioning on the access and transmission channels.

1.9.15 The Contractor will implement the nationwide scheme adopted by FirstNet, if provided prior to Phase 3 NTP date, for assigning Access Classes to public safety users and secondary users following the 3GPP recommendations in TS 22.011, Section 4.2. If a nationwide scheme is not provided prior to the Phase 3 NTP date, the Contractor will propose a scheme for LA-RICS.

1.9.16 The PSBN will support any default Quality of Service (QoS) profile template if defined by FirstNet prior to Phase 3 NTP date for each responder function (e.g. police, fire, EMS), associated with a UE, including default values for ARP, Access Class, UE Aggregate Maximum Bit-Rate (UE-AMBR), and Access Point Name Maximum Bit-Rate (APN-AMBR). If a nationwide scheme is not provided prior to the Phase 3 NTP date, the Contractor will propose a scheme for LA-RICS.

1.9.17 Every UE of the PSBN (public safety and secondary Users) will be assigned a default prioritization and QoS profile using the set of pre-defined QoS profile templates.

1.9.18 The Contractor will support the 3GPP Rx interface allowing national, regional, and local applications to have access to Priority and QoS control.

1.9.19 The PSBN control systems will allow the establishment of priority levels as defined by the Authority for approved and assigned UE, network, application, and services, via UE device identification (i.e., International Mobile Station Identifier (IMSI)). An IMSI series will be provided by the Authority 90 days prior to delivery of UEs.

1.9.20 The PSBN will support Quality of Service parameter assignment from the field using the subscriber provisioning tool and will enable allocation of the highest priority levels to authorized UEs.

1.9.21 QoS will be considered as the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core) to provision and apply priority for IP packet based traffic.

1.9.22 The PSBN will support the nationwide scheme that FirstNet will define, if available prior to Phase 3 NTP date, for assigning QoS Class Identifier priority to IP network and backhaul priority across the entire Nationwide Public Safety Broadband Network (NPSBN). If a nationwide scheme is not provided prior to the Phase 3 NTP date, the Contractor will propose a scheme for LA-RICS.

1.9.23 The assignment of network resources will take into account the UEs and/or application priority as well as the QoS performance criteria of the application.

1.9.24 The PSBN will support multiple QoS flows between a UE and PSBN, where each flow may have a different QoS requirement, priority and pre-emption level.

1.9.25 The PSBN will allow LA-RICS Authority administrators to configure the system such that certain UEs, applications, or application instance (e.g., emergency trigger for a video application) flows are pre-emptible and which flows can pre-empt other flows. Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.26 The PSBN must enable the Authority to change these configurations as needed.

1.9.27 If PSBN resources are not available to meet a resource request the PSBN will provide queuing or pre-emption of lower priority traffic. In such cases, applicable Users will be notified of the event and be capable of UE and application policy configuration to resolve such congestion.

1.9.28 The PSBN will support the use of industry standard VPN and MVPN technology while providing priority and Quality of Service for encapsulated applications for statically configured non-GBR flows in the PCRF or with customer provided solutions using unencrypted headers. Dynamic QoS configuration will be provided via the 3GPP Rx interface.

1.9.29 The PSBN will maintain both VPN and QoS performance criteria for all non-GBR traffic and the applications used inside and outside the VPN tunnel (i.e., considers priority based on all UE and application traffic including those applications that are contained within a VPN tunnel).

1.9.30 Hardware and software systems comprising the PSBN will enable QoS control for Public Safety Applications Network (PSAN) hosted applications via the 3GPP Rx interface.

1.10 Network Services and Applications

1.10.1 The PSBN will transport all LA-RICS Member approved IP traffic.

1.10.2 The PSBN will meet the required network performance and routing parameters specified in 3GPP TS 23.203.

1.10.3 **Amended and restated under Amendment No. 25** – The PSBN will deliver mechanisms for monitoring the network adherence and conformance to availability, system repair, component repair, service quality, and performance standards specified in this Performance Criteria.

1.10.3.1 Service level metrics and associated key performance indicators (KPI) definition, metrics, and reporting.

1.10.3.2 Service Level Agreement (SLA) conformance oversight and management.

1.10.3.3 SLA violation and shortfall identification, and notification. Upon request from the Authority, Contractor will provide a quotation for KPI corrective actions.

1.10.4 The PSBN will produce a comprehensive set of standard and customizable reports compliant with 3GPP standards and attributes that can be configured as desired.

1.10.5 The PSBN will provide access to raw counter level information and will provide all necessary aggregation methods to provide meaningful statistics regarding the performance of the PSBN.

1.10.6 The PSBN will generate reports on an hourly, daily, weekly, and monthly basis and will allow statistical aggregation of performance data over each of these periods. Reports will be published to folders in PDF, CSV, TXT, and Excel formats.

1.10.7 Any available system parameter or KPI will be accessible, as input to or for display in the report, by the report writer.

1.10.8 The reports system will provide common consumable report formats including Microsoft Office products and Adobe PDF Reader.

1.10.9 The PSBN will also provide statistics regarding traffic usage for all network subscribers.

1.10.10 The PSBN will also provide statistics regarding high (excessive) Users (both in total usage and maximum throughput demand).

1.10.11 The PSBN will also provide statistics regarding network availability and congestion statistics

1.11 Interoperability

1.11.1 The PSBN and User Equipment will support intra-system (single Public Safety PLMN ID) and nationwide inter-system roaming, interoperability and compatibility. Upon request from the Authority, Contractor will provide a quotation for IOT services to achieve interoperability and compatibility with LTE systems using non-Ericsson equipment.

1.11.2 The PSBN will roam and handover with adjacent LTE public safety systems when constructed, as directed by the Authority and Contractor will provide costs for enabling this functionality.

1.11.3 The PSBN will handover between adjacent cells via both the S1 and X2 interfaces if those cells are provided by the Contractor. For cells outside the PSBN, Contractor will provide a cost for enabling this functionality.

1.11.4 The PSBN will provide seamless mobility (inbound and outbound) with other public safety systems utilizing the same PLMN ID (313-100) comprising the NPSBN and Contractor will provide a cost for enabling this functionality.

1.11.5 The PSBN EPC will be interoperable with at least three RAN vendors based on their participation in the Public Safety Communications Research (PSCR), in particular, Phase 3 – Part 1: Network Interoperability and Drive Test testing and/or other independent interoperability test results (e.g., Network Vendors Interoperability Testing Forum (NVIOT), MultiService Forum (MSF)).

1.11.6 The PSBN RAN will be interoperable with at least three other EPC vendors based on their participation in PSCR Program, in particular, PSCR Phase 3 – Part 1: Network Interoperability and Drive Test testing and/or other independent

interoperability test results (e.g., Network Vendors Interoperability Testing Forum (NVIOT), MultiService Forum (MSF)).

1.11.7 The PSBN will be based on FirstNet requirements for interface interoperability, thus allowing interoperability and sourcing of components from multiple vendors if such requirements are available at Phase 1 NTP date.

1.11.8 Hardware and software systems comprising the PSBN will implement interfaces consistent with Table 2: Standards Implementation Methodology, contained in the Appendix A of the FCC order "Recommendations of the Technical Advisory Board for First Responder Interoperability" (PS Docket No 12-74).

1.11.9 Required LTE interfaces - The Contractor will provide devices and all interfaces needed to ensure roaming and interoperability to and from other regional public safety networks.

1.11.10 The network will support the following interfaces and will support future LTE releases as they are mandated by FirstNet:

1.11.10.1 Uu- LTE air interface

1.11.10.2 S6a – Visited MME to Home HSS

1.11.10.3 S8 – Visited SGW to Home PGW

1.11.10.4 S9 – Visited PCRF to Home PCRF for dynamic policy arbitration to be provided post-launch during the Warranty Period. Any interoperability testing (IOT) that may be required to integrate the S9 interface with other systems is not included. Upon request from the Authority, Contractor will provide a quotation.

1.11.10.5 S10 – MME to MME support for Category 1 handover support

1.11.10.6 X2 – eNodeB to eNodeB

1.11.10.7 S1-u – between eNodeB and SGW

1.11.10.8 S1 - MME–between eNodeB and MME

1.11.10.9 S5 – between SGW and PGW;

1.11.10.10 S6a – between MME and HSS

1.11.10.11 S11 – between MME and SGW

1.11.10.12 SGi – between PGW and external PDN

1.11.10.13 Gx – between PGW and PCRF (for QoS policy, filter policy and charging rules)

1.11.10.14 Rx – between PCRF and AF located in a PDN

1.11.10.15 Gy/Gz – offline/online charging interfaces.

1.11.11 The Contractor will certify that Interface Interoperability Testing (IOT) was performed on the following interfaces:

1.11.11.1 S1 - MME (interface between eNodeB and MME)

1.11.11.2 S1 -u (interface between eNodeB and SGW)

1.11.11.3 Uu - LTE air interface

1.11.12 Prior to operational deployment on the PSBN, the Contractor will certify that the infrastructure equipment has passed FirstNet-required Performance Testing of individual interfaces, nodes and overall system, if FirstNet required testing procedures are available at Phase 1 NTP date.

1.11.13 The Contractor will support any additional interface enumerated in Table 1 of Appendix A of the FCC order "Recommendations of the Technical Advisory Board for First Responder Interoperability" (PS Docket No 12-74).

1.11.14 The PSBN will be compatible and interoperable with the National Public Safety Broadband Network (NSPBN) and other public safety networks as required as a condition of the Authority's spectrum obligations from the First Responder Network Authority (FirstNet).

1.12 Mobility and Handoff

1.12.1 The PSBN will provide mobile, high speed (80 mph terrestrial) mobility and seamless handoffs between sectors.

1.12.2 The PSBN will provide seamless mobility across sectors including while maintaining a secure connection (VPN session) and session persistence in a mobile environment.

1.13 System Management and Performance Enhancement

1.13.1 Self Organizing Network (SON): The PSBN will employ SON features that deliver, but are not limited to: automatic site configuration, load balancing, site optimization, and recovery from failures.

1.13.2 **Revised and restated under Amendment No. 25** – The PSBN will employ Inter-Cell Interference Coordination (ICIC) capabilities that will improve system performance due to intra-system interference.

1.13.3 The PSBN will be resistant to and avoid interference from other Radio Access Technologies (RAT) or unknown sources.

1.13.4 The Contractor will implement a scheme for engineering RAN boundaries according to a national cell coordination plan if one is available at Phase 1 NTP date.

1.13.5 In case such plan is not defined, the Contractor will coordinate with adjacent public safety LTE network operators to minimize interference and maximize handover performance at the boundary.

1.13.6 The PSBN will include performance enhancing features at launch including Cooperative Multi-Point, 2x4 MIMO, TTI Bundling, Semi-Persistent Scheduling, and other performance enhancing features Exhibit A (Statement of Work), this Exhibit B (PSBN Specifications) and Contractor's Response to Appendix H (Pricing Requirements – Scored), contained in Exhibit C (Schedule of Payments).

1.13.7 The Contractor will provide software and firmware upgrades and other PSBN Updates that enable the Authority to have the same capabilities as commercial wireless carriers as they are available and remain interoperable with other public

safety networks. The PSBN will continue to comply with FirstNet standards for interoperability with other public safety networks. Contractor will inform the Authority if any additional costs are associated with any of these features.

1.13.8 In accordance with Agreement, the PSBN will improve coverage, capacity, spectral efficiency and performance over time consistent with 3GPP defined targets.

1.14 Spares and Test Equipment

1.14.1 The Contractor will provide spares for all PSBN Components necessary to achieve and maintain the coverage and Key Performance Indicators (KPIs) requirements. The Contractor's spare levels will consider each Component's failure rate, removal rate, time to repair (restock time), sparing pool size, and mean time between failure. The stockout probability will not exceed 0.1 percent. With respect to spares, surplus equipment will be taken into consideration in fulfilling spares equipment set forth in this Section 1.14.

1.14.2 The Contractor will provide a Spare Parts List for the PSBN that reflects the agreed upon spare levels in accordance with section 1.14.1 and should take into consideration the Contractors estimated failure rate or if available, Mean Time Between Failure (MTBF), for all critical components and meets the Authority's PSBN Specifications under the Agreement. In addition, spare equipment inventory volumes will factor in the equipment removal rate due to external causes (e.g., lightning, high temperature, human error, etc.) repair intervals, and warehousing distributions. Critical components include, but are not limited to hot standby cards, power supply, core network components, routers, workstations, servers, RAID Arrays, HDD storage, database storage, controllers, inventory of commonly used components, antenna systems, base stations, transceivers, data modems, etc.

1.14.3 The Contractor will provide PSBN Component spares at the following levels as part of base system. These levels are constrained by the Authority's BTOP grant:

1.14.3.1 eNodeB: 7.22%

1.14.3.2 EPC: 10.0%

1.14.3.3 Microwave: 6.0%

1.14.4 The Contractor's comprehensive list of recommended spares will include a description of how these spares will be utilized, stored, and replaced in order to meet Section 7.2 (Warranty) and Section 7.3 (Maintenance) of Exhibit A (Statement of Work).

1.15 PSBN Site Use

1.15.1 The PSBN will include an LTE Subsystem (Section 2), Backhaul Subsystem (Section 3), Ancillary Site Subsystems (Section 4), System Management and Monitoring Subsystem (Section 5), Inventory Management Subsystem (Section 6), and PSBN User Equipment (Section 7).

1.15.2 The PSBN will employ:

1.15.2.1 Each and every PSBN Site identified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement) to this RFP as a site at which eNodeB equipment will operate in its System Design; and

1.15.2.2 No other site as a site at which eNodeB, EPC and/or backhaul equipment will operate in its System Design other than the sites identified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement).

1.15.3 The required PSBN Components to support the eNodeB at each site varies based on the type of site indicated for each site in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement).

1.15.4 The Authority will endeavor to secure all of those site locations at the prescribed height, or taller height if existing antenna support structure with height taller than the structural height prescribed at those site locations can be used as determined during System Design, however, the Authority does not guarantee that all site and heights will be available to the Contractor.

1.15.5 In the event of loss of sites or reduced structural height, the Contractor will minimize any reductions in PSBN coverage.

1.15.6 In the event of either (a) loss of sites as specified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement) or (b) structural height change that is lower than as specified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement), the Contractor will use the same modeling parameters used to create

the Contractor's proposed coverage guarantee to create an amended coverage guarantee. The Authority, at its sole discretion, may utilize the modeling software provided by the Contractor, and using the Contractor's modeling parameters used in the development of the proposed coverage guarantee with the modifications caused by loss of sites or reduced structural height, to define the Contractor's amended coverage guarantee. No other reductions in guaranteed coverage will be permitted. Notwithstanding the foregoing, in the event that either loss of sites or reduced structural height is caused by Contractor, its employees, Subcontractors, or other agents, then contractor shall not be allowed to amend its coverage guarantee under this Section 1.15.6

1.15.7 In the event of either (a) sites are added to those specified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement) or (b) structural height change that is higher than as specified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement), the Contractor will use the same modeling parameters used to create the Contractor's proposed coverage guarantee to create an amended coverage guarantee. The Authority, at its sole discretion, may utilize the modeling software provided by the Contractor, and using the Contractor's modeling parameters used in the development of the proposed coverage guarantee with the modifications caused by the added sites or increased structural height, to define the Contractor's amended coverage guarantee.

1.15.8 The net change in coverage and performance resulting from the difference between the Contractor's design and the Final System Design using the Contractor provided software, will be applied to the proposed coverage guarantee to form the final coverage guarantee.

1.15.9 The Contractor will not be permitted to reduce its proposed coverage or performance guarantees in the event that the site is built as specified in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement).

1.15.10 In the event of increased height availability, the Contractor will maximize the improvement in coverage. However, if the Contractor can secure more advantageous antenna support structure heights than what was proposed by Contractor, increases in coverage or performance guarantees will be provided under Section 1.15.7.

1.15.11 In accordance with this Agreement, the Contractor will correct any Deficiency in guaranteed coverage, performance, or functionality in the system at its sole expense

including initial capital costs and ongoing operational costs, except to the extent a Deficiency in coverage is due to loss of sites or reduced structural height as specified in Section 1.15.6.

1.15.12 At all PSBN Sites, with the exception of those listed as Collocation in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), the Contractor is required to provide a generator and other PSBN Components according to Section 4.3 (Emergency Power Generating Systems).

1.15.13 In the event of loss of site or reduction of structural height as specified in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement), the Contract Sum and Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced based on the reduced scope of work by the full amount indicated on Exhibit C (Schedule of Payments) to the Agreement.

1.16 General Installation Requirements

1.16.1 For equipment to be installed indoors, the Authority will direct the Contractor to utilize outdoor cabinets or to provide an indoor rated cabinet otherwise consistent with the requirements of Section 4.1 (Equipment Cabinets/Enclosures and HVAC). For indoor installations using an indoor rated cabinet, the cabinet will maintain the appropriate interior conditions, regardless of the temperature within the shelter.

1.16.2 All site fixtures, equipment and cabling installed outdoors will be designed and installed to withstand the antenna support structure environmental performance criteria of Section 4.5 (Antenna Support Structures) (e.g., basic wind speed per Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplemental) and ice load) and meet or exceed the most stringent of applicable codes and standards.

1.16.3 All LTE, microwave and battery equipment to be installed outdoors will be installed in RBS 6000 or BBS 6000 series cabinets which have a locking cabinet unless otherwise approved by the Authority.

1.16.4 All exposed equipment will be adequately treated for protection from the geographical environmental conditions (e.g., salt water, industrial contaminants, snow and ice, etc.).

1.16.5 All cabinets requiring keys will be keyed the same systemwide.

1.16.6 Where possible, the Contractor will leave the bottom 12 inches of rack space unused. As an alternative, low maintenance equipment will be installed in the lowest spaces of the racks.

1.16.7 Wherever practical the heaviest equipment will be mounted low in the rack.

1.16.8 All power, signal, and transmission line cables will be routed according to TIA-568, TIA-569, or Motorola R-56, Harris (formerly M/A-COM) Site Installation, Grounding, and Lightning Protection guidelines, whichever is more stringent. Cables will be appropriately separated based on type to prevent interference. The Contractor will be responsible for mitigating and/or correcting any interference between disparate types of transmission cables.

1.16.9 Cables will be installed in such a manner to facilitate ease of removal of existing cabling.

1.16.10 For equipment designed to be rack-mounted, it will be properly attached to the rack or cabinet in which it is housed.

1.16.11 Any loose equipment (monitors, printers, etc.) on rack trays/shelves within the racks or cabinets will be earthquake braced or secured by straps.

1.16.12 Coaxial cable will be anchored using the coaxial cable manufacturer's recommended hardware and using the cable manufacturer's recommended methods of installation.

1.16.13 Each run of cable will be one continuous piece without a splice or connectors.

1.16.14 All cabling will attach to consoles and to racks in the electronic equipment room through appropriate cable connectors to facilitate ease of removal for maintenance.

1.16.15 Plenum rated and riser rated cable will be provided and installed where required.

1.16.16 Nameplates will be plastic laminate, white face with black engraved characters and will comply with BTOP labeling requirements.

1.16.17 All cables, terminal, interface panels and demarcation points will be properly labeled and referenced in the PSBN Documentation.

1.16.18 All cables, where applicable, will be routed through a properly labeled demarcation point with the capability of isolation and monitoring. All cables will be protected from damage (bends, sharp edges, etc).

1.17 Antenna Placement

1.17.1 The Contractor will utilize industry best practices for the physical placement of antennas. The mounting of antennas will not alter the antenna's radiation pattern. The Contractor will provide information on the standards utilized to ensure that adequate isolation is included in the proposed System Design and ultimately carried through the installation process.

1.18 Alarm and Status Sensors

1.18.1 At a minimum, eNodeB cabinets will include the following sensors:

1.18.1.1 Ionization sensor(s) as required in each cabinet for smoke detection. The number of sensors will conform to the required applicable code.

1.18.1.2 A Hydrogen sensor if needed due to type of battery system.

1.18.1.3 A cabinet door intrusion detection sensor.

1.18.1.4 High and low temperature monitoring sensors.

1.18.1.5 An interface to the camera activation alarm (if applicable).

1.18.1.6 Other alarms and sensors will be available for:

1.18.1.7 Sleepy cell condition (operating cell, but no user traffic after an Authority defined period of time).

1.18.1.8 High voltage standing wave ratio (VSWR).

1.18.1.9 Any PSBN Component failure.

1.18.2 Sensors and alarms will be wired back to the site alarm interface panel and will be connected to the System Management and Monitoring Subsystem.

1.18.3 Appropriate software and licenses (including licenses for equipment/devices being monitored, if applicable) will be provided for each site to enable remote alarm reporting, management and monitoring of site alarms. All software and licenses will be part of the base software license agreement and the costs are identified in Section 3 (Detailed Breakdown of Pricing for Delivery of the Base PSBN) of Contractor's Response to Appendix H (Pricing Requirements – Scored) contained in Exhibit C (Schedule of Payments).

2. LTE Subsystem

2.1 Evolved Packet Core

2.1.1 The PSBN will include one (1) Evolved Packet Core (EPC) at the Los Angeles County Fire Command and Control Facility (FCCF). The Evolved Packet Core includes all network elements as defined by 3GPP standards, except the HSS, which is an Additive Alternate (see Section 8.1 (Home Subscriber Server) below). If the additive alternate HSS is from a third party, the Contractor will provide a quotation for all necessary services. The FCCF installation will also contain any other centralized element specifically required in this Agreement or otherwise to meet the functional and performance requirements. This includes Domain Name Services (DNS), Dynamic Host Configuration Protocol (DHCP), Multi-Protocol Label Switching (MPLS), and others.

2.1.2 The Contractor will provide the full facility requirements including space, power, and grounding, as part of the Site Survey Report (see Section 3.3.13 of Exhibit A (Statement of Work)) and implement necessary facility modifications in order for the PSBN to meet the performance criteria.

2.1.3 The Contractor will provide Electrical Power (Section 4.2), Batteries (Section 4.4), Equipment Cabinets/Enclosures and HVAC (Section 4.1) for all centralized PSBN Components (including EPC, MPLS core, DNS, security components, routers, switches) unless Contractor determines the Authority or its Members' existing facilities meet the Contractor's and the Authority's requirements during Design Review. The Authority will provide adequate space, with access to power, inside its EPC facilities. The Authority will provide generator backup power at these facilities. The Contractor is not required to provide a generator at these facilities supporting the centralized equipment.

2.1.4 In the event that the Authority, or its Members, have sufficient existing systems, the Contract Sum and Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced based on the reduced scope of work by the full amount indicated on Exhibit C (Schedule of Payments) to the Agreement for such Electrical Power, Batteries, and Equipment Cabinets/Enclosures and HVAC.

2.1.5 The PSBN will support the 3GPP Multi-Operator Core Network (MOCN) network sharing standard whereby secondary Users can be serviced by the PSBN RAN in conjunction with a separate EPC.

2.1.6 The PSBN will be capable of multiple Public Land Mobile Network Identifiers (PLMN ID).

2.1.7 The PSBN will be capable of MOCN using the multiple PLMN IDs.

2.1.8 If directed by the Authority, the Contractor will configure the PSBN with multiple PLMN ID and configure all PSBN Components as required for MOCN.

2.1.9 The PSBN if so configured for MOCN will allow the PSBN EPC (the Authority's EPC) to control quality of service in the PSBN for the Authority's UEs. The Authority will work with the other MOCN operator to ensure:

2.1.9.1 Coordination of plans/Service Level Agreements (SLAs) between the PSBN and the MOCN operators.

2.1.9.2 MOCN operators agree to defined QCI and ARP usage.

2.1.9.3 PSBN auditing for SLAs compliance.

2.1.10 In the event of lost connectivity with a HSS, the MME will temporarily continue to authenticate UEs using cached authenticate vectors. The cached authentication vectors will be configurable by the Authority in number of vectors and persistence duration of the vectors. The intent of these requirements is to continue to process traffic in the event of a catastrophic event that renders the HSS inaccessible and to provide flexibility for the Authority to allow its own and visiting (mutual aid) Users continued service.

2.1.11 In the event of lost connectivity with a Policy and Charging Rules Function (PCRF) the PSBN will provide continued operations and broadband wireless service to LA-RICS Authority Users in a failover mode.

2.1.12 **Amended and restated under Amendment No. 25** – In the failover mode, the PSBN must continue to provide default bearers. The intent of these requirements is to continue to provide broadband wireless operations in the event of a catastrophic event. In the event of a failure of the single core due to catastrophic event, this requirement will be waived.

2.1.13 If purchased by the Authority, the IPX Service will include roaming with commercial carriers identified by the Authority.

2.1.14 If purchased, the Contractor will provide comprehensive management services associated with commercial carrier roaming including billing administration.

2.1.15 If purchased, the Contractor will provide billing services such that the Authority can segment roaming charges by agency or as otherwise determined by the Authority.

2.1.16 Roaming between the PSBN and commercial LTE networks will follow GSMA PRD IR.88.

2.1.17 Data roaming between the PSBN and commercial 3GPP 2G/3G networks will follow 3GPP TS 23.002 to support roaming into 3GPP 2G/3G networks.

2.1.18 As directed by the Authority, the Contractor will configure the PSBN to include Contractor provided primary and redundant Evolved Packet Core (EPC) elements (HSS, PCRF, MME, SGW, and PGW). Primary elements are those located at FCCF and redundant elements will be either the Additive Alternate core identified in Section 8.2.1 of this Exhibit B (PSBN Specifications) or with other Ericsson EPCs that will be hosted by FirstNet, another BTOP entity, or other third party. The Contractor will design, configure, and pool control and user plane PSBN EPC Components such that they automatically failover in the case of any core's failure, with minimal degradation of service. If the EPC hosted by FirstNet, another BTOP entity, or other 3rd party, is not provided by the Contractor, the Contractor upon request from the Authority and the Authority obtaining the cooperation and assistance of the third party vendor, will provide a quotation for IOT if the redundant core is not provided by the Contractor or Ericsson, or integration services if the redundant core is provided by Ericsson. Upon request from the Authority, the Contractor will provide a quotation to reconfigure the EPC from a redundant configuration to a single EPC configuration for proper operation.

2.1.19 In the event that secondary core uses PCRF and/or HSS Components from a different vendor, the Contractor will provide a quotation for IOT services to work with the other vendor to develop and implement a solution to integrate the other vendor’s components and the Authority's data into the other vendor's system using industry standard solutions such as SPR (Subscriber Profile Repository, as defined by 3GPP TS23.203) User Data Repository (UDR), the Ud interface (3GPP TS 29.335), and LDAP (Lightweight Directory Access Protocol, as specified by the Internal Engineering Task Force,).

2.1.20 All EPC control plane elements provided by the Contractor will be compatible with a Diameter Routing Agent, as defined by 3GPP TS 29.213.

2.2 eNodeBs

2.2.1 The PSBN will include 3GPP compliant eNodeBs with transmission lines, antennas and filters as needed to provide the service in accordance with the performance criteria detailed in this Exhibit B (PSBN Specifications) and other requirements in detailed in this Agreement.

2.2.2 The transmit power of the eNodeBs will be 20W or higher per radio (10 W or higher if using Remote Radio Heads).

2.2.3 The eNodeBs will meet all FCC Technical Advisory Board mandatory requirements and any relevant requirements issued by FirstNet, consistent with Section 4.2 (FirstNet Participation) of the Base Document.

2.2.4 All eNodeBs will be provided as cabinet units.

2.2.5 Each PSBN site location will include an antenna support structure, eNodeB and backhaul subsystem.

2.2.6 The eNodeB will have cabinets that comply with the requirements of Section 4.1 (Equipment Cabinets/Enclosures and HVAC).

2.2.7 The cabinets will contain the 3GPP compliant eNodeBs as well as the performance criteria of Electrical Power (Section 4.2), Batteries (Section 4.4) and Equipment Cabinets/Enclosures and HVAC (Section 4.1) unless Contractor determines the Authority or its Members' existing facilities meet the Contractor's and the Authority's requirements during Design Review.

2.2.8 In the event that the Authority, or its Members, have sufficient existing systems, the Contract Sum and Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced based on the reduced scope of work by the full amount indicated on Exhibit C (Schedule of Payments) to the Agreement for such Electrical Power, Batteries, Antenna Support Structures, Emergency Power Generating Systems and Equipment Cabinets/Enclosures and HVAC.

2.2.9 All PSBN LTE sector antennas will be cross polarized and support the entire 700 MHz band specified herein.

2.2.10 The antennas will be Remote Electrical Downtilt (RET) capable and will support AISG 2.0 standard. The Contractor will provide software and hardware required for RET operations.

2.2.11 The eNodeB will fall back to Single Input Single Output (SISO) in the event of a transceiver or power amplifier failure.

3. Backhaul Subsystem

3.1 General Requirements

3.1.1 The PSBN will include a Backhaul Subsystem that provides Internet Protocol interconnectivity among all Components of the PSBN.

3.1.2 The Backhaul Subsystem will include connectivity with the Public Safety Enterprise Networks (PSEN) located at LA-RICS Member agencies. Contractor will provide design and engineering to accommodate connections to the PSENs. Contractor will provide a quotation for any changes required to accommodate the bandwidth or connectivity beyond the PSBN sites.

3.1.3 In the case of the County of Los Angeles, the Backhaul Subsystem will deliver connectivity and backhaul to the FCCF facility.

3.1.4 The Contractor will deliver a Backhaul Subsystem that is scalable and can accommodate increased site quantities, increased spectrum allocations for each microwave radio, and increased throughput for each microwave radio.

3.1.5 The Backhaul Subsystem will provide transport bandwidth as agreed in the final design.

3.1.6 The Backhaul Subsystem will utilize fixed microwave and leased and customer fiber services to provide redundant connectivity wherever possible as agreed in the final design. The Contractor is permitted to provide temporary backhaul equipment if the permanent backhaul design solution is not available when the site is ready for connection to the core.

3.1.7 The Contractor will not be permitted to utilize existing LA-RICS Member backhaul facilities (microwave, fiber, or leased facilities) unless specifically authorized by LA-RICS Authority during the Design Review. The Contractor, if so directed by the Authority, will include LA-RICS Member backhaul facilities in the Backhaul Subsystem design. If such existing backhaul facilities reduce the need for Contractor provided backhaul facilities, the Contract Sum and Maximum Contract Sum will be reduced accordingly pursuant to Section 2 (Changes to Agreement) of the Base Document).

3.1.7.1 If fixed microwave backhaul is not possible from any PSBN Site then:

3.1.7.2 The Contractor will provide communication to and from this site using lease circuits or some other mutually agreeable solution; and

3.1.7.3 The Contractor's provision of leased circuits shall be in accordance with Section 38.3 (Contractor-Provided Leased Circuits) of the Base Document.

3.1.8 For microwave sites, the Contractor will guarantee the availability of the path from any spur site to a leased service or Member Agency PoP at 99.99%.

3.1.9 The Backhaul Subsystem will accommodate 15 year growth in foliage beyond current growth levels unless otherwise approved by both parties.

3.1.10 Any individual microwave link must have an availability of 99.999% or higher unless otherwise approved by both parties.

3.1.11 Any microwave link within the Backhaul Subsystem that does not have a complementary diverse route, will be configured with hot standby radios.

3.1.12 PSBN microwave dishes will be 3 feet in diameter or less unless otherwise authorized by the Authority.

3.1.13 All dishes will include dual polarization where the aggregate demand is in excess of fifty percent of the link capacity, if there is insufficient spectrum to support the required link capacity, or as otherwise directed by the Authority during Design Review.

3.1.14 In the event the Final Design configuration does not implement both polarizations, and this requirement triggers dual polarized dishes, the Contractor will cap and weather-seal any outdoor connectors.

3.1.15 The Contractor will be responsible for all frequency availability, coordination and license applications required for microwave design. All FCC licenses will be made under the Authority.

3.1.16 For roof mount antenna support structure microwave radio equipment will be placed as close to the antenna dishes as possible.

3.1.17 Except as noted herein, Backhaul Subsystem Components will be placed in a single cabinet compliant with Section 4.1(Equipment Cabinets/Enclosures and HVAC), containing the required DC power plant of Section 4.2 (Electrical Power), with HVAC elements of Section 4.1, and with battery backup of Section 4.4 (Battery Power Subsystem).

3.1.18 PSBN microwave radios will include adaptive modulation and will be software upgradeable to provide higher throughput as directed by the Authority.

3.2 Multiprotocol Label Switching (MPLS)

3.2.1 The Backhaul Subsystem will include IETF Multiprotocol Label Switching (MPLS) compliant system.

3.2.2 The MPLS System will be fully compliant with all current and applicable IETF requirements and standards.

3.2.3 The MPLS functions must enable breakout of dedicated bandwidth, detailed traffic engineering, routing diversity (including routing over non Contractor provided transport) and Virtual Private Network connections across the System. This includes MPLS VPN to Member WAN/LAN facilities.

3.2.4 The MPLS system will provide Fast Reroute whereby, upon failure of a network element, the MPLS System will reconfigure the System using different resources within 50 mS. Where failover is handled by MPLS, the failover time will be within 50 msec. For the City of Los Angeles fiber, G.8032 is implemented to manage failover rather than MPLS, which is outside of the Contractor's control.

3.2.5 An MPLS edge router will be provided at every eNodeB site. It will have eight or more ports that can be field configured for the following:

3.2.5.1 IPv4 Unicast

3.2.5.2 L2VPN/VPWS

3.2.5.3 L3VPN

3.2.5.4 LDP/IGP Synchronization (RFC 5443)

3.2.5.5 BFD (RFC 5880, 5881)

3.2.6 The MPLS system will have sufficient ports to support 50% future capacity growth and will accommodate additional traffic, devices (including third party MPLS compliant equipment) and routers, and their increased demands.

4. Ancillary Site Subsystems

4.1 Equipment Cabinets/Enclosures and HVAC

4.1.1 The Contractor will provide cabinets that are sized to house the specified equipment at each site and meet all other criteria in this Exhibit B (PSBN Specifications). At all PSBN Sites, with the exception of those listed as collocation in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), the Contractor is required to provide outdoor cabinets to house the PSBN Components. At all PSBN Sites listed as collocation in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), the Contractor is required, if directed by the Authority, to provide indoor cabinets to house the PSBN Components.

4.1.2 The exterior of all outdoor cabinets will be fire resistant and will have a minimum two hour fire rating.

4.1.3 Cabinets will be attached to the foundations in accordance with the cabinet manufacturer's specifications and meet or exceed 2013 CBSC (Calif. Building Standards Code) seismic requirements.

4.1.3.1 Concrete pad foundation is required for all ground-based outdoor equipment cabinets (i.e. excludes indoor equipment cabinets in shelters, roof-mounted and pole-mounted equipment).

4.1.4 Cabinets will be vandal resistant.

4.1.5 Cabinets will be lockable. All cabinets requiring keys will be keyed the same system-wide.

4.1.6 Cabinets will be RBS 6000 or BBS 6000 series for outdoor cabinets for LTE, microwave and battery equipment unless otherwise approved by the Authority, except for Authority provided indoor locations where the cabinet is not required to be weather resistant.

4.1.7 Cabinets will include alarm blocks including intrusion and thermal alarms and will be connected to and monitored via the System Management and Monitoring Subsystem.

4.1.8 Cabinets will include a service light.

4.1.9 Cabinets will have at least three feet of front and rear access space to perform repairs.

4.1.10 Indoor cabinets will be properly and seismically secured to the floor and to the cable ladders of the facility as well as to the adjacent racks to meet local and Zone 4 seismic requirements.

4.1.11 The cabinet will have the following configurations, but not limited to, roof mount and concrete foundation mount. Contractor will utilize the configuration that meets the needs of each site. Pole mount microwave ODU enclosure will be IP54 compliant (equivalent to NEMA 3S).

4.1.12 Climate control units will maintain the air quality inside the cabinet according to the most stringent interior equipment's specifications.

4.1.13 The Contractor will provide climate control on a site by site basis.

4.1.14 The climate control system will be rated for heavy duty, continuous operation and may be adaptively controlled by software.

4.1.15 The climate control system will not have any single point of failure that will affect the operation of the PSBN.

4.1.16 The climate control system will be backed up by the generator.

4.1.17 The climate control system will be designed and implemented to optimize air distribution and circulation throughout the cabinet.

4.1.18 The climate control system will be capable of remote diagnostics via the System Management and Monitoring Subsystem.

4.1.19 The climate control system will be capable of remote set point adjustments (e.g., temperature adjustments, unit on/off, etc.).

4.1.20 Wherever there are openings or apertures to the cabinet or to the equipment attached to the cabinet that exceed ¼" diameter (e.g., louvered opening, HVAC unit

casing, etc.), there will be 1/8" mesh screens, wire cloth with 0.035" wire, or other rodent proof shield or sheet metal guard to prevent rodent entry through the openings.

4.1.21 Rodent screen or shield will be easily removable to allow maintenance, repair, and replacement of the subject unit.

4.1.22 Climate controls and sensors will be mounted in such a fashion that it is not directly in the path of the output from the HVAC system, to avoid erroneous temperature control.

4.1.23 The climate controls will provide for automatic re-start in case of a power event.

4.1.24 The climate controls will default to the previous settings in case of a power event.

4.1.25 The climate controls will be designed in such a way as to maximize operational life of the thermal management components.

4.1.26 If the climate control system is floor-mounted on concrete pads, it will be mounted a minimum of 24" above grade (i.e. elevated above grade).

4.1.27 At sites where snow accumulation may occur, climate control units will be installed so that accumulated snow does not block air flow around the units.

4.1.28 Any portion of the climate control system extending from or mounted on the building exterior must include an ice and vandal shield to protect the unit from ice falling and vandals.

4.1.29 The equipment cabinets shall be equipped with an Emergency Ventilation System (EVS).

4.1.30 The EVS will be automatically activated when the temperature inside the cabinet reaches a pre-determined level to reduce heat inside the cabinet.

4.1.31 The proposed EVS shall not compromise the cabinet's weatherseal and shall keep the cabinet weatherproofed against outside environment including salt, fog, ocean spray, and wind-driven rain.

4.1.32 The level at which the Emergency Ventilation System (EVS) activates will be user-selectable or automatically controlled by software within a range of 80 and 120 deg. F.

4.2 Electrical Power

4.2.1 Power requirements for all PSBN Subsystems located at a site must support the worst case or maximum draws that would be experienced during a catastrophic event (i.e., all equipment drawing maximum rated power from the source at 100% duty).

4.2.2 Power systems will be sized to include a 50% future growth capacity.

4.2.3 Electrical systems will be, at a minimum, 50 Amp, 120 / 240-volt, 60 Hz, single phase, unless a greater capacity is needed.

4.2.4 Individual circuits will be a minimum of 20 amps.

4.2.5 A Transient Voltage Surge Suppressor (TVSS) device will be installed on individual load (i.e. each cabinet that has AC powered equipment will have a wire-in receptacle outlet TVSS installed inside the cabinet).

4.2.5.1 Transient Voltage Surge Suppressor (TVSS) devices will have a status output which will be connected to the site alarm system and the alarms will be provided to the System Management and Monitoring Subsystem.

4.2.5.2 Transient Voltage Suppression Systems (TVSS) will be provided to protect the electrical panel providing power to the PSBN Components.

4.2.6 Conductors to be buried will be run in a minimum 4 inch PVC conduit encased in concrete.

4.2.7 The Contractor will deliver AC power to each cabinet to backup equipment within the cabinet. and provide the appropriate DC power plant and battery backup within each cabinet (i.e., the Contractor will not provide a single DC power plant and battery power plant for multiple cabinets). The removal of any one cabinet will not affect backup power for the equipment in other cabinet(s)

4.2.8 The Contractor will provide an automatic transfer switch with manual override in a separate NEMA 3R powder coated aluminum, lockable outdoor enclosure.

4.2.8.1 The automatic transfer switch will be capable of bypass-isolation.

4.2.8.2 The automatic transfer switch will be capable of remote diagnostics and monitoring via the System Management and Monitoring Subsystem.

4.2.8.3 The automatic transfer switch will automatically switch the power source to the generator (or other backup power source) when commercial power (or the primary power source) is unavailable.

4.2.8.4 Tower lighting, backhaul system cabinet, and eNodeB cabinet will be connected to the automatic transfer switch, and therefore, be backed up by the backup power source.

4.2.8.5 A manual transfer switch with built-in remote start will be provided in NEMA 4X, lockable enclosure on the H-frame and pre-wired for connection of a mobile generator. Upon switching, the remote-start will automatically enable and remote site the appropriate generator and disable the unused generator.

4.2.9 Each power supply will be fed from a separate circuit with a separate breaker.

4.2.10 Electrical panel will be permanently labeled with panel identifier according to the electrical as-built drawing and panel schedule.

4.2.11 Electrical panels will be permanently labeled with circuit identification.

4.2.12 Electrical outlets will be permanently labeled showing panel ID and circuit number to enable cross-reference to the electrical panel schedule.

4.2.13 Interior AC power conductors will be installed in metallic conduit.

4.2.14 Exterior conductors will be installed in galvanized rigid metallic conduit.

4.2.15 A 20-amp GFCI convenience outlet in weatherproof enclosure will be provided on or near the H-frame. Location of the outlet will be determined during Design Review.

4.2.16 All power system Components (including Emergency Power Generating Systems) will be properly secured to meet local and Zone 4 seismic requirements.

4.3 Emergency Power Generating Systems

4.3.1 Each site will be equipped with an emergency power generating system, unless this Section 4.3 specifically indicates otherwise.

4.3.2 The emergency power system will be compliant with the performance criteria set forth in this Section 4.3.

4.3.3 The Contractor will provide a new diesel fueled AC generator for each PSBN Site with the exception of sites listed as Collocation in the PSBN Site List. In these cases, the Authority will provide access to backup power. The Contractor will evaluate existing Authority generators during Design Review. If, during Design Review, existing generators are available for PSBN use, the Contractor will integrate these generators into the design if they otherwise meet the overall requirements of the Agreement. If such existing generators or emergency power generating system reduce the need for Contractor provided generators or emergency power generating system, the Contract Sum and Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced in accordance with Section 2 (Changes to Agreement) of the Base Document. In cases where existing generators are used or considered, the following requirements apply:

4.3.3.1 The Contractor will test each existing generator using an appropriately sized load bank to prevent wet stacking if required by the Authority. Such test will be witnessed by Authority representative at the Authority's discretion.

4.3.3.2 Existing generators failing the load test will be replaced with new generators.

4.3.3.3 Contractor will provide all connections and interfaces required to integrate existing generators in the PSBN.

4.3.3.4 In addition to the existing load, the Contractor will include 50% growth factor for the proposed PSBN when determining if existing generators can be reused.

4.3.4 If a generator is impractical, cost-prohibitive, or physically impossible, then during Design Review, the Contractor will propose an alternative solution that meets the performance criteria of this Agreement and quote such costs.

4.3.5 The emergency generator will be provided with a day tank located underneath or adjacent to the generator or as close as permitted by code and regulation, unless otherwise directed by the Authority during Design Review.

4.3.6 Below-ground diesel storage tanks are not permitted.

4.3.7 Fuel tanks will be surrounded by a Concrete Masonry Unit (CMU) wall for fire protection and protection from gunfire. Contractor has provided the cost of the CMU wall in Section 3 (Detailed Breakdown of Pricing for Delivery of the Base PSBN) of Contractor's Response to Appendix H (Pricing Requirements – Scored) contained in Exhibit C (Schedule of Payments).

4.3.7.1 The wall will have an opening of sufficient size to permit easy fueling and maintenance. The opening will face the interior of the site compound.

4.3.7.2 If during Design Review it is determined that the Concrete Masonry Unit (CMU) wall is not feasible due to site-design or space constraints, the Contractor will provide a double-walled fuel tank with concrete outer wall.

4.3.8 Fuel tanks will be secured to an appropriately sized concrete foundation pad, which will be adjacent to the generator. To the greatest extent possible, generator with integrated sub-base fuel tank shall be implemented to minimize space required for the generator and fuel tank, unless existing fuel tank will be re-used.

4.3.9 The Contractor will consider existing Authority fuel tanks during Design Review. If existing fuel tank will be re-used, Contractor is responsible to furnish and install piping and any equipment necessary for the successful delivery (i.e. supply and return) of fuel between the generator and the fuel tank and comply with all applicable laws, regulations and codes, including design, furnish and install the appropriate secondary containment and overspill protection. If such existing fuel tank use reduces the need for Contractor provided facilities, the Contract Sum and

Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced in accordance with Section 2 (Changes to Agreement) of the Base Document.

4.3.10 Fuel tanks and fuel delivery systems will be seismically protected per National Fire Protection Association (NFPA) 37.

4.3.11 Wherever a fuel tank is exposed to potential vehicular damage due to proximity to alleys, driveways, parking areas or roads, the Contractor will provide suitable protection. As a minimum, concrete filled steel bollards placed within 3 feet of the tank shall be installed.

4.3.12 Fuel containers will be designed, fabricated, tested, and marked (or stamped) in accordance with the Regulations of the U.S. Department of Transportation (DOT), the American Society of Mechanical Engineers (ASME) or jointly by the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME).

4.3.13 ASME containers will be marked with a stainless steel name plate that includes such information as container supplier, container water capacity in pounds or gallons, design pressure in pound-force per square inch gauge, year of container manufacture, manufacturer's serial number, ASME code symbol, etc.

4.3.14 Any fuel tanks provided will be filled to the maximum level according to manufacturer’s recommendations at acceptance.

4.3.15 All fuel product (supply and return) lines will be primed at time of operations.

4.3.16 Contractor will provide generators that will meet all applicable regulations, zoning requirements and noise ordinances.

4.3.17 Contractor will provide generator exhaust that will be equipped with spark arrestors per applicable codes, ordinances, regulations and jurisdictional directives.

4.3.18 The generator and automatic transfer switch will be capable of remote diagnostics via Ethernet connection and will be connected, monitored, and managed by the System Management and Monitoring Subsystem and alarm system.

4.3.19 The Contractor will provide proper cooling and heating mechanisms for the emergency power systems (including fuel delivery systems).

4.3.20 The emergency power system will be sized to support 150% of the initial electrical load of all PSBN Components at each PSBN Site.

4.3.21 Generators will be equipped with a remote start function. The remote start function will be activated from the System Management and Monitoring Subsystem.

4.3.22 Fuel tanks provided will be steel, double-wall construction and will comply with NFPA 30 and meet or exceed UL 142 and UL 2085 and all applicable regulations, local codes and requirements, including secondary containment and overfill prevention, and vehicle protection.

4.3.23 The Contractor will provide sufficient space to permit easy maintenance and fueling.

4.3.24 Fuel tanks located at PSBN aggregation sites will be sized to provide 72 hours of operation at full rated load, 100% duty. Any changes to aggregation sites after design review may result in a change order to redistribute 72 hour generators to applicable aggregation sites and may result in the need to order additional generators.

4.3.25 Fuel tanks located at PSBN non-aggregation sites will be sized to provide 24 hours of operation at full rated load, 100% duty.

4.3.26 Fuel tanks will be installed to meet applicable fire codes or a minimum of twenty-five (25') feet, whichever is greater, from any external source of ignition or mechanical ventilation system.

4.3.27 Fuel tanks will meet all requirements of the State of California Environmental Protection Agency (EPA)/Water Resource Board.

4.3.28 The fuel tank and fuel level will be monitored with a leak detection and alarm system capable of remote diagnostics via Ethernet connection and will be connected to the System Management and Monitoring Subsystem.

4.3.29 The Contractor will evaluate commercial power adequacy during Design Review. Where commercial power is inadequate, greater than 300 feet away from the site,

or unavailable, the Contractor will describe and recommend a solution for primary and backup power which maintains the reliability of the PSBN.

4.4 Battery Power Subsystem

4.4.1 General Requirements for Battery Power Subsystem

4.4.1.1 For the Equipment Centers, a UPS, or the equivalent, will maintain operation of all centralized equipment (EPC, MPLS, DNS, DHCP, firewalls, and other centralized components) for a minimum of ten (10) minutes at maximum design load plus fifty percent (50%) future growth.

4.4.1.2 All PSBN Sites, except EPC sites, will be equipped with new -48VDC battery plant for the proposed PSBN Components sized with additional 50% capacity for future growth.

4.4.1.3 -48 VDC battery backup will be a minimum of eight (8) hours at maximum rated power, one hundred percent (100%) duty cycle for the following equipment:

4.4.1.3.1 Microwave radio, MPLS routers, and all other Components required in the Backhaul System cabinet, except for HVAC.

4.4.1.3.2 LTE eNodeB equipment, switches and all other Components required in the eNodeB cabinet, except for HVAC.

4.4.1.4 The battery system will have a recharge time of less than 12 hours.

4.4.1.5 The Contractor will provide a non pro-rated 7 year warranty for the battery backup system, from the date of installation provided that installation is not delayed by acts of the Authority (environmental and permitting approval and compliance will not constitute a delayed act of the Authority) for more than three months after shipment, in which case the warranty would commence three months after shipment date. .

4.4.1.6 All battery systems, including UPS at Equipment Centers, will have a battery monitoring system which will monitor the health of individual cells and report battery condition continuously.

4.4.1.7 The battery monitoring system will integrate with the System Management and Monitoring system.

4.4.1.8 The battery monitoring system will have remote network Ethernet monitoring, alerting and diagnostic capability via the SMMS.

4.4.1.9 All UPS and Battery Power Systems will be capable of hot swapping of modules.

4.4.1.10 Batteries will be installed within enclosed, temperature-controlled environment for unit to operate within manufacturer specifications.

4.4.1.11 The -48VDC battery backup system will include all necessary equipment at each PSBN site to provide power for the runtime and conditions identified in this document for each backhaul and eNodeB cabinets, including charger/charge controller, rectifiers, low voltage disconnect, alarm panel, breaker distribution panels, inverters and DC-DC converter.

4.4.2 Charge Controller

4.4.2.1 The charge controller must perform the following:

4.4.2.2 Monitor the battery's charging process.

4.4.2.3 Provide overcharge protection.

4.4.2.4 Use maximum power point tracking (MPPT) technology.

4.4.2.5 Providing fully charged state (float) indefinitely.

4.4.2.6 Provide efficient battery charging.

4.4.2.7 Have a Low Voltage Disconnect (LVD).

4.4.2.8 Have Battery Temperature Compensation (BTC).

4.4.2.9 Have major and minor alarm.

4.4.2.10 Prevent reverse current flow.

4.4.2.11 Provide battery equalization.

4.4.2.12 Not emit radio interference.

4.4.3 Batteries

4.4.3.1 The PSBN will use deep cycle batteries.

4.4.3.2 The batteries will have a minimum of two banks in parallel for redundancy.

4.4.3.3 If one battery fails the system will still provide 100% power to the site components.

4.4.3.4 Absorbed glass mat (AGM) batteries are required.

4.4.4 Battery System Monitor

4.4.4.1 The battery system monitor will accommodate 500 total PSBN Sites and will be integrated into the System Management and Monitoring Subsystem. The following additional criteria apply to the battery system monitoring capabilities for each battery cell:

4.4.4.2 Battery monitor will measure and record total amp-hours in and out of the batteries.

4.4.4.3 Battery monitor will measure and record the battery's state and charge.

4.4.4.4 Battery monitor will collect, process and log data measure and record battery temperature.

4.4.4.5 Battery monitor will measure the voltage of two battery banks.

4.4.4.6 Battery monitor will measure secondary voltage source.

4.4.4.7 Battery will have an optional computer interface with software to control and read out all data locally.

4.4.4.8 Battery monitor will record battery efficiency data.

4.4.4.9 Battery monitor will have computer interfaces for monitoring and control.

4.5 Antenna Support Structures

4.5.1 General Antenna Support Structure Performance Criteria

4.5.1.1 The Contractor will attach its antennas, antenna mounts, GPS antennas, cables, and appropriate electronics cabinets to antenna support structures that meet the requirements of this section.

4.5.1.2 Three (3) antenna support structure types are included in the PSBN, which, for each PSBN Site listed in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement), is as indicated in such Attachment 1 (PSBN Site List):

4.5.1.2.1 New Undisguised Monopole to be provided by the Contractor (Section 4.5.2);

4.5.1.2.2 New roof mounts to be provided by Contraction in Section (4.5.3); and

4.5.1.2.3 Authority provided Collocation sites (Section 4.5.4).

4.5.1.2.4 Except as provided in Attachment 1 (PSBN Site List) to Exhibit J (Confidential Supplement), the Contractor will not be permitted to utilize existing LA-RICS Member antenna support structures unless specifically authorized by LA-RICS Authority during the Design Review. The Contractor, if so directed by the Authority, will include LA-RICS Member antenna support structures in the antenna support structure design. If such existing antenna support structures reduce the need for Contractor provided antenna support structures, the Contract Sum and Maximum Contract Sum contained in Exhibit C (Schedule of Payments) will be reduced accordingly pursuant to Section 2 (Changes to Agreement) of the Base Document. If a PSBN Site requires a specialized antenna support structure found in Section 17 of Contractor's Response to Appendix I (Pricing Requirements – Unscored Options) contained in Exhibit C (Schedule of Payments), the Contract Sum and Maximum

Contract Sum contained in Exhibit C will be adjusted pursuant to Section 2 (Changes to Agreement) of the Base Document.

4.5.1.3 All proposed and provided antennas, antenna support structures and appurtenances and attachment, including their foundations, will meet requirements for Class III structures under the TIA-222 – G Classification of Structures.

4.5.1.4 Any new or modified antenna support structure will adhere to these performance criteria, and latest revision of all applicable standards and codes.

4.5.1.5 The Contractor will provide the antenna support structures for the PSBN to be self-supporting steel monopoles, or pipe mounts for building-mounted (wall-mounted), roof-mounted or other support structure antennas. During Design Review, Contractor will identify sites proposed for the PSBN where it is impractical or infeasible (cost prohibitive) to use such antenna support structures and provide appropriate solutions.

4.5.1.6 For all new antenna support structures and existing support structures (if applicable as determined during design process) to be modified for the PSBN, the Contractor will check against FAA airport airspace obstruction criteria to determine if FAA notification is required. If FAA notification is required, the Contractor will file with the FAA Form 7460-1 (Notice of Proposed Construction or Alteration) for airspace obstruction evaluation.

4.5.1.7 Upon approval by the FAA for the proposed antenna support structure height, the Contractor will file with FCC application Form 854R Antenna Structure Registration (ASR) to obtain an ASR number. Contractor shall coordinate with the Authority and its environmental assessment consultant before filing any FCC required environmental notifications and will comply with all FAA and FCC application approval conditions.

4.5.1.8 The Contractor will submit with the FAA Form 7460-1 a certified survey letter verifying the longitude and latitude coordinates of the antenna support structure in North American Datum (NAD) NAD-83and the structure's base elevation in North American Vertical Datum (NAVD) NAVD-88. Survey will be to FAA 1A accuracy.

4.5.1.9 The Contractor will furnish and display the ASR Number in a conspicuous place so that it is readily visible near the base of the antenna support structure.

4.5.1.10 Materials used to display the ASR Number must be weather-resistant and of sufficient size to be easily seen at the base of the antenna support structure.

4.5.1.11 All antenna support structures and PSBN Component installation shall incorporate and comply with the Attachment 2 (Construction Management Requirements) of Exhibit J (Confidential Supplement) of the Agreement.

4.5.1.12 The Contractor will conduct a comprehensive/rigorous structural analysis of any existing structure to be used for the PSBN (as determined during Design Review) using the same set of criteria as specified in this Section 4.5 of this Exhibit B (PSBN Specifications). Such analysis will include the existing antennas, appurtenances and attachments, mounting, hardware, etc. on the existing structure to be used.

4.5.1.13 All fabrication will be in accordance with The American Institute of Steel Construction (AISC) requirements for fabrication of structural steel and Section 5.0 of ANSI/TIA-222-G.

4.5.1.14 Under no circumstances will dissimilar metals be used in contact with one another.

4.5.1.15 All welding processes and welding operators will be qualified in accordance with American Welding Society (AWS) Standard Qualification Procedure.

4.5.1.16 All materials will be properly marked and match-marked for field assembly.

4.5.1.17 All materials will be fabricated for a delivery sequence which will expedite erection and minimize field handling of materials.

4.5.1.18 All furnished materials will be new and of the best quality as measured by the highest standards of the trade. Any defect will be cause for rejection. Mill certificates will be available for all materials furnished and will be submitted upon request.

4.5.1.19 Contractor will fabricate items of structural steel in accordance with AISC Specifications and as indicated on the final approved shop drawings.

4.5.1.20 The structure and its individual members will be constructed so that there are no pockets, wells or traps in which moisture can condense or water collect. Tubular members will be sealed at the top of the structure, and weep holes will be provided where necessary.

4.5.1.21 Unless specified otherwise by the designer, straightness and shape of all members will meet the tolerances specified in ASTM A-6 after galvanizing.

4.5.1.22 Contractor will submit six (6) copies of the design drawings and construction plans for all new and modified antenna support structures including wind, seismic and other code-required loadings and structural calculations, bill of material and material specifications (type and grade), for the structure and its foundation certified by the Structural Engineer of record (SEOR) to the Authority for Design Review prior to plan check. Design Review is not intended to correct Contractor's design error and does not release Contractor from oversights made on the submittals.

4.5.1.23 The drawing will be in ANSI - E size format or as determined during Design Review. All engineering drawings will be folded to approximately 8 ½" x11". The same drawing will also be provided in electronic format in AutoCAD and PDF on a CD-ROM or a DVD.

4.5.1.24 The structure's design drawings and construction plans will clearly and completely show all components and parts, material specification, part number and dimensions, antenna mount construction, placement of antenna mounts, cable ladders and cable support system, climbing ladders, any rest areas, and method of attachment for each. The drawings will also contain the following:

4.5.1.24.1 Cross-Reference: Commonly-used, logical and consistent cross-referencing symbols, conventions, and the like will be used on the drawing and structural analysis.

4.5.1.24.2 Title: Each and every sheet of the drawing will be bear a Title block and drawing number of the issuing organization.

4.5.1.24.3 Identification: The drawing and plan shall include the signatory engineer's name, title, firm name, address, telephone number, facsimile number and e-mail address, on lower, right-hand side of each sheet.

4.5.1.25 Drawings and plans will show all design loading parameters. The antenna and other loads (ladders, obstruction lights and other appurtenances, etc.) will be tabulated and numbered / indexed so they can be easily cross-referenced to the elevation drawings of the antenna support structure.

4.5.1.26 Scaled and dimensioned drawings complete with parts and hardware lists for all items installed on the antenna support structure will be provided. This will include the following:

4.5.1.26.1 Specifications will indicate the various types of materials that will be used and will describe the methods not covered in the technical regulations which are to be used to obtain the required quality of the work shown on the plans. The grades and materials will be shown on the drawings for each item.

4.5.1.26.2 Sectional details of the antenna support structure including the dimensions of all structural members.

4.5.1.26.3 The antenna support structure and feedline brackets, antenna mounts, etc.

4.5.1.26.4 The antenna support structure's anchoring details, sections and plan views.

4.5.1.26.5 Antenna mounting details.

4.5.1.26.6 Climbing ladder / step bolts and fall-arrest / safety climb cable details.

4.5.1.26.7 Grounding and bonding details, including lightning rod details.

4.5.1.26.8 Cable / waveguide vertical ladder and feedline bracket details.

4.5.1.26.9 Any electrical conduit and junction box and obstruction lighting mounting details.

4.5.1.26.10 Cable / waveguide bridge or underground conduit and pull-box details.

4.5.1.26.11 Erection details for the antenna support structure.

4.5.1.27 Antenna layout elevations and plan views: Drawings and plans will show the elevation drawing (at least 2 different elevations from the north/south and east/west) of the antenna support structure with all antenna pipe mount details.

4.5.1.28 The structure's design drawings and construction plans will clearly and completely show all design loading parameters and will tabulate design loads, including antenna and transmission line types, sizes, weights, weldments, projected areas and location on the structure for wind load design. Cross-referencing will be provided to other relevant drawings, analysis or documents.

4.5.1.29 The design and structural calculations of the antenna support structure shall comply with the following requirements:

4.5.1.29.1 Contractor will provide a structural analysis report for each new or modified antenna support structure that includes elevation drawing and profile of the antenna support structure, computations, stress diagrams and other pertinent data so that calculations for individual structural members can be readily interpreted.

4.5.1.29.2 The computation will be prefaced by a statement of calculation criteria that clearly and concisely outlining the basis for the structural design and indicating the manner in which the structure will resist vertical loads and horizontal forces.

4.5.1.29.3 Loads and Forces: The computation will clearly and correctly establish that the structure will resist the loads and forces in accordance with ANSI/TIA-222-G and the California Building Standards Code (CBSC) and Title 24, CCR.

4.5.1.29.3.1 Calculations will clearly show how all vertical and horizontal loads are transferred from the steel antenna support structure to the concrete foundation. Calculations for anchor rods design will be

included with the design drawings and construction plans of the antenna support structure and its foundation.

4.5.1.29.3.2 Maximum forces and specified strengths of members will be included in computations and noted on plans and drawings.

4.5.1.29.3.3 Where unusual conditions occur, such additional data as are pertinent to the design and construction of the antenna support structure or its foundation shall be identified and submitted to the Authority during Design Review and to the local jurisdiction for construction plan check.

4.5.1.29.3.4 Eccentricities: Calculations used to determine member stresses will include the effects of horizontal and vertical eccentricities at the connection joints.

4.5.1.29.3.5 Any assumptions used in the structural analysis and calculations and the basis of assumption will be explicitly identified and described in the structural analysis report. Any presumptive parameters used as allowed by codes and standards in the absence of actual value will also be explicitly identified in the report.

4.5.1.29.3.6 A finite element analysis computer program using a 3-dimensional (space) model in conformance with ANSI-TIA-222-G will be used to structurally design the antenna support structure. The structure's design will consider at a minimum eight (8) wind directions: four (4) face winds and four (4) apex winds. When excessive shear forces and moments occur on locations other than joints, an additional second order analysis is required.

4.5.1.29.3.7 The software computer analysis program name, program provider, release number, and a brief description of the theoretical basis and theories used for the structural calculations for the design of the antenna support structure and its foundation will be provided and noted in the structural analysis report.

4.5.1.29.3.8 The software computer analysis program's calculation output will include but be not limited to the following items which will be clearly labeled and identified:

4.5.1.29.3.8.1 Elevation drawing and profile of the antenna support structure representing the graphical analytical model with the bracing configurations.

4.5.1.29.3.8.2 Load forces, uniform and concentrated.

4.5.1.29.3.8.3 Member sizes and their material.

4.5.1.29.3.8.4 Effective Projected Areas and Weights of appurtenances.

4.5.1.29.3.8.5 Deflection Twist and Sway at design and operational loads.

4.5.1.29.3.8.6 Maximum forces and design strength of all members.

4.5.1.29.3.8.7 Foundation reaction loads.

4.5.2 Undisguised Monopole

4.5.2.1 General Requirements for Undisguised Monopole

4.5.2.1.1 Contractor will design, fabricate and provide the antenna support structure as required by this Exhibit B (PSBN Specifications). The antenna support structure with the base antenna loads shall meet or exceed the operational and design requirements of applicable codes, regulations and standards, and the requirements of this Exhibit B (PSBN Specifications), whichever are more stringent.

4.5.2.1.2 Antenna support structures will be self-supporting steel monopoles and their installation will meet or exceed the requirements of the most current TIA 222 standards (TIA-222 – G or later and all addendums). In this Exhibit B (PSBN Specifications). , the Authority is specifying certain performance criteria greater than the minimums required by TIA-222.

4.5.2.1.3 The Contractor will furnish materials, design, fabricate, and erect a tapered, self-supporting, hollow steel, custom designed, telecommunications applications monopole, at the height prescribed by Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), drilled, cast in place concrete foundation, mounting structures and support

systems for LTE antennas and microwave antennas, etc. as designated by the approved Design Review and Site Design Documents for all sites requiring such facilities.

4.5.2.1.4 California Building Standards Code (CBSC): The antenna, antenna support structure and appurtenances and attachments will be classified as Essential Facilities per the California Building Standards Code (CBSC) and will meet or exceed the CBSC requirements except where it references the ANSI/TIA-222.

4.5.2.1.5 All structural steel and hardware is to be hot-dipped galvanized steel after fabrication. All exposed surfaces of auxiliary equipment to the antenna support structure (including cable ladders, climbing ladders/step bolts, safety climb system and devices and antenna mounts and struts) will be galvanized to resist rust.

4.5.2.1.6 Any galvanized surfaces which are damaged for any reason, will be painted immediately with two coats of high zinc content paint.

4.5.2.1.7 Bolts will be hot dip galvanized according to the latest revision of the American Society for Testing and Materials (ASTM) A-325.

4.5.2.1.8 All hot-dipped components will include a minimum zinc coating of two (2) ounces per square foot.

4.5.2.1.9 Correct length of bolts will be used for all connections in accordance with the bolt assembly lists furnished by the antenna support structure manufacturer.

4.5.2.1.10 All bolts will be equipped with self-locking nuts.

4.5.2.1.11 The antenna support structure (except hardware) and major parts on the shop and/or assembly drawings will be permanently marked by the manufacturer. Marks will correspond with the marks on the assembly drawings.

4.5.2.1.12 The antenna support structure will be labeled, with a metal nameplate securely fastened near the base, indicating, as a minimum, the

manufacturer's name, antenna support structure model and reference number, antenna support structure height, and date of manufacture.

4.5.2.1.13 The Contractor will file with the FAA and FCC as required per the determination or registration approval conditions from each agency, or as per applicable rules from each, within the stipulated timeframe, to notify them that the antenna support structure has reached its maximum height and the construction of the antenna support structure is complete.

4.5.2.1.14 If required by the FAA, the antenna support structure will be lit and/or marked according to FAA Advisory Circular AC 70/7460-1 (latest revision).

4.5.2.1.15 Contractor will provide FAA approved obstruction lighting systems that are equal to or better than LED lighting system for energy efficiency, life cycle and mean time between failures.

4.5.2.1.16 The lighting systems will include controller, lamps, lightning protection units, mounting hardware, service cords and/or conduit, conduit drain-breather system, wiring and other material required for a complete installation.

4.5.2.1.17 The lighting systems will be controlled by a solid state control unit and power supply.

4.5.2.1.18 The lighting system power will be backed up by the Emergency Power Generating System for PSBN equipment in accordance with Section 4.3 of this Exhibit B (PSBN Specifications).

4.5.2.1.19 The lighting system will provide separate automatic relays for ON-OFF status of lights.

4.5.2.1.20 The lighting system will provide automatic fail-safe during nighttime and automatic reset upon power source failure.

4.5.2.1.21 The lighting system will provide test switch in controller to simulate daytime, nighttime, and auto modes.

4.5.2.1.22 The lighting system will provide separate automatic alarm relays (Form C dry contact) for control unit failure.

4.5.2.1.23 The lighting system will provide individual automatic alarm relays (Form C dry contact) for each light provided (e.g., beacon light, side light, etc.).

4.5.2.1.24 All lighting system alarms will be wired back to the alarm interface panel to interface with the System Management and Monitoring Subsystem.

4.5.2.1.25 All lighting system wiring will be of service cord type design, or contained within rigid galvanized conduit, junction boxes, and lighting equipment housing.

4.5.2.1.26 All levels of lighting will be clearly visible from any direction of approach to the antenna support structure.

4.5.2.1.27 All lighting system controller components will be installed in a standardized manner for all sites.

4.5.2.1.28 All lighting equipment will be installed per manufacturer's direction.

4.5.2.1.29 The lighting system cable will be attached in a way to minimize additional loading of the antenna support structure (e.g., metal conduit).

4.5.2.1.30 One weatherproof, ground fault circuit interrupter (GFCI) protected, 120-volt, 20-amp, NEMA 5-20R receptacle duplex convenience electrical outlet will be installed near each of the FAA obstruction lights. The duplex outlet will be installed on a dedicated, breaker protected circuit. The duplex outlet circuit voltage drop will be limited to 4% maximum at the outlet under a 16-amp load.

4.5.2.1.31 If the antenna support structure requires FAA marking, under no circumstances will any coating on any metal member or fastener be cathodic relative to the base material.

4.5.2.1.32 During construction of an antenna support structure, the required FAA obstruction lighting fixtures will be installed and operational at each required level as each such level is exceeded in height during construction.

4.5.2.1.33 The Contractor will protect all existing buildings, structures, and equipment from falling objects during the assembly, erection and modification of any antenna support structures. The Contractor will be liable for any damage caused to such buildings and equipment.

4.5.2.1.34 At the sole discretion of the Authority, the Contractor will pursue a conditional use permit.

4.5.2.1.35 If the new monopole is constructed at the site of an existing monopole, the Contractor will restore the existing equipment on the newly constructed monopole. During Design Review, a site-by-site analysis will be performed to determine the components to be transferred to the new monopole.

4.5.2.1.36 The final monopole height will be at the discretion of the Authority and will be a function of the optimal RF performance, cost, and what can be successfully zoned and permitted.

4.5.2.1.37 The steel monopole and all its appurtenances and attachments that are fabricated or constructed at the jobsite will be fabricated or constructed by California-licensed contractors.

4.5.2.1.38 The Contractor will be licensed as a California General Engineering Contractor, specifically experienced in the construction of steel communication monopole towers.

4.5.2.1.39 The steel monopole and all its appurtenances and attachments will meet or exceed the performance criteria of this document including, but not limited to, the steel monopole, foundation, antenna mounts, earthwork retaining systems, FAA lighting (if required), lightning protection, and grounding.

4.5.2.1.40 An appropriately sized panel/termination block on H-frame will be provided next to the monopole to be used as a demarcation to interconnect any electrical and communications cables and conduits from the monopole and outdoor PSBN equipment to the utility point of entry or nearest available connection with adequate capacity in the existing building on site.

4.5.2.2 The Base Antenna Loads for the Monopoles

4.5.2.2.1 The monopole will support all appurtenances and attachments (e.g., fall-arrest safety-climb system, step bolts, any stealthing or camouflage, FAA tower lights and controller if applicable, lightning rod, conduits and cables, etc.).

4.5.2.2.2 Monopole will support all antennas (allowing 4x4 MIMO for three sectors) and feedlines (allowing 4x4 MIMO for three sectors) and all other pole mounted PSBN Components.

4.5.2.2.3 Monopole will support T-arms and antenna mounts for the Authority's sector antennas and antenna mounts for any microwave backhaul equipment. For purpose of structural design of the monopole, the T-arms and antenna mounts will be as described in Section 4.5.2.13.

4.5.2.2.4 The monopole and all its appurtenances and attachments will also accommodate two additional commercial cellular carriers with typical carrier configurations including 12 cellular antennas per carrier, antenna support structure mounted electronics, microwave antennas, and the T-arms with standoffs and mounts for these antennas will be as they are commonly used by commercial carriers. The monopole will be equipped with flexible cable ports to support other non-LA-RICS tenants and accommodate those tenants with the appropriate antenna spacing to avoid harmful interference. The monopole will support T-arms with standoffs and antenna mounts using industry accepted practices for those additional carriers provided that these practices exceed the requirements in this Exhibit B (PSBN Specifications).

4.5.2.2.5 The monopole will have a lightning rod mounted at the top of the pole. The maximum length of the lightning rod is provided in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement).

4.5.2.2.6 Ice Loading: For sites at elevations higher than 3000 feet above sea level, a 1 ½ inches clear radial ice will be included in the design load for the monopole. Ice load is not required otherwise for the antenna support structure.

4.5.2.2.7 The antenna support structure (and its appurtenances and attachments) will sustain the basic wind speed (3-second gust), exposure category and topographic category stated in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement). The Topographic and exposure category for each site will be reviewed during Design Review.

4.5.2.2.8 Exposure Category: The antenna support structure Exposure Category is provided in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement).

4.5.2.2.9 Topographic Category: The antenna support structure Topographic Category is provided in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement). The antenna support structure Topographic Category will be determined by the Structural Engineer and/or Land Surveyor of Record based on site-specific data and actual local terrain and topographic feature in conformance with ANSI/TIA-222-G and as approved by the Authority during Design Review for site identified with a category other than one (1) in the PSBN Site List.

4.5.2.2.10 Base Antenna Loads, mounts, monopole appurtenances, and step bolts will meet or exceed the following listed standards:

4.5.2.2.10.1 ANSI/TIA - 222: Structural Standards for Antenna Supporting Structures and Antennas, the latest adopted revision and all addendums.

4.5.2.2.10.2 California Building Standards Code (CBSC)

4.5.2.2.11 Lightning Protection & Grounding: The communications monopole ground, bonding and lightning protection will also conform to the requirements of ANSI/TIA-222-G, Section 10 inclusive, TIA 607-B, NFPA-780 for the Installation of Lightning Protection Systems, or Motorola R56 or Harris (formerly M/A-COM) AE/LZT 123 4618/1 Site Installation, Grounding, Lightning Protection guidelines or equivalent, whichever is more stringent.

4.5.2.2.12 Twist and Sway: The maximum limit of communications monopole twist and sway will not exceed 0.5 degrees at the uppermost antenna attachment point of the monopole section per ANSI/TIA-222-G.

4.5.2.2.13 The twist and sway requirement will be maintained through operational wind speeds to seventy (70) mph (3 second gust).

4.5.2.2.14 The communications monopole twist and sway at all antenna mounting elevations will be determined by analytical methods and will be noted on the formal stress analysis. Where multiple microwave frequencies are co-located on the monopole, the most critical twist, sway and displacement limits will govern compliance with codes and standards. For purpose of the structural design of the monopole, the twist and sway limits of the structure at the elevation of a microwave antenna will be calculated per Annex D of ANSI/TIA-222-G assuming 3dB degradation in radio frequency signal level is allowed.

4.5.2.2.15 Monopole Deflection: The communications monopole deflection limits will be held both vertically and horizontally. Deflection must be determined at each specific point on the monopole where an antenna is attached.

4.5.2.2.16 Seismic Load: Monopole will have a spectral response acceleration coefficient of Ss = 2.0 or greater as required per codes based on site-specific data.

4.5.2.3 Step Bolts

4.5.2.3.1 Contractor will provide ten (10) safety cable slider and climbing harness to the Authority to allow a climber constantly attached to the safety cable while moving or resting on the Step Bolts.

4.5.2.3.2 The Step bolts will conform to CCR Title 8, Industrial Relations, Subchapter 7, General Industry Safety Orders, Group, Article 4, Section 3277.

4.5.2.3.3 Step bolts will meet the requirements of ANSI/TIA-222-G, strength requirements and dimensional requirements.

4.5.2.3.4 The maximum allowable spacing of the horizontal step rungs will be fifteen (15) inches. The Step bolts will support a concentrated load of 300 pounds minimum.

4.5.2.3.5 The monopole will be equipped with a 3/8-inch diameter DBI-SALA galvanized steel safety cable. The cable will be equipped with top, bottom, and intermediate cable brackets in accordance with the manufacturer's recommendations.

4.5.2.3.6 The monopole will be equipped with equipped with step bolts beginning from ten (10) feet above the base plate of the monopole to top of the monopole.

4.5.2.3.7 Extra resting step bolts will be provided for installers below all T-Arms and below the joints of monopole sections.

4.5.2.4 Feedline Cable Supports

4.5.2.4.1 The feedline support system will be internal routing systems.

4.5.2.4.2 Monopole will provide three (3) ports (6"WX18"H) three (3) feet from the top of the antenna support structure elevation (or otherwise approved by Authority during Design Review) and positions the ports at 0º, 120º, and 240º from true north (or as otherwise approved by the Authority). The ports will accommodate 1.¼ inch coaxial cables or larger that enable MIMO 4x4 for all sectors. The monopole will provide additional ports for microwave cables.

4.5.2.4.3 Monopole will provide three additional ports each for two additional cellular carriers at additional industry accepted elevations that consider interference and carrier needs and are developed through the Design Review process with the Authority.

4.5.2.5 Top Flange

4.5.2.5.1 Provide a top flange (2-3/8" OD x 3') be mounted on the top, and at the center of the monopole top cap plate. The top flange will be extended six (6) inches below the bottom of the monopole top cap plate. This is to allow the accessibility between the monopole inner tube and the top flange inner tube.

4.5.2.5.2 The top flange will be covered with a removable threaded cap.

4.5.2.5.3 The top flanges will be designed to support an equivalent load of a 2-3/8" OD x 10' long antenna, and shall allow the attachment of an air terminal/lightning rod.

4.5.2.6 Monopole Grounding

4.5.2.6.1 Three 5/8 inch diameter, copper plated steel, 8 foot minimum length ground rods will be installed within five (5) feet of the monopole. Each ground rod will be exothermically welded to its respective copper main conductor, which will be connected to the monopole.

4.5.2.6.2 The monopole will be connected directly to a 5/8 inch ground rod with a # 2 tinned, solid, bare copper conductor. Attachment will be done by exothermic welding directly to the base plate.

4.5.2.6.3 Grounding rods are to be connected by a peripheral ground ring constructed from # 2/0 soft-drawn, bare, stranded, tinned, copper ground conductor. Grounding rods and ground ring will have as minimum 18 inches of ground cover. Bending radius for any grounding conductor will be no less than 8 inches.

4.5.2.6.4 Contractor will connect the monopole grounding to equipment cabinet and other PSBN components grounding as well as the building / facility's grounding system where commercial power is supplied at the PSBN site location.

4.5.2.7 Design and Calculations

4.5.2.7.1 Contractor will provide a design for each site and provide drawings, bill of materials, specifications, and structural calculations prepared and stamped by a California licensed professional engineer and other specialty (e.g. architect, surveyor, etc.) as applicable.

4.5.2.8 Components

4.5.2.8.1 Structural steel used will be pre-qualified steel in conformance with the requirements of section 5 of ANSI/TIA-222-G. Manufacturer's standard components parts may be used, providing components, accessories, and

complete structure conformance to the performance criteria as specified herein.

4.5.2.8.2 Components will be factory drilled for field assembly, easily erected, capable of being dismantled and re-erected without damage to components.

4.5.2.9 Zinc Coatings

4.5.2.9.1 ASTM A525, G90 coating class.

4.5.2.9.2 Hot-dip galvanized: All steel items inside and out after fabrication per ASTM A123. Fabrication includes shearing, punching, bending, forming, or welding. Fabricate units complete or in largest practical sections before galvanizing.

4.5.2.9.3 Clean welded and damaged galvanized surfaces. Removal weld spatter, burns, char, smoke, flux, oil, grease, and other deleterious matter.

4.5.2.9.4 Repair air exposed galvanized finish work (not to be painted) with hot process field galvanizing (Re-galv, Galvalloy, Galvweldalloy, or equal) per manufacturer's published directions.

4.5.2.10 Shapes, Plates, and Bars

4.5.2.10.1 All structural steels used for the monopole structure will conform to section 5.0 of ANSI/TIA-222-G and to one of the pre-qualified steel material standards listed in Table 5.1 of ANSI/TIA-222-G.

4.5.2.10.2 The use of A36 modified material to obtain the 50 ksi minimum yield strength is prohibited.

4.5.2.10.3 Utilizing mill certifications to obtain minimum yield strengths is prohibited. Yield strengths will be based upon ASTM designated minimums.

4.5.2.10.4 Proper drainage of all moisture and condensation will be provided for all members.

4.5.2.10.5 Minimum thickness of any structural steel member will be 1/8 inch.

4.5.2.11 Structural Bolts and Anchor Bolts

4.5.2.11.1 All structural bolts and anchor bolts used for the antenna support structure will conform to section 5.0 of ANSI/TIA-222-G and to one of the pre-qualified steel material standards listed in Table 5.1 therein. Provide zinc-plated or cadmium-plated bolts throughout except unpainted anchor bolts and high-strength bolts.

4.5.2.11.2 All bolts will be domestic A-325 Type X high strength bolts or equal.

4.5.2.11.3 A449 bolts or A325 type N bolts are acceptable if the designer discounts the capacity of the bolts in accordance with AISC specifications.

4.5.2.11.4 All bolts will be constructed utilizing a Heavy Hex Structural head.

4.5.2.11.5 The use of A-325M bolts is prohibited unless the designer utilizes an A449 capacity.

4.5.2.11.6 All bolts will be hot dipped in accordance with ASTM A153 or mechanically galvanized in accordance with B695 class 50.

4.5.2.11.7 All fasteners will project a minimum of two threads beyond the nut and nut locking devices when the nut is properly tensioned.

4.5.2.11.8 Pre-tensioning will be defined as a snug tight condition unless modified by the engineer of record.

4.5.2.12 Connections

4.5.2.12.1 Shop connections will be bolted and/or welded.

4.5.2.12.2 Field connections will be bolted.

4.5.2.12.3 Drawings will indicate where high tensile bolts are used. Such bolts will bear the identifying head mark. Tighten nuts for high strength bolts to specifications therefore.

4.5.2.12.4 All nuts will have a Class A fit. Use beveled washers under bolt heads and nuts on beveled surfaces.

4.5.2.12.5 No field welding will be permitted unless specifically approved in writing.

4.5.2.12.6 All members will be connected with galvanized structural bolts unless otherwise approved.

4.5.2.12.7 All threaded fasteners will extend not less than 1 ½ threads beyond nuts and locking devices.

4.5.2.13 Antenna and Cable Supports

4.5.2.13.1 Contractor will provide 3 T-Arm, 10 feet cross-arm at one foot below the top elevation of the monopole at 0º, 120º, and 240º from true north (or other Authority approved locations).

4.5.2.13.1.1 Each T-Arm will support four (4) antenna mounts for panel antennas.

4.5.2.13.1.2 Contractor will provide a solution that readily enables six (6) additional T-arms installed with mounting hardware that can allow the T-arm locations to be adjusted to be mounted at a different elevation for potential future use by commercial carriers as determined by the Authority in Design Review.

4.5.2.13.1.3 Provide four underground conduits (of sufficient size to accommodate the baseline need and future expansion) from the monopole inner tube to a stub out location determined during Design Review. The minimum bending radius of all conduits will be twenty-four (24) inches.

4.5.2.13.1.4 All ports, cable raceways, and conduit will support the necessary cables based on industry accepted design practices.

4.5.3 Roof Mount

4.5.3.1 The Contractor will install PSBN Components on the roof for PSBN Sites specified in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), where a roof mount is specified for a particular site.

4.5.3.2 The general antenna support structure performance criteria of section 4.5.1 apply.

4.5.3.3 Contractor will conduct a structural analysis and designs for roof mount sites and will apply the general requirements of Section 4.5.2, Undisguised Monopole, where applicable.

4.5.3.4 The Contractor will install antenna mounts and associated antennas on a penthouse or parapet wall as directed by the Authority and comply with Attachment 2 (Construction Management Requirements) of Exhibit J (Confidential Supplement), where applicable.

4.5.3.5 The Contractor will install a generator backup, consistent with Section 4.3 (Emergency Power Generating Systems) of this Exhibit B (PSBN Specifications) on the ground. The Contractor will install a concrete pad of sufficient size and scope to support the generator.

4.5.3.6 The Contractor will provide associated power cables from the ground based generator to the rooftop power system through the building and in compliance with Authority and building owner requirements and comply with Attachment 2 (Construction Management Requirements) of Exhibit J (Confidential Supplement), where applicable.

4.5.3.7 The Contractor will accommodate all building code and site owner requirements for the equipment installed at the site, including, but not limited to specific requirements for roof and other penetrations.

4.5.3.8 The Contractor will install cable trays, conduit or equivalent mechanisms to protect cables from damage or disturbance resulting from foot traffic or other public access.

4.5.3.9 The Contractor will install the Backhaul Subsystem and eNodeB cabinets on the roof.

4.5.3.10 Contractor will perform a structural engineering analysis for roof cabinet installation to demonstrate the existing roof will adequately support the cabinets with interior PSBN equipment where the cabinets will be placed on the roof.

4.5.3.10.1 Contractor will provide a solution where placement is infeasible during Design Review and implement solution as approved and directed by the Authority. If the proposed solution impacts the scope of work and/or impacts the cost of such work, the Contractor may seek an amendment pursuant to Section 2 (Changes to Agreement) of the Base Document.

4.5.3.10.2 Rooftop cabinet and equipment installation will meet and comply with applicable Construction Management Requirements for the PSBN sites.

4.5.3.10.3 At hospital PSBN sites, system design and installation will also comply with California Office of Statewide Health Planning and Development (OSHPD) requirements.

4.5.4 Collocation

4.5.4.1 The Contractor will mount the appropriate antennas, lines, and other appropriate contractor supplied equipment on an existing Authority (or Authority Member) provided collocation tower for PSBN Sites specified in Attachment 1 (PSBN Site List) of Exhibit J (Confidential Supplement), where a collocation is specified for a particular site.

4.5.4.2 All performance criteria of Section 4.5.1 apply.

4.5.4.3 The Authority provided collocation tower identified in the PSBN Site List will not be required to be structurally enhanced to support the load of the tower mounted equipment, unless determined otherwise during Design Review and the Contractor will perform any required structural modifications.

4.5.4.4 The Contractor will install any necessary support arms required to achieve horizontal separation between antennas or to achieve sufficient spatial separation from the tower legs.

4.5.4.5 The Contractor will install an ice bridge between the tower and the site PSBN electronics.

4.5.4.6 The Contractor will provide and install associated cable hangers and all related transmission cable hardware.

4.5.4.7 With the exception of performance criteria that specifically call for the construction of a monopole, the existing tower implementation will be consistent with Section 4.5.2. The Contractor will demonstrate during Design Review how the site meets these performance criteria.

4.5.4.8 In the instances where an existing tower is used, the Authority will provide an existing shelter for the equipment with adequate generator backup power for the Contractor's PSBN Components for that site. The Contractor will not be required to provide these PSBN Components at these sites.

4.5.4.9 The Contractor will install its equipment at the Authority provided PSBN Site in cabinets consistent with Section 4.1 (Equipment Cabinets/Enclosures and HVAC).

4.5.4.10 During design review, the Contractor will evaluate all Authority provided equipment and infrastructure and determine if it meets the required performance criteria of this Exhibit B (PSBN Specifications).

4.6 Site Preparation and Construction

4.6.1 Contractor will perform site preparation that will include all clearing, grading, trenching, boring, excavation and construction required for the antenna support structure (if applicable), equipment cabinet/enclosure, access road modification and/or repair (if necessary), security fencing (if necessary), and utility service. All civil work will follow and comply with Attachment 2 (Construction Management Requirements) of Exhibit J (Confidential Supplement).

4.6.2 The Contractor will not provide perimeter security fencing unless, during Design Review and following Contractor's inspection of all existing fencing systems at each PSBN Site, it is determined that any portion of an existing fencing system at any PSBN Site is unacceptable. The Contractor will include repair or replacement, as applicable, of the affected portions of the existing fencing system in its System Design and all impacted Site Design Documents as required to enclose the

applicable antenna support structure, equipment cabinet, generator, fuel tank and any other associated equipment according to the total linear length of the fence. The cost per foot for the repaired or replaced perimeter security fence will require a change to the Agreement in accordance with Section 2 (Changes to Agreement) of the Base Document, which change will be priced no greater than the cost per foot that the Contractor identified in its response to Section 17 of Contractor's Response to Appendix I (Pricing Requirements – Unscored Options) contained in Exhibit C (Schedule of Payments). The repaired or replaced perimeter fence provided by Contractor shall meet the requirements of Section 17 of Contractor's Response to Appendix I (Pricing Requirements – Unscored Options) contained in Exhibit C (Schedule of Payments).

4.6.3 The sites must be left in a satisfactory usable condition when site work is completed as determined by the Authority individual members.

4.6.4 Clearing will consist of removal of all trees, tree stumps, bushes, shrub stumps, weeds and roots. Power poles will be cleared to a minimum width of ten (10) feet or local code whichever is greater.

4.6.5 The Contractor will export unsuitable materials from the site and properly dispose of in a licensed landfill or a permitted site approved by the Authority.

4.6.6 All structures being provided as part of the PSBN will be designed and constructed as essential structures, in accordance with all applicable building codes. Contractor is responsible for obtaining all current copies of the relevant building codes.

4.6.7 The Contractor will install concrete pads and the top of foundation pad shall be a minimum of twelve (12) inches above the one hundred (100) year flood plain, be in no case less than six inches above finished grade, and will meet applicable flood hazard ordinances. For project sites in coastal region (i.e., within five (5) miles of tidal line), the top of foundation pad must be twenty-four (24) inches minimum above high tides or comply with applicable codes and ordinances, whichever more stringent.

4.6.8 Adequate erosion controls, drainage, and drainage structures will be provided to prevent water from accumulating in such a manner as to prohibit or restrict access to the PSBN Site or to cause damage to installed equipment both during and after site construction.

4.6.9 All graded slopes will have a surface gradient of not less than a two (2) horizontal to one (1) vertical ratio unless required otherwise by local jurisdiction codes or per the Geotechnical Investigation Report recommendations.

4.6.10 Topsoil is to be stockpiled and redistributed to disturbed areas not receiving aggregate surfacing unless required otherwise by local jurisdiction codes.

4.6.11 All slopes and disturbed areas not receiving aggregate surfacing are to be prepared and seeded for erosion protection as approved by the Authority.

4.6.12 If utilities are to remain in place, the Contractor will provide adequate means of protection for those utilities during earthwork operation.

4.6.13 No buildings or other structures will be located within the defined utility service or other right of ways.

4.6.14 Where necessary, the Contractor will furnish and apply aggregate surface course over the access road, fence area including one (1) foot outside the fence perimeter, guy anchor fencing, vehicular turn around, and parking area. Crushed stone (#3 gravel with a minimum depth of four (4) inches) will consist of clean, round, tough, durable particles.

4.6.15 The Contractor will furnish and apply Amoco (or approved equal) woven fabric underlayment under all aggregate surfacing. The Contractor will submit the specifications for the underlayment during Design Review.

4.6.16 Finish grading will be performed after the work in the area is complete and just prior to placing gravel surfacing. Fill, if necessary, will be brought to finished grades indicated and will be graded to drain water away from structures. A minimum slope of 2% will be provided for positive drainage away from proposed structures. Grading will provide an even, smooth surface free from cellulose materials, large rocks, and other deleterious materials.

4.6.17 All sub-surface or below grade materials installed per design specification, particularly metallic pipes, rods and tubing, will be suitable for the soil condition findings in the geotechnical investigation report and will be protected against corrosion with means and methods as recommended in the Report.

4.6.18 The Contractor will provide suitable materials for fill and backfill as defined in Uniform Soil Classification System: as GW, GP, SW, SP, or SM, and which is free from cellulose materials and debris.

4.6.19 Excavation will be carried to depths and contours indicated or necessary.

4.6.20 Excavations will be kept free from water while work therein is in progress.

4.6.21 Excavated materials of suitable quality as defined hereinbefore may be used for fill or backfill.

4.6.22 Unsuitable and surplus excavated material will be removed from the Authority's property and legally disposed of by the Contractor.

4.6.23 Fill and backfill will be placed in layers not exceeding six (6) inches in depth and each layer compacted to at least 95% of the maximum dry density in accordance with ASTM D 1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort, ASTM International, West Conshohocken, PA, http://www.astm.org/.

4.6.24 All antenna support structure foundation designs will have a minimum safety factor of 2.0 and will be designed per the applicable geotechnical investigation report. The Contractor will submit the report to the Authority during Design Review and the appropriate jurisdiction(s).

4.6.25 The geometric center of the antenna support structure will be the coordinate point for the site for purpose of PSBN frequency coordination, licensing, and other coordinates-based filing, unless directed otherwise by the Authority during Design Review.

4.6.26 Care will be exercised to keep inserts in position until concrete has set.

4.6.27 Foundation construction will include all related and incidental operations required to complete the excavating, filling and backfilling related to the construction of the foundations as specified herein.

4.6.28 The Contractor's Engineer of Record will provide a mix design for all concrete poured on-site.

4.6.29 The Contractor's Engineer of Record will provide reinforcing steel designs for all concrete structures.

4.6.30 All reinforcing steel will be new deformed bars, conforming to ASTM A-615, Grade 60.

4.6.31 All foundation and soil work will conform to the recommendations of the geotechnical investigation report.

4.6.32 Concrete will be consolidated with the use of vibrators.

4.6.32.1 If honeycombs are present after forms are removed the structure will be rejected.

4.6.32.2 There will be a spare vibratory device on site during concrete placement.

4.6.32.3 Concrete will be provided from a certified and licensed batch plant.

4.6.33 Concrete delivery tickets will specify the truck's time of departure from the batch plant and the drum rotation counter number, and copies will be provided to the Authority Project Manager.

4.6.34 Concrete will be mixed and placed only when the temperature is at least forty (40) degrees F. and rising. When temperature is ninety (90) degrees F. or above, or is likely to rise above ninety (90) degrees F. within the twenty-four (24) hour period after concrete placement, follow recommendations of ACI 305. Alternatively, when the temperature of the surrounding air is below forty degrees (40) F., concrete will have a temperature between sixty (60) degrees F. and ninety (90) degrees F. When placing concrete, the Contractor will follow recommendations of ACI 306 or the latest version.

4.6.35 Concrete for drilled foundations will be placed with a tremie having a diameter of at least eight times the maximum size of the aggregate. Concrete will be placed with the aid of mechanical vibration equipment applied directly to the concrete for the top 10 feet. The intensity of vibration will be sufficient to cause flow or settlement of concrete in place without causing segregation of the mix.

4.6.36 Concrete will be placed continuously to avoid cold joints. Cold joints are not permitted and will result in rejection of the structure.

4.6.37 The Contractor will engage a certified testing lab (Lab) to be on-site during delivery and placement of concrete. The Lab will be the sole judge of the acceptability of the concrete arriving at the site.

4.6.37.1 The Lab will provide concrete testing during placement and will inspect and certify reinforcing steel and form work prior to placement.

4.6.37.2 Concrete tests will include time of placement, temperature, drum rotation, slump, and air entrainment.

4.6.37.3 Time of placement will be no greater than ninety minutes from departure from the batch plant.

4.6.37.4 Drum rotations will be three hundred or less.

4.6.37.5 Temperature will be eighty degrees or less.

4.6.37.6 Slump will be no greater than specified by the Engineer of Record.

4.6.37.7 Air entrainment will be no greater than specified by the Engineer of Record.

4.6.38 The Lab will take four cylinder samples for compressive testing. The cylinders will be tested, one at seven days and two at twenty-eight days. If the concrete samples fail the compressive test, the structure will be rejected and the concrete will be removed and replaced at no cost to the Authority.

4.6.39 Slabs must be poured level with no cross fall slope provided.

4.6.40 One (1) inch chamfer will be provided on edges of exposed footing.

4.6.41 The Contractor will comply with all Federal, State and local trenching requirements including OSHA standards for trenching and excavation.

4.6.42 Contractor shall locate known existing installations before proceeding with trenching or other operations that may cause damage, shall maintain them in service where appropriate, and shall repair any damage to them caused by the Work, requiring no increase to the Contract Sum. If unknown utilities are encountered by Contractor, Contractor shall immediately report their existence to

the Authority. In addition to such reporting, if any utility is damaged, Contractor shall take appropriate action as provided in Section 7.3.3 (Emergencies) of the Base Document. In the event that Contractor must take reasonable action to protect or repair unknown utilities encountered during performance of the Work, then Contractor may submit a request for an Amendment in accordance with Section 2 (Changes to Agreement) of the Base Document.

4.6.43 The Contractor will cause minimal disturbance to the surroundings.

4.6.44 The Contractor will be responsible for contacting the necessary company for locating all underground utilities. Damage to the existing utilities during excavation will be repaired immediately by the Contractor at the Contractor's expense. All utilities aboveground or underground that needs re-routing will be done so at Contractor's expense. The Contractor will include this information on all appropriate documentation provided to the Authority.

4.6.45 Following the completion of burying all underground facilities associated with the trench, the Contractor will restore the surface to its original condition.

5. System Management and Monitoring Subsystem

5.1 General Performance Criteria

5.1.1 Contractor will provide a System Management and Monitoring Subsystem able to manage and monitor all of the PSBN performance criteria in this Exhibit B (PSBN Specifications). Additionally, the System Management and Monitoring Subsystem will have the capability of being securely partitioned to allow participating LA-RICS entities to manage their respective User Equipment, access detailed PSBN usage statistics, and continuously monitor overall network integrity (health), as well as remote site environmental and power conditions, if desired.

5.1.2 The System Management and Monitoring Subsystem will have both local and remote operational status monitoring and local and remote management capabilities.

5.1.3 The System Management and Monitoring Subsystem will include features to immediately notify PSBN Administrators and maintenance personnel when a condition that affects them occurs.

5.1.4 The System Management and Monitoring Subsystem controller will be fully redundant.

5.1.5 The Contractor will provide System Management and Monitoring Subsystem servers that have dedicated screens, keyboards, PC mouse, and local printers.

5.1.6 System Management and Monitoring Subsystem functions will be protected by tiered levels of security, including passwords for access to System Management and Monitoring Subsystem functions.

5.1.7 All actions taken on the PSBN will be logged and retrievable by the System Management and Monitoring Subsystem.

5.1.8 The System Management and Monitoring Subsystem functions will be accessible via a browser based interface from any point in the LA-RICS local or any remote location.

5.1.9 The PSBN will prevent User logged content from being delivered to a PSEN that does not have one of its users participating in the call or session via authorized administrative users. The intent is to prevent agency 1 (PSE-1) from receiving logged content for users belonging to agency 2 (PSE-2).

5.1.10 The System Management and Monitoring Subsystem will include reporting on an ad hoc or automatically scheduled basis for alarms, performance, and administrative actions (e.g., query by any alarm criteria, data time range).

5.1.11 The System Management and Monitoring Subsystem will be sized to accommodate existing and all PSBN Components at each site.

5.1.12 The Contractor will thoroughly assess the presence and functionality of existing site environmental/security alarm systems necessary to alarm Contractor provided equipment. Where such environmental, security or system functional alarming is 1) not present, 2) inadequate or 3) connection to an alarm system for reporting said alarms to the appropriate monitoring point is absent or inadequate, the Contractor will provide the site alarm system for Contractor-provided equipment at the site.

5.1.13 The PSBN will provide alarm monitoring for all PSBN Components for all sites.

5.1.14 The System Management and Monitoring Subsystem will be accessible by only authorized Users and will be administered by Authority personnel and will integrate the System Management and Monitoring System with a Microsoft Active Directory® server.

5.1.15 The alarm monitoring system will be capable of paging, emailing, and text messaging Authority-defined messages to service personnel.

5.1.16 The alarm notification and how each is handled will be configurable by the Authority, e.g., high/low priority, email, page, etc.

5.1.17 Control of PSBN parameters will be accomplished through a System Manager's terminal by properly authorized personnel. Parameters will include, at a minimum, all configurable elements described within this document and others required to successfully maintain and operate the PSBN.

5.1.18 At a minimum, the proposed System Management and Monitoring System will monitor and report the following:

5.1.18.1 Smoke and/or fire alarms;

5.1.18.2 Indoor temperature and alarms;

5.1.18.3 Outdoor temperature;

5.1.18.4 Climate control alarms;

5.1.18.5 Cabinet intrusion;

5.1.18.6 Exterior motion detector alarms;

5.1.18.7 Tower lighting;

5.1.18.8 Interconnect equipment;

5.1.18.9 Low/Low battery voltage for each battery;

5.1.18.10 UPS automatic bypass operation;

5.1.18.11 Rectifier/inverter failure;

5.1.18.12 UPS common trip alarm (form C);

5.1.18.13 High/low battery temperature for each battery;

5.1.18.14 Low/high -48 VDC;

5.1.18.15 All rectifier alarms;

5.1.18.16 Low/high temperature of the -48 VDC system;

5.1.18.17 Generator fuel level;

5.1.18.18 Generator low fuel alarms;

5.1.18.19 Generator fuel overfill alarms;

5.1.18.20 Generator battery alarms;

5.1.18.21 Generator online alarms;

5.1.18.22 Generator high temperature alarms;

5.1.18.23 Generator over crank alarms;

5.1.18.24 Generator over speed alarms;

5.1.18.25 Generator low oil alarms;

5.1.18.26 Generator transfer switch status;

5.1.18.27 AC surge suppression alarm indication;

5.1.18.28 Master time source loss of sync;

5.1.18.29 Voltage Standing Wave Ration (VSWR) on output of the combining system;

5.1.18.30 **Amended and restated under Amendment No. 25** – Power amplifier failure;

5.1.18.31 High reflected power;

5.1.18.32 Interference monitoring;

5.1.18.33 Loss of connectivity on any microwave or backhaul link;

5.1.18.34 Loss of connectivity to the Internet;

5.1.18.35 Power amplifier failure and high/low voltage; and

5.1.18.36 Alarms from site frequency and time standards (e.g., GPS, etc.).

5.1.19 The subsystem will detect, monitor and report liquid/fuel in the annular space of the double-wall generator fuel tank.

5.1.20 Diagnostic functions will allow maintenance personnel to view current status and status history of the system.

5.1.21 The PSBN will perform remote diagnostic tests on system devices (e.g., microwave radios, power amplifiers, modems, switches, etc.) to verify component and path integrity.

5.1.22 The PSBN will be able to remotely restart any Component and modify each Component's firmware/software (e.g., roll back or upgrade).

5.1.23 A diagnostic and alarm history will include, but not be limited to, alarm history (daily, weekly, monthly), alarm acknowledgement history, including ID of user that acknowledged the alarm.

5.1.24 The diagnostic and alarm history will include, but not be limited to, alarm history (by Component).

5.1.25 The diagnostic and alarm history will include, but not be limited to, technician's notes.

5.1.26 The alarm and performance reporting of the PSBN will be displayed using a hierarchical and geographic representation of the PSBN and its subsystems using graphical icons.

5.1.27 **Amendment and restated under Amendment No. 25** – Selecting an EPC or eNodeB icon will reveal the next level of system detail.

5.1.28 Alarms will appear as flashing icons, representing the component and sub-systems affected. Flashing icons will alternate between the priority color and their normal appearance.

5.1.29 The alarm system will support administratively configurable audible alarms by priority.

5.1.30 The System will allow an administrator to configure alarm priority levels. The Contractor will state the available alarm priority levels and how they may be changed.

5.1.31 **Amended and restated under Amendment No. 25** – The System will have pre-defined colors associated with each alarm priority.

5.1.32 The System will allow a system administrator to define/redefine any alarm.

5.1.33 **Amended and restated under Amendment No. 25** – Provide event correlation capability to define and report alarms triggered by related events (e.g., a correlation event can be defined to report the case of an eNodeB connectivity failure and microwave radio failure supporting the eNodeB).

5.2 PSBN Performance Criteria

5.2.1 All PSBN system configuration management, alarm management, change management, performance management, and other system functions will be integrated into the System Management and Monitoring Subsystem in order to provide a single User interface for the Authority.

5.2.2 The PSBN will provide real-time and near real-time network OSS/NMS-based visibility to network and service quality status.

5.2.3 The PSBN will be capable of supporting services that may require elements of IP Multimedia Subsystem (IMS) environments for the control and management of services.

5.2.4 The PSBN will provide LA-RICS Member agencies the capability to efficiently provision, delete, and modify Users and User groups. The PSBN will allow partitioning by Member agency Users.

5.2.5 The PSBN will provide LA-RICS Member agencies with the ability to establish UE and application priorities.

5.2.6 The PSBN will provide LA-RICS Member agencies detailed PSBN usage statistics, and the ability to continuously monitor overall network and localized network integrity (health), as well as eNodeB environmental and power conditions by affected Member (that portion of the PSBN that affects the Member's service).

5.2.7 The PSBN System Management and Monitoring Subsystem will provide partitioning the PSBN by affected Member (e.g., providing alarms and performance management capabilities for the core, sectors, and backhaul serving one city within

Los Angeles County). The Contractor will provide the proposed configuration of partitioning during Design Review.

5.2.8 The PSBN will provide over-the-air management for end-user devices (individually or in groups of devices) to provision, modify and disable devices. Such over-the-air management will be based on Open Mobile Alliance Device Management version 1.2.1 standards.

5.2.9 The PSBN will provide automatic notifications of malfunctions or failures that impact end Users' services and applications.

5.2.10 The PSBN will provide automated notification to LA-RICS Members of system downtime (or any work that may affect service or system performance) due to planned maintenance, configuration changes, or PSBN Updates.

5.2.11 **Amended and restated under Amendment No. 25** – The System Management and Monitoring Subsystem's alarms and network status information will be presented at each NOC workstation.

5.2.12 The System Management and Monitoring Subsystem will support additional Simple Network Management Protocol (SNMP) Version 1, Version 2 and Version 3 managed devices, agents and network management systems. Traps and Management Information Bases (MIBs) outside of Contractor supplied Components and such costs are included in Section 3 (Detailed Breakdown of Pricing for Delivery of the Base PSBN) of Contractor's Response to Appendix H (Pricing Requirements – Scored) contained in Exhibit C (Schedule of Payments). Contractor will provide SNMP traps and MIBs for all PSBN Components to be served as managed devices/agents by a third party management system.

5.2.13 The System Management and Monitoring Subsystem will support double the total amount of data and interfaces above the initial PSBN deployment.

5.2.14 All PSBN Components will be monitored using the System Management and Monitoring Subsystem.

5.2.15 The System Management and Monitoring Subsystem will deliver a detailed history of PSBN activities including call detail records for a minimum of twenty-four (24) months.

5.2.16 The database of the System Management and Monitoring Subsystem will use Open Database Connectivity (ODBC) standards or the equivalent, and will be fully accessible by third party reporting and management systems (e.g., Crystal Reports).

5.2.17 **Amended and restated under Amendment No. 25** – The System Management and Monitoring Subsystem's Genesis database will retain aggregated data at the daily, weekly, monthly, and annual levels for a longer period of time to be determined during Design Review. Administrative activities (e.g., system parameter changes), and raw data storage, if required, will be provided by the Authority.

5.2.18 The System Management and Monitoring Subsystem will be licensed to accommodate fifty (50) Authority users plus in addition to Users required by the Contractor to accommodate its role in network operations.

5.2.19 The System Management and Monitoring Subsystem will provide historical information for all post launch KPI and SLA parameters. KPIs and SLA parameters available in real-time will be defined during design review. Aggregation (e.g., at system-wide levels) will be developed during design review.

5.2.20 The System Management and Monitoring Subsystem will provide real-time and historical information on interference levels per sector.

5.3 Network Operations Center

5.3.1 **Revised and restated under Amendment No. 25** – The Contractor will establish a local Network Operations Center (NOC) at an Authority provided location with adequate working space, power, and furniture. Establishing the NOC will consist of providing and configuring workstations to allow the Authority to monitor and perform maintenance on the PSBN.

5.3.2 The local NOC will support all System Management and Monitoring Subsystem functions.

5.3.3 The location of the NOC will be at a location designated by the Authority.

5.3.4 The NOC will have the capability to remotely troubleshoot and reset system failures with the PSBN.

5.3.5 The NOC will include six User workstations each complete with dual twenty-three (23) inch or larger screens, computer, keyboard, mouse, and speakers.

6. Inventory Management Subsystem

6.1 General Performance Criteria

6.1.1 The PSBN will include an Inventory Management Subsystem that tracks all Components in the PSBN.

6.1.2 The Contractor will utilize and update the Inventory Management Subsystem from the initial Component delivery to the end of term of the Agreement.

6.1.3 The Contractor will enter every piece of equipment delivered to the Authority into this database program.

6.1.4 The database will be capable of tracking equipment based on an individual LA-RICS Member agency.

6.1.5 The Contractor will utilize this same database program to perform asset management, inventory tracking, work order management, repair parts management, and report generation, parts inventory management, software/hardware version management and service history management.

6.1.6 The Contractor will recommend and provide the method of tracking, e.g., Radio Frequency Identification (RFID) technology, barcode, etc. that would be suitable for LA-RICS.

6.1.7 Contractor will affix paper inventory labels to applicable Contractor provided equipment upon receipt in the project warehouse.

6.1.8 The database will be a web based application to allow users with proper authorization to access the database. The Contractor will provide 1000 levels of access.

6.1.9 The database access will be partitioned, at a minimum by agency and jurisdiction(s).

6.1.10 The Contractor will provide 200 Users that can simultaneously access the application without negatively impacting performance/response time.

6.1.11 At a minimum, the database will support most current version of Microsoft Internet Explorer, Google Chrome, and Firefox, at the time of implementation.

6.1.12 The Contractor will allow Authority personnel to access the database via Virtual Private Network (VPN) or other means of secure access public Internet network acceptable by the Authority.

6.1.13 The Contractor will allow Authority personnel to access the database via LA-RICS backhaul network.

6.1.14 Access to the database will be timed out after a predetermined amount of time, based on user inactivity detected by the database application.

6.1.15 The database system will provide User access logs for audit trail.

6.1.16 The Contractor is to provide and setup database server at an LA-RICS location to be determined at the time of handoff.

6.1.17 The recommended replacement rate based upon the installation environment must be provided in years for all products provided.

6.1.18 The Inventory Management Subsystem will provide a mechanism for reporting and tracking component problems encountered in the field. Users will be provided a means for entering component problems into the Inventory Management Subsystem.

6.1.19 The Inventory Management Subsystem will include an enterprise authentication system that will integrate with other platforms, such as Microsoft Active Directory®, Radius, etc.

6.1.20 LA-RICS access to this Inventory Management Subsystem will start when the Authority accepts the first hardware delivery.

6.1.21 The Inventory Management Subsystem will be configured for automatic backup on a daily basis. Contractor will provide a recommendation for the backup medium as part of this Agreement.

6.2 Inventory and Maintenance Database Performance Criteria

6.2.1 The Inventory and Maintenance Database will include, but not be limited to the following:

6.2.1.1 Real-time access.

6.2.1.2 Asset number, serial number, firmware, software version, and make/ model tracking.

6.2.1.3 Complete asset history of components tracked.

6.2.1.4 Asset search by vehicle, building, location, employee, agency ID and incident number.

6.2.1.5 Work Order Entry and Invoicing.

6.2.1.6 Technician work order tracking.

6.2.1.7 Project tracking, i.e., tracking multiple work orders related to one project.

6.2.1.8 Available to run on industry standard PDA devices, such as Smartphones and tablets.

6.2.1.9 Automatic Accounting and Billing by department/agency, and Employee.

6.2.1.10 Web Applications.

6.2.1.11 Point-of-sale and batch invoicing.

6.2.1.12 Work in-progress reports with date/time stamps.

6.2.1.13 Technician and administrative notes with date/time stamps.

6.2.1.14 Multiple service locations and contacts for a single customer.

6.2.1.15 Routing Information.

6.2.1.16 Allow transfer of work orders from one internal repair shop to another.

6.2.1.17 Allow customer to enter initial trouble report from customer terminal.

6.2.1.18 Maintenance terms.

6.2.1.19 Audit trails.

6.2.1.20 Serialized number tracking and component history.

6.2.1.21 Alternate ID number tracking (Asset, Vehicle ID, Electronic Serial Number).

6.2.1.22 Equipment frequencies, PL/ID codes, Radio IDs, Alias IDs, GStar, MDC signaling.

6.2.1.23 Warranty tracking and reporting.

6.2.1.24 Cost detail and summary.

6.2.1.25 Sale and installation dates.

6.2.1.26 Work order, service, ownership, and transfer history.

6.2.1.27 Work order scheduling via daily status reports.

6.2.1.28 Service reporting which includes service orders, technicians, billing, service and status codes, warranty and maintenance file listings, and history reporting.

6.2.1.29 Fully customizable work orders, packing lists and invoice forms.

6.2.1.30 Time and material, maintenance and recall reports.

6.2.1.31 Multiple work codes.

6.2.1.32 Complete historical recall.

6.2.1.33 Breakdown of hours worked and billed, total tickets worked by period and year-to-date, total hours billed by period and year-to-date.

6.2.1.34 Cost and income reports for parts, labor, travel, and installation.

6.2.1.35 Interface to a scheduling program as determined by the Authority during Design Review.

6.2.1.36 View account balances and open items.

6.2.1.37 View open sales and work orders and their real time status.

6.2.1.38 Re-print open invoices to Adobe, Personal Document Format (PDF).

6.2.1.39 View payment history.

6.2.1.40 View historical sales and service orders.

6.2.1.41 Customer views for their equipment and component information (warranty, etc.).

6.2.1.42 Automatic pricing or manual override.

6.2.1.43 Inventory transfer program.

6.2.1.44 Work order request and work order entry.

6.2.1.45 Signatures labeled for "Drop Off" or "Pick Up".

6.2.1.46 Signature verification on screen, via signature capture pad, and saved when completed.

6.2.1.47 Efficient and accurate way of filing signatures for historical retrieval.

6.2.2 This module will provide basic inventory capabilities that serve LA-RICS Member agencies needs for the accounting of equipment and supplies installed, in inventory, or assigned to personnel.

6.2.3 The Inventory and Maintenance Database will support Authority defined categories of equipment and supplies to be tracked and consistent with BTOP requirements. The Authority defined categories will be defined during Design Review.

6.2.4 At a minimum, data entry fields will be provided for Personnel Identifier, Type of Equipment, Make, Model, Year purchased, Year for replacement, Vendor information.

6.2.5 Fixed assets such as office furniture, equipment, and other items of capital equipment will be recorded and tracked within this Inventory and Maintenance Database.

6.2.6 Inventory of equipment assigned to Departmental vehicles will be recorded within this Inventory and Maintenance Database.

6.2.7 This Inventory and Maintenance Database will be used to assist the various agencies within LA-RICS in managing the inspection and maintenance of components other than vehicles.

6.2.8 The Inventory and Maintenance Database will track downtime and maintenance costs.

6.2.9 The outputs will include a report, which may be selected by any database field (e.g., equipment ID numbers, type of equipment, type of activity, date range, etc.).

6.2.10 This module will track maintenance activities and schedules, operation and maintenance costs, and work order completion/scheduling.

6.2.11 This module will provide reporting that would allow the completion of comparative analyses on a variety of cost items (e.g., compare the relative costs (over time) of two different vehicles of the same type).

6.2.12 The Contractor will provide all software, hardware and procedures for the restoration of the Inventory and Maintenance Database to full operation after a failure in both paper and softcopy formats.

7. PSBN User Equipment

7.1 General User Equipment Criteria

7.1.1 The PSBN will be compatible with any Category 3 or higher User Equipment (UE) meeting 3GPP specifications as defined in Section 4.2 of 3GPP TS 36.306.

7.1.2 All User Equipment (UEs) deployed on the PSBN will conform to the 3GPP Release 9 Uu interface enumerated in "Recommendations of the Technical Advisory Board for First Responder Interoperability" (PS Docket No 12-74) Table 1: Minimum Interoperable Interfaces.

7.1.3 All User Equipment (UEs) deployed on the PSBN will conform to the 3GPP Release 9 Uu interface and to the 3GPP TS 36.306 UE Radio Access Capabilities, Release 9.

7.1.4 All UEs deployed on the PSBN that support roaming onto commercial LTE networks will operate on any FirstNet LTE roaming partner network using bands supported by the device.

7.1.5 All UEs will support interworking of the device with the Universal Subscriber Identity Module (USIM) / USIM Application Toolkit (USAT) applications on the UICC in accordance with the relevant 3GPP 31.101, 31.102, and 31.111 standards. The Contractor will program the UE SIM with the correct IMSI and other information required to enable the UE to operate on the PSBN.

7.1.6 All UEs deployed on the NPSBN that support roaming onto commercial LTE networks will operate on any FirstNet roaming partner network using bands supported by the device.

7.1.7 The Contractor provided UEs, with the exception of the USB modem, will support dual IPv4/IPv6 stacks.

7.1.8 Prior to interoperability and System-Level testing, UEs will have already met 3GPP conformance and certification requirements per an independent conformance testing organization (e.g., the PCS Type Certification Review Board (PTCRB)).

7.1.9 Prior to operational deployment on the PSBN, UEs will have passed FirstNet required Interoperability Testing (e.g., using a subset of applicable test cases from the Cellular Telephone Industry Association (CTIA) Interoperability Testing (IOT) and Universal Integrated Circuit Card (UICC) functional test cases, vendor IOT or similar commercial LTE industry practice) if such test plans are available at Phase 1 NTP.

7.1.10 Prior to operational deployment on the PSBN, UEs will have passed FirstNet-required UICC functional testing if such test plans are available at Phase 1 NTP.

7.2 Vehicular Routers

7.2.1 The Contractor will provide 1,000 vehicular routers User Equipment with the following requirements:

7.2.2 The Contractor will provide a multi-radio mobile router that meets minimum UE Performance Criteria required to satisfy all coverage and KPI requirements in this Exhibit B (PSBN Specifications).

7.2.3 The User Equipment will be capable of IPv6 and backward compatible with IPv4.

7.2.4 The router will be over the air upgradable/configurable and provide web based configuration, status and troubleshooting access.

7.2.5 The router will be fully compliant with Release 9 of the 3GPP specifications and backward compatible with Release 8. The Contractor will indicate any Release 8 or 9 specifications that are not supported by the proposed hardware.

7.2.6 The vehicular router will include slots for at least two modems, one that provides LTE connectivity to the PSBN and is provided by the Contractor, and another modem that provides connectivity to one of the 3G or LTE commercial carriers, provided by the Authority. The slots will use standard, field serviceable slots (e.g., PC Express) installed by trained personnel. The router will allow secure and seamless switching between the two modems to select the best available network. The router will have configuration settings to determine the point at which a switch occurs.

7.2.7 The router will include a GPS receiver and the capability to autonomously report location to a centralized server or be polled by a centralized server and using

standards based location reports or methods compatible with Member agency Computer Aided Dispatch systems.

7.2.8 The router will support Downlink MIMO 2x2 configuration.

7.2.9 The router will transmit 200 mW maximum output power per 3GPP TS 36.101 power class 3 in the public safety band and will support at least 16QAM modulation scheme in the uplink.

7.2.10 The router will have an RJ-45 Ethernet interface and support connectivity to client computers.

7.2.11 The router shall serve as an 802.11 b/g/n access point with WPA2 security capabilities. Wi-Fi will have a web based configuration interface and will enable modification of all settings (SSID, security and encryption parameters, etc.).

7.2.12 The router will be ruggedized. The Contractor will provide test data attesting the device meets MIL SPEC 810G specifications.

7.2.13 The router will run on standard vehicle 12VDC power and will automatically power-up on ignition and will be configurable for automatic shutdown when ignition is turned off.

7.2.14 The router dimension will not exceed 10 (L) x 8.0 (W) x 2 (H) in and it will not weigh more than 6 pounds.

7.2.15 The router shall have a standard RF connector port to allow a detachable antenna or RF cable for roof-mounted vehicular installations.

7.2.16 The router will provide link/connectivity status indicators.

7.2.17 The router will include a roof penetrating antenna capable of supporting all bands supported by the UE, RF cable (for connection to the UE), integrated GPS antenna and power cable. These elements must be included in the single unit pricing for each rugged router.

7.2.18 The router will also include the following interfaces:

7.2.18.1 RJ45 Ethernet port

7.2.18.2 USB 2.0 of higher

7.2.18.3 Antenna Connectors for RF cable and GPS antenna

7.2.19 The router will be configured by a USB or RJ45 cable connected computer via a web based interface.

7.2.20 The router will support common Connection Manager (CM) framework that use the following open standards:

7.2.21 Mobile Broadband Interface Model (MBIM);

7.2.22 Secure On Device API (SODA);

7.2.23 OMA Open Connection Manager API (Open CMAPI); and

7.2.24 Pricing for the router will be inclusive of packaging, shipping and handling.

7.3 UICC (Standalone)

7.3.1 Contractor will provide, at additional cost and upon request, standalone UICCs for use with third party User Equipment on the PSBN.

7.3.2 The Contractor shall offer a 2FF plug-in form factor and a 3FF plug-in form factor for UICCs in support of the PSBN. If available, the Authority prefers that the electronics on the 2FF card type be compatible with 3FF. Resizing either card will void any Contractor support.

7.3.3 The Contractor shall offer a variety of quantity pricing for UICCs with a minimum order quantity of 1000 units. Contactor will evaluate on a case-by-case basis smaller quantity orders based upon inventory and material availability. Contractor will provide any additional pricing to fulfill smaller quantities at time of order.

7.3.4 The Contractor shall ensure that the PSBN profile information is included on the UICC and shall supply the UICC information file that supports a subscriber provisioning file format which is compatible with the PSBN subscriber provisioning system.

7.3.5 The Parties agree that Contractor is not responsible for the successful operation of the third party devices on the PSBN or any harm it may cause to the PSBN. Contractor recommends that before a third party device is provisioned on the system, the Authority require the device to have successfully passed device interoperability testing at a lab that tests the device on a system that essentially duplicates the PSBN. The test should be designed to confirm base level compatibility of the device for providing LTE service only on the PSBN. At the Authority's discretion, additional test cases may be required to confirm other feature compatibilities. Contractor has a test lab capable of performing the above-described test and pricing for the basic device Interoperability testing is included in Exhibit C.11.

7.3.6. The Parties agree to have the Contractor include the bulk uploading for purchased UICC into the subscriber provisioning manager in the unassigned state as part of their warranty or maintenance services.

8. Additive Alternates

8.1 Home Subscriber Server (HSS)

8.1.1 In addition to the Evolved Packet Core Components provided and installed by the Contractor pursuant to the above sections of this Exhibit B (PSBN Specifications), the Contractor will provide and install an HSS at FCCF. This additional installation will also contain any other Components and other Work specifically required in this Agreement or otherwise in order for the PSBN to meet the functional and performance requirements of this Exhibit B (PSBN Specifications) when operated with the HSS.

8.1.2 The HSS will have a minimum capacity of 150,000 UEs.

8.2 Redundant Evolved Packet Core

8.2.1 The PSBN will also include redundant SGW, PGW, MME, PCRF, and HSS at the LAPD Valley Dispatch Center (LAPDVDC). The LAPDVDC installation will also contain any other centralized Components and other Work specifically required in this Agreement or otherwise in order for the PSBN to meet the functional and performance requirements of this Exhibit B (PSBN Specifications) in the event of a total failure of the primary core components located at FCCF. This includes Domain Name Services (DNS), Dynamic Host Configuration Protocol (DHCP), Multi-Protocol Label Switching (MPLS), and others. The Contractor will have included pricing for the Components in each location in response to Section 4 of Contractor's Response to Appendix H (Pricing Requirements – Scored) contained in Exhibit C (Schedule of Payments).

8.3 Location Services – Amended and Restated under Amendment No. 25

8.3.1 ~~If so exercised, the PSBN will provide the capability to collect and convey User Equipment location in real time based on network-assisted methods and fully compliant with 3GPP TS 23.271. The Contractor will assess the PSBN's ability to meet the Enhanced 911 location accuracy requirements if the OTDOA option in Appendix I is purchased~~.

8.3.2 ~~The Contractor will provide a geo-location estimate, absent GPS information.~~

8.3.3 ~~The Contractor will provide an Application Programming Interface (API) or other output in industry standard formats to allow sharing of geo-location content with other Member systems (e.g., to interface with the Members CADs). In addition, the Contractor will provide interoperable location content using the Open Geospatial Consortium (or equivalent) standards. Such content will be consumable on Member Geographical Information Services (GIS) systems (e.g., ArcGIS).~~

8.3.4 ~~The Location Services system will be capable of segmenting user geolocation by agency (i.e., only authorized users or systems of a particular agency can have access to the geolocation information for that agency).~~

Table 4 - PSBN LTE Major Components and Software

Nothing in this Table 4 is intended to override or replace any requirements set forth in this Agreement. In the event of a conflict with anything contained in this Table 4 and a requirement otherwise set forth in this Agreement, that requirement will control.

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
Primary EPC	
Mobility Management Entity (MME) Solution	100,000 SAU
Base offer includes MME Package 1, MME Package 2, MME Package 3	
LTE_MME_Software_Features - Package 1	
MME Base Platform License (8 blades)	1
MME Pool	100,000 SAU
Network-Initiated Dedicated Bearers	100,000 SAU
ANR Support	100,000 SAU
Roaming Restrictions	100,000 SAU
Access Aware Core Edge Support	100,000 SAU
IPSec for Secure Network Traffic	100,000 SAU
Lawful Intercept	100,000 SAU
MME SW Feature Package License	100,000 SAU
MME Capacity SW License (incl IP Sessions)	100,000 SAU
LTE_MME_Software_Features - Package 2	
Multiple PLMN Support	100,000 SAU
Geographically Redundant Pool	100,000 SAU
Multi-Operator Core Network	100,000 SAU
Control-Plane-Based Positioning	100,000 SAU
LTE_MME_Software_Features - Package 3	
Integrated Traffic Capture	100,000 SAU

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
Event-Based Monitoring	100,000 SAU
UE Tracer	100,000 SAU
Cause code extensions in CDR	100,000 SAU
Enhanced Packet Gateway	100,000 IP Sessions
Base offer includes EPG Package 1, EPG Package 2	
IP OPERATING SYS 12.2 SSR 8010	Embedded on Single Device
SSR 8010 BASE SYSTEM BUNDLE	Embedded on Single Device
PGW/SGW SSC Platform License	Embedded on Single Device
LTE_EPG_Software_Features - Package 1	
PDN Gateway Support	100,000 IP Sessions
Serving Gateway Support	100,000 IP Sessions
Network Initiated Dedicated Bearers (incl. 1 Dedicated Bearer per IP Sessions)	100,000 IP Sessions
Network Initiated Dedicated Bearers, expansion 1	100,000 IP Sessions
Network Initiated Dedicated Bearers, expansion 2	100,000 IP Sessions
Network Initiated Dedicated Bearers, expansion 3	100,000 IP Sessions
IMS-Based Telephony - MMTel	100,000 IP Sessions
Event Based Monitoring (EBM) - EPG Control plane events	100,000 IP Sessions
Smart Paging	100,000 IP Sessions
Lawful Intercept	100,000 IP Sessions
IP Sessions Capacity Basic SW License	100,000 IP Sessions
1 Mbps Capacity Basic SW License	5,000
LTE_EPG_Software_Features - Package 2	
Usage Monitoring	100,000 IP Sessions
Policy and Charging Rules Function (PCRF) Solution	
Base offer includes PCRF_Package 1	
LTE_PCRF_Software_Features - Package 1	
Enhanced Policy Control	100,000 IP Sessions
Basic Policy Control	100,000 IP Sessions
SAPC 3GPP Gx.	100,000 IP Sessions
Default Bearer QoS Control.	100,000 IP Sessions
Dedicated Bearer QoS Control.	100,000 IP Sessions
Usage Reporting for Gx	100,000 IP Sessions
External DB Access	100,000 IP Sessions
User Notifications.	100,000 IP Sessions
O&M Via Web Services.	100,000 IP Sessions
Dynamic Policy Control.	10,000 AF Sessions

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
SOAP Notifications	100,000 IP Sessions
Enhanced subscription handling	100,000 IP Sessions
Multimedia Priority Services - Rx Interface	10,000 AF Sessions
Analytics (Event Based Monitoring)	100,000 IP Sessions
Multimedia Priority Services - Gx interface	100,000 IP Sessions
Diameter Signaling Controller (DSC) Solution	
DSC SW	Embedded on Single Device
Diameter Message Screening and Topology Hiding	5x100 TPS
DSC 13A Basic SW package	5x100 TPS
Rate Limiting and Throttling	5x100 TPS
LTE Operation Support System Solution - RAN and EPC (OSS)	
Base offer includes OSS Package 1, OSS Package 2	
LTE OSS Operating SW	Embedded on Single Device
LTE_OSS_Software_Features - Package 1	
LTE RAN Starter OSS-RC	500 eNodeBs
IP RAN Configuration Manager	500 eNodeBs
Auto Provisioning (per Integraded eNB)	500 eNodeBs
MME Pool Manager	100,000 SAU
Pool Load Balance	100,000 SAU
Core Network Starter Package	100,000 SAU
Network Status Display	100,000 SAU
Configuration Manager	100,000 SAU
Network Surveillance eXpert	100,000 SAU
Core Network Status Analyzer	100,000 SAU
Event Based Statistics	100,000 SAU
EPC Self Diagnosis	100,000 IP Sessions
Connection to OSS-RC FM (COF) for Telecom Nodes	1
Fault Management Expert II, Rule engine (FMXR II)	1
Connection to NMS (CON)	1
Storage Checkpoints AdmServer	1
OSS Software Bundle	1
Consistency Check	Included with OSS Software Bundle
Consistency Check - User Defined	Included with OSS Software Bundle
LTE Real-Time KPI's in NSD	Included with OSS Software Bundle
Automatic PCI Selection	Included with OSS Software Bundle
ANR support IRAT	Included with OSS Software Bundle

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
Mobility Support	Included with OSS Software Bundle
Network Surveillance eXpert	Included with OSS Software Bundle
Export File Editor	Included with OSS Software Bundle
Automatic PCI Collision Resolution	Included with OSS Software Bundle
Configuration Profiles	Included with OSS Software Bundle
Undo Plan	Included with OSS Software Bundle
Network Status Display	Included with OSS Software Bundle
Fallback Area	Included with OSS Software Bundle
AMOS (CPP Scripting)	Included with OSS Software Bundle
Automated Neighbour Relations - LTE	Included with OSS Software Bundle
LTE RAN OSS-RC - Users	Included with OSS Software Bundle
OMBS Server License	Embedded on Single Device
IS/IT OMBS Client SW	10
LTE_OSS_Software_Features - Package 2 (SON Virtualization)	
LTE ANR and PCI Visualization	500 eNodeBs
SON Viz Starter Package	1
LTE Device Management System Solution	
LTE Device Management Software License	100,000 Subscribers
Load Balancing	1
Storage Area Network	2
LTE System Operation Support Platform (OSP)	
System Mgmt and Monitoring OSP Package	Embedded on Single Device
Fault Management	500 eNodeBs
Subscriber Management	100,000 Subscribers
Security Monitoring	500 eNodeBs
LTE OSP Software License	500 eNodeBs
-48V DC Indoor eNodeB - 3 Sector, 2x2 MIMO, 10+10 MHz, 40DL/20UL, 40W	2 eNodeBs
-48V DC 3 Sector 2x2 MIMO INDOOR eNodeB (40DL/20UL, 40W)	2x2 MIMO, 40 DL/20UL, 40 W
LTE-FDD 10+10 MHz Bandwidth	3 Sector, 10+10 MHz
Shared LTE RAN Feature	1 per eNodeB
LTE_eNB_Software_Features - Package 1	1 per eNodeB
LTE_eNB_Software_Features - Package 2A&2B	1 per eNodeB
Integrated IP Security	1 per eNodeB
LTE-FDD DL Throughput (Mbps) - 20DL/10UL (additional)	20 DL/10UL

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
RET INTERFACE UNIT (RIU)	1 per eNodeB
-48V DC Outdoor eNodeB - 3 Sector, 2x2 MIMO 10+10 MHz, 40DL/20UL, 40W	230 eNodeBs
-48V DC 3 Sector 2x2 MIMO OUTDOOR eNodeB (40DL/20UL, 40W)	2x2 MIMO, 40 DL/20UL, 40 W
LTE-FDD 10+10 MHz Bandwidth	3 Sector, 10+10 MHz
Shared LTE RAN Feature	1 per eNodeB
LTE_eNB_Software_Features - Package 1	1 per eNodeB
LTE_eNB_Software_Features - Package 2A&2B	1 per eNodeB
Integrated IP Security	1 per eNodeB
LTE-FDD DL Throughput (Mbps) - 20DL/10UL (additional)	20 DL/10 UL
RET INTERFACE UNIT (RIU)	230 eNodeBs
4-Way Receive Diversity	Licensed for 120 eNodeBs
LTE_eNB_Software_Features - Package 1	per eNodeB
Multiple Radio Bearers per user	1 per eNodeB
Dual Antenna DL performance Package	1 per eNodeB
Data Forwarding at Intra LTE Handover	1 per eNodeB
Clock source over NTP	1 per eNodeB
Automated Neighbour Relations (ANR)	1 per eNodeB
Support for 3GPP Compatible RET Antennas	1 per eNodeB
Cell ID Based Location Support	1 per eNodeB
Streaming of Events	1 per eNodeB
QoS Aware Scheduler	1 per eNodeB
A-GPS, User Plane Location Support	1 per eNodeB
IPv6 Backhaul Support	1 per eNodeB
Cross-Sector Antenna Sharing Redundancy	1 per eNodeB
Firmware Download of Antenna Line Devices	1 per eNodeB
A-GPS, Control Plane Location Support	1 per eNodeB
Limited Services Mode Emergency Support	1 per eNodeB
Enhanced Cell ID in Traces	1 per eNodeB
OTDOA, User Plane Location Support	1 per eNodeB
Dynamic GBR Admission Control	1 per eNodeB
Differentiated Admission Control	1 per eNodeB
OTDOA, Control Plane Location Support	1 per eNodeB
LTE_eNB_Value_Added_Features - Package 2A	per eNodeB
VSWR Antenna Supervision	1 per eNodeB
Dynamic QoS modification	1 per eNodeB

PSBN LTE Major Components and Software	PSBN System Licensing Limitations
PCI Conflict Reporting	1 per eNodeB
Mobility Control at Poor Coverage	1 per eNodeB
Advanced Cell Supervision	1 per eNodeB
LPPa-based OTDOA support	1 per eNodeB
LPPa-based E-CID Support	1 per eNodeB
LTE Air Interface Load Generator	1 per eNodeB
LTE_eNB_Value_Added_Features - Package 2B	per eNodeB
PM initiated UE Measurement	1 per eNodeB
Minimum Rate Proportional Fair Scheduling	1 per eNodeB
Uplink, Frequency-Selective Scheduling	1 per eNodeB
UE Level Oscillating Handover Minimization	1 per eNodeB
Relative Priority Scheduling	1 per eNodeB
LTE_eNB_Additional_Features_Included	per eNodeB
Delay-Based Scheduling and Grant Estimation	1 per eNodeB
Quad Antenna Uplink Performance Package	Licensed for 120 eNodeBs (outdoor)
TTI Bundling	1 per eNodeB

SCHEDULE OF PAYMENTS
EXHIBIT C.1 - PSBN PAYMENT SUMMARY

Description	Unilateral Option Sum	Contract Sum - Full Payable Amount	10% Holdback Amount	Payment Less 10% Holdback Amount
Phase 1 - System Design	$ -	$ 14,460,588	$ 1,206,987	$ 13,253,601
Phase 2 - Site Construction and Site Modification	$ -	$ 20,556,399	$ 2,009,409	$ 18,546,990
Phase 3 - Supply PSBN Components	$ -	$ 25,373,629	$ 2,408,342	$ 22,965,287
Phase 4 - PSBN Implementation	$ -	$ 7,181,025	$ 708,966	$ 6,472,059
Subtotal (Phases 1 to 4)	**$ -**	**$ 67,571,641**	**$ 6,333,704**	**$ 61,237,937**
Phase 5 - PSBN Maintenance (Year 1 Option Term)	$ -	$ 2,991,000	$ -	$ 2,991,000
Phase 5 - PSBN Maintenance (Years 2 through 5)	$ 26,414,061	$ -	$ 2,641,406	$ 23,772,655
Subtotal (Phases 1 to 5)	**$ 26,414,061**	**$ 70,562,641**	**$ 8,975,110**	**$ 88,001,592**
Additive Alternate 1 - Home Subscriber Server (HSS) (Notes 1 & 2)	$ -	$ 960,888	$ 96,089	$ 864,799
Additive Alternate 2 - Redundant Evolved Packet Core (Notes 1 & 2)	$ -	$ 2,519,662	$ 251,967	$ 2,267,695
Additive Alternate 3 - Location Services	$ -	$ -	$ -	$ -
Maintenance for Additive Alternates 1 to 3 (First 5 Years of Maintenance)	$ 6,166,090	$ -	$ 616,609	$ 5,549,481
Subtotal (Additive Alternates)	**$ 6,166,090**	**$ 3,480,550**	**$ 964,665**	**$ 8,681,975**
Total ([Phases 1-5] + Additive Alternates)	**$ 32,580,151**	**$ 74,043,191**	**$ 9,939,775**	**$ 96,683,567**
Phase 1 Work for 15 Cell-on-Wheels (COWs)	$ -	$ 411,975	$ 41,175	$ 370,800
Phase 2 Work for 15 Cell-on-Wheels (COWs)	$ -	$ 1,702,848	$ 170,296	$ 1,532,552
Phase 3 Work for 15 Cell-on-Wheels (COWs)	$ -	$ 3,452,895	$ 338,067	$ 3,114,828
Phase 4 Work for 15 Cell-on-Wheels (COWs)	$ -	$ 116,830	$ 11,690	$ 105,140
Restoration Work	$ -	$ 2,378,664	$ -	$ 2,378,664
Fiber Optic Equipment and Related Work	$ -	$ 1,275,000	$ 127,500	$ 1,147,500
Site Construction Changes	$ -	$ 699,837	$ 69,998	$ 629,841
Claims Settlement	$ -	$ 15,764,246	$ -	$ -
LA-RICS Deployable Vehicle Readiness Upgrade and Related Work	$ -	$ 235,768	$ 23,577	$ 212,191
LA-RICS PSBN - Equipment Relocation	$ -	$ 208,338	$ -	$ 208,338
LA-RICS Public Safety Enterprise Network (PSEN) Services	$ -	$ 278,908	$ -	$ -
TOTAL CONTRACT SUM	**$100,568,500**			
MAXIMUM CONTRACT SUM (Total Unilateral Option Sum + Total Contract Sum)	**$133,148,651**			

AGENDA ITEM H - ENCLOSURE

SCHEDULE OF PAYMENTS
EXHIBIT C.1 - PSBN PAYMENT SUMMARY

Description	Unilateral Option Sum	Contract Sum - Full Payable Amount	10% Holdback Amount	Payment Less 10% Holdback Amount

*** The Authority will authorize payment to Contractor for the amount of the applicable invoices less ten percent (10%) as Holdback for each deliverable under Exhibit A (Statement of Work) and Exhibit B (PSBN Specifications), however not all deliverables (i.e. insurance, bonds) in the Exhibit C, Schedule of Payments, will be subject to a 10% holdback.**

Note 1: Pursuant to Amendment No. 2, effective April 7, 2014, the Authority exercised the Unilateral Option Sum for Phase 1 for both Additive Alternate No. 1, System Design for the Home Subscriber Server (HSS), and Additive Alternate No. 2, System Design for the Redundant Evolved Packet Core (EPC). In connection therewith, the Unilateral Option Sum for System Design for Phase 1 for both Additive Alternate No. 1 and Additive Alternate No. 2, in a total amount of $359,044 was converted into a Contract Sum. The cost for the System Design for Phase 1 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 2. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

Note 2: Pursuant to Amendment No. 4, effective July 16, 2014, the Authority exercised the Unilateral Option Sum for all Work pertaining to (i) Phase 2 for Additive Alternate No. 1, Site Construction and Site Modification for Home Subscriber Server (HSS), (ii) Phase 3 for Additive Alternate No. 1, Supply PSBN Components for the HSS, (iii) Phase 2 for Additive Alternate No. 2, Site Construction and Site Modification for the Redundant Evolved Packet Core (EPC), and (iv) Phase 3 for Additive Alternate No. 2, Supply PSBN Components for the Redundant EPC. In connection therewith, the Unilateral Option Sum for (i) Phase 2 for Additive Alternate No. 1, Site Construction and Site Modification for the HSS, (ii) Phase 3 for Additive Alternate No. 1, Supply PSBN Components for the HSS, (iii) Phase 2 for Additive Alternate No. 2, Site Construction and Site Modification for the Redundant Evolved Packet Core (EPC), and (iv) Phase 3 for Additive Alternate No. 2, Supply PSBN Components for the Redundant EPC; all in a total amount of $2,962,648 was converted into a Contract Sum. The cost for the Site Construction and Site Modification for Phase 2 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 4. The cost for Supplying PSBN Components for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C.7 (Additive Alternates) as amended and restated in Amendment No. 4. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

Note 3: Pursuant to Amendment No. 5, effective September 24, 2014, the Authority exercised the Unilateral Option Sum for all Work pertaining to (i) Phase 4 for Additive Alternate No. 1, PSBN Implementation Work for Home Subscriber Server (HSS), and (ii) Phase 4 for Additive Alternate No. 2, PSBN Implementation Work for the Redundant Evolved Packet Core (EPC). In connection therewith, the Unilateral Option Sum for (i) Phase 4 for Additive Alternate No. 1, PSBN Implementation Work for the HSS, and (ii) Phase 4 for Additive Alternate No. 2, PSBN Implementation Work for the Redundant EPC; all in a total amount of $1,184,562 was converted into a Contract Sum. The cost for the PSBN Implementation Work for Phase 4 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 5. The cost for PSBN Implementation Work for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C.7 (Additive Alternates) as amended and restated in Amendment No. 5. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

Note 4: Pursuant to Amendment No. 7, effective December 31, 2014, credits for Phases 1 and 2 were realized in the amount of $1,005,807. However, the cost for power load studies in Phase 1 in the amount of $12,444 was taken from the Credits. The remaining Credit balance of $991,585 is reserved for use for a future replacement site(s).

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details						Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
		Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1						
A.6.1	Installation and Commission:												
	Primary EPC	-	-	-	-	-	-	-	-		$ 763,448	$ 76,345	$ 687,103
A.6.1	Network Management System and Inventory Manangement System	-	-	-	-	-	-	-			$ 67,066	$ 6,707	$ 60,359
A.6.1	Site Detail Summary for eNodeBs and Backhaul Per Site:	-	-	-	-	-	-	-	-		$ -	$ -	$ -
~~A.6.1~~	~~Alhambra PD_ALHPD01~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Arcadia PD_ARCPD01	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	Azusa PD_AZPD001	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
~~A.6.1~~	~~Bell Gardens PD_BGPD001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Beverly Hills Rexford Drive_BHR~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Bald Mountain_BMT	$ 6,510	$ 20,724	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 57,714	$ 5,771	$ 51,943
~~A.6.1~~	~~Baldwin Park PD_BPPD001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Blue Rock_BRK~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Burnt Peak_BUR~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Burbank PD_BURPD01~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Criminal Court Building_CCT	$ 2,184	$ 18,034	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,360	$ 5,136	$ 46,224
A.6.1	Century_CEN	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~Carlton J. Peterson Park_CJP~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Claremont Microwave Tower_CLM	$ -	$ 18,554	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 37,219	$ 3,722	$ 33,497
~~A.6.1~~	~~Claremont PD_CLRMPD1~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-	-	$ -	$ -	$ -
~~A.6.1~~	~~FS 2_CPTFD02~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	FS 4_CPTFD04	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~Culver City Communications Tower_CULV001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Downey PD_DWNYPD1~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	El Monte PD_ELMNTPD	$ 6,510	$ 13,819	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 50,809	$ 5,081	$ 45,728
~~A.6.1~~	~~El Segundo PD_ELSGDPD~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	FCCF -HQ_FCCF	$ 6,510	$ 13,819	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,471	$ 5,147	$ 46,324
A.6.1	FS 5_FS5	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Gardena_GARD001	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~Glendale Civic Center_GCC~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Glendale Water & Power UOC_GDWP001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 23_GLNDL23~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 24_GLNDL24~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 28_GLNDL28~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 3_LACF003~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 4_LACF004~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 16_LACF016~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 21_LACF021~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 23_LACF023~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 24_LACF024~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 28_LACF028~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 30_LACF030~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 31_LACF031~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details						Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
		Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1						
~~A.6.1~~	~~FS 38_LACF038~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 44_LACF044~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 48_LACF048~~	$ -	$ 22,219	$ -	$ -	$ -	$ 6,926	-	-		$ 29,145	$ 2,915	$ 26,230
~~A.6.1~~	~~FS 50_LACF050~~	$ -	$ 13,819	$ -	$ -	$ -	$ 6,926	-	-		$ 20,745	$ 2,075	$ 18,670
~~A.6.1~~	~~FS 53_LACF053~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 56_LACF056~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 58_LACF058~~	$ -	$ 13,819	$ -	$ -	$ -	$ 6,926	-	-		$ 20,745	$ 2,075	$ 18,670
~~A.6.1~~	~~FS 59_LACF059~~	$ 6,510	$ 22,219	$ -	$ -	$ -	$ 6,926	-	-		$ 35,655	$ 3,566	$ 32,089
~~A.6.1~~	~~FS 61_LACF061~~	$ -	$ 20,724	$ -	$ -	$ -	$ 6,926	-	-		$ 27,650	$ 2,765	$ 24,885
~~A.6.1~~	~~FS 65_LACF065~~	$ -	$ 20,724	$ -	$ -	$ -	$ 6,926	-	-		$ 27,650	$ 2,765	$ 24,885
~~A.6.1~~	~~FS 68_LACF068~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 69_LACF069~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 71_LACF071~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 72_LACF072~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 73_LACF073~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 76_LACF076~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 77_LACF077~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 78_LACF078~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 79_LACF079~~	$ 6,510	$ -	$ -	$ -	$ -	$ 6,926	-	-		$ 13,436	$ 1,344	$ 12,092
~~A.6.1~~	~~FS 80_LACF080~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 81_LACF081~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 83_LACF083~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 84_LACF084~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 85_LACF085~~	$ -	$ 22,219	$ -	$ -	$ -	$ 6,926	-	-		$ 29,145	$ 2,915	$ 26,230
~~A.6.1~~	~~FS 86_LACF086~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 87_LACF087~~	$ 6,510	$ -	$ -	$ -	$ -	$ 6,926	-	-		$ 13,436	$ 1,344	$ 12,092
~~A.6.1~~	~~FS 88_LACF088~~	$ -	$ -	$ -	$ -	$ -		-			$ -	$ -	$ -
~~A.6.1~~	~~FS 90_LACF090~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 91_LACF091~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 92_LACF092~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 93_LACF093~~	$ -	$ 22,219	$ -	$ -	$ -	$ 6,926	-	-		$ 29,145	$ 2,915	$ 26,230
~~A.6.1~~	~~FS 95_LACF095~~	$ -	$ 13,819	$ -	$ -	$ -	$ 6,926	-	-		$ 20,745	$ 2,075	$ 18,670
~~A.6.1~~	~~FS 96_LACF096~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 98_LACF098~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 99_LACF099~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 102_LACF102~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 105_LACF105~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 106_LACF106~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 107_LACF107~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS108_LACF108~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 111_LACF111~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 112_LACF112~~	$ -	$ -	$ -	$ -	$ -		-			$ -	$ -	$ -
~~A.6.1~~	~~FS 114_LACF114~~	$ 6,510	$ -	$ -	$ -	$ -	$ 6,926	-	$ -		$ 13,436	$ 1,344	$ 12,092
~~A.6.1~~	~~FS 117_LACF117~~	$ 6,510	$ 22,219	$ -	$ -	$ -	$ 6,926	-	$ -		$ 35,655	$ 3,566	$ 32,089
~~A.6.1~~	~~FS 118_LACF118~~	$ -	$ -	$ -	$ -	$ -		-	$ -		$ -	$ -	$ -
~~A.6.1~~	~~FS 120_LACF120~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 123_LACF123~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 129_LACF129~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 132_LACF132~~	$ 6,510	$ 22,219	$ -	$ -	$ -	$ 6,926	-	-		$ 35,655	$ 3,566	$ 32,089
~~A.6.1~~	~~FS 140_LACF140~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 141_LACF141~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 144_LACF144~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details						Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
		Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1						
~~A.6.1~~	~~FS 146_LACF146~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 149_LACF149~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 151_LACF151~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS153_LACF153~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 154_LACF154~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 157_LACF157~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 159_LACF159~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 161_LACF161~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 162_LACF162~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 163_LACF163~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 164_LACF164~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 169_LACF169~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 171_LACF171~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 173_LACF173~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 181_LACF181~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 183_LACF183~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 184_LACF184~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 187_LACF187~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 188_LACF188~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 192_LACF192~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 194_LACF194~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~CP 2_LACFCP02~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~CP 9_LACFCP09~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~CP 14_LACFCP14~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	LAC/HARBOR+UCLA MEDICAL CENTER_LACHAR	$ 2,184	$ 18,034	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,360	$ 5,136	$ 46,224
A.6.1	LAC/OLIVEVIEW+UCLA_LACOLV	$ 2,184	$ 26,787	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 60,113	$ 6,011	$ 54,102
A.6.1	LAC/USC MEDICAL CENTER_LACUSC	$ 2,184	$ 18,034	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,360	$ 5,136	$ 46,224
~~A.6.1~~	~~FS 005_LAFD005~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 012_LAFD012~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 015_LAFD015~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 016_LAFD016~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 019_LAFD019~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 029_LAFD029~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 035_LAFD035~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 042_LAFD042~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 044_LAFD044~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 047_LAFD047~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 049_LAFD049~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 055_LAFD055~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 061_LAFD061~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 066_LAFD066~~	$ -	$ 13,819	$ -	$ -	$ -	$ 6,926	-	-		$ 20,745	$ 2,075	$ 18,670
~~A.6.1~~	~~FS 074_LAFD074~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 076_LAFD076~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 077_LAFD077~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 079_LAFD079~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 080_LAFD080~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 081_LAFD081~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 082_LAFD082~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 084_LAFD084~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 085_LAFD085~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details						Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
		Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1						
~~A.6.1~~	~~FS 088_LAFD088~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 093_LAFD093~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 094_LAFD094~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 095_LAFD095~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 096_LAFD096~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 097_LAFD097~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 101_LAFD101~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 105_LAFD105~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 114_LAFD114~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Hermosa HQ_LALG100~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Zuma Lifeguard HQ_LALG300~~	$ -	$ -	$ -	$ -	$ -		-	-	-	$ -	$ -	$ -
~~A.6.1~~	~~Lifeguard Division_LALG HQ~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Lancaster_LAN	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	77TH Street Area Complex_LAPD077	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~Central Area Complex_LAPDCEN~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Devonshire Area station_LAPDDVN	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	Foothill Area station_LAPDFTH	$ 6,510	$ 22,219	$ 9,448	$ 10,727	$ 8,765	$ 6,926	-	-		$ 64,595	$ 6,460	$ 58,135
A.6.1	Hollenbeck Area station_LAPDHLB	$ 6,510	$ 13,819	$ 9,448	$ 10,727	$ 8,765	$ 6,926	-	-		$ 56,195	$ 5,620	$ 50,575
A.6.1	Hollywood Area station_LAPDHWD	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	Mission Area station_LAPDMIS	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	Northeast Area station_LAPDNED	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	North Hollywood Area Station_LAPDNHD	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	Newton_LAPDNWT	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Olympic Area station_LAPDOLY	$ 6,510	$ 13,819	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,471	$ 5,147	$ 46,324
A.6.1	Pacific Area station_LAPDPAC	$ 6,510	$ 13,819	$ 16,242	$ 13,390	$ 8,765	$ 6,926	-	-		$ 65,652	$ 6,565	$ 59,087
A.6.1	Rampart Area station_LAPDRAM	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Topanga Area station_LAPDTOP	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~Valley Dispatch Center_LAPDVDC~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Van Nuys Area station_LAPDVNS	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Wilshire Area station_LAPDWIL	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	West Los Angeles Area station_LAPDWLA	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	West Valley Area facility_LAPDWVD	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Altadena_LASDALD	$ 6,510	$ 22,219	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 59,209	$ 5,921	$ 53,288
A.6.1	Carson_LASDCSN	$ 6,510	$ 13,819	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 50,809	$ 5,081	$ 45,728
~~A.6.1~~	~~Crescenta Valley_LASDCVS~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Industry_LASDIDT	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Lakewood_LASDLKD	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Lennox (Closed)_LASDLNX	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	North County Correctional Facility_LASDNCC	$ 6,510	$ 20,724	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 58,376	$ 5,838	$ 52,538
A.6.1	Norwalk_LASDNWK	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Pico Rivera_LASDPRV	$ 6,510	$ 13,819	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 50,809	$ 5,081	$ 45,728
A.6.1	Santa Clarita Valley_LASDSCV	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	San Dimas_LASDSDM	$ 6,510	$ 20,724	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 45,899	$ 4,590	$ 41,309
A.6.1	Temple_LASDTEM	$ 6,510	$ 22,219	$ 4,062	$ 10,727	$ 8,765	$ 6,926	-	-		$ 59,209	$ 5,921	$ 53,288
~~A.6.1~~	~~FS 2_LBFD002~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 6_LBFD006~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 9_LBFD009~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 12_LBFD012~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 13_LBFD013~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details						Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
		Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1						
~~A.6.1~~	~~FS 21_LBFD021~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~HQ_LBFD026~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
A.6.1	HQ_LBPDHQ	$ 2,184	$ 18,034	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,883	$ 3,888	$ 34,995
~~A.6.1~~	~~Sylmar Converter Station - E_LDWP220~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
A.6.1	Lost Hills/Malibu_LHS	$ 6,510	$ 20,724	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 45,899	$ 4,590	$ 41,309
~~A.6.1~~	~~FS 2_LVFD002~~	$ -	$ -	$ -	$ -	$ -		-			$ -	$ -	$ -
~~A.6.1~~	~~La Verne PD_LVRNPD~~	$ -	$ -	$ -	$ -	$ -		-			$ -	$ -	$ -
~~A.6.1~~	~~FS 1_MBFD001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Mira Loma Detention Facility_MLM	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
~~A.6.1~~	~~Monrovia PD_MNRVPD~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Montebello PD_MNTBLPD~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Monterey Park PD_MNTPKPD~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.5.1~~	~~Mount Olivet Reservoir_MOR~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 2_MRFD002~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 3_MTBFD03~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Mount Washington_MTW~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Goodrich_PASA001	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
~~A.6.1~~	~~FS 33_PASFD33~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
A.6.1	Puente Hills_PHN	$ 6,510	$ 22,219	$ 9,448	$ 10,727	$ 8,765	$ 6,926	-	-		$ 64,595	$ 6,460	$ 58,135
A.6.1	Palmdale_PLM	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
A.6.1	LAC/RANCHO LOS AMIGOS NATIONAL REHAB CTR_RANCHO	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~FS 2_RDBFD02~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Redondo Beach PD_RDNBPD~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~Reservoir Hill_REH~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~San Pedro City Hall_SCH~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Southeast Area station_SEP	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~FS 3_SFSFD03~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 4_SFSFD04~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	South L.A._SLA	$ 6,510	$ 13,819	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 51,471	$ 5,147	$ 46,324
~~A.6.1~~	~~FS 2_SMFD002~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~South Gate PD_SOGTPD~~	$ -	$ -	$ -	$ -	$ -	$ -	-	-		$ -	$ -	$ -
~~A.6.1~~	~~San Vicente Peak_SVP~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	Southwest Area station_SWP	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
~~A.6.1~~	~~City Hall Radio Tower_TORC001~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 2_TORFD02~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 3_TORFD03~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 4_TORFD04~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	FS 1_VEFD001	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	FS 3_VEFD003	$ 6,510	$ 13,819	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 38,994	$ 3,899	$ 35,095
A.6.1	Walnut/Diamond Bar_WAL	$ 6,510	$ 22,219	$ 4,724	$ 10,727	$ 8,765	$ 6,926	-	-		$ 59,871	$ 5,987	$ 53,884
~~A.6.1~~	~~FS 4_WCFD004~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
~~A.6.1~~	~~FS 5_WCFD005~~	$ -	$ -	$ -	$ -	$ -		-	-		$ -	$ -	$ -
A.6.1	West Hollywood_WHD	$ 6,510	$ 22,219	$ 2,000	$ 974	$ 8,765	$ 6,926	-	-		$ 47,394	$ 4,739	$ 42,655
	DELIVERABLES												
A.6.2	Spares Management	-	-	-	-	-	-	-	-		$ 385,629	$ 38,563	$ 347,066
A.6.3	Acceptance Testing:	-	-	-	-	-	-	-	-		$ -	$ -	$ -
A.6.3.27	Functional Test	-	-	-	-	-	-	-			$ 185,314	$ 18,531	$ 166,783
A.6.3.30	Wide Area Coverage Test	-	-	-	-	-	-	-	-		$ 200,000	$ 20,000	$ 180,000
~~A.6.3.32~~	~~Waterway Coverage Test~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~$ -~~	~~$ -~~	~~$ -~~
~~A.6.3.33~~	~~Freeway Coverage Test~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~$ -~~	~~$ -~~	~~$ -~~

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details: Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1	Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
~~A.6.3.34~~	~~Special Operational Test~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~$ -~~	~~$ -~~	~~$ -~~
~~A.6.3.35~~	~~PSBN Burn-in Test~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~$ -~~	~~$ -~~	~~$ -~~
A.6.4	Training:	-	-	-	-	-	-	-	-		$ -	$ -	$ -
A.6.4	Wave 1 Training										$ 266,670	$ 26,667	$ 240,003
A.6.4	Wave 2 Training										$ 266,669	$ 26,667	$ 240,002
A.6.5	Documentation	-	-	-	-	-	-	-			$ 502,447	$ 50,245	$ 452,202
A.6.6	Implementation Phase Acceptance	-	-	-	-	-	-	-	-		$ 321,357	$ 32,136	$ 289,221
A.6.7	Final PSBN Acceptance	-	-	-	-	-	-	-	-		$ 321,357	$ 32,136	$ 289,221
Base 22.3.2	Performance Bond for Phase 4 - PSBN Implementation	-	-	-	-	-	-	-	-		$ 88,000	$ -	$ 88,000
Base 38.3	Total Lease Costs for Phase 4 – PSBN Implementation	-	-	-	-	-	-	-	-		Included	$ -	$ -
Subtotal		**$ 381,990**	**$ 1,231,104**	**$ 187,474**	**$ 243,488**	**$ 499,605**	**$ 498,672**	**$ -**	**$ 245,506**	**$ 35,144**	**$ 6,410,290**	**$ 632,224**	**$ 5,778,066**
	ADDITIONAL SITES (AMENDMENT NO. 8)												
A.6.1	Installation and Commission:												
~~A.6.1~~	~~FS 101_LACF101 (replacing CLRMPD1)~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~-~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~$ -~~
A.6.1	Oat Mountain_ONK	6,510	-	$ 8,124	$ 10,727	-	-	-	-	-	$ 25,361	$ 2,536	$ 22,825
~~A.6.1~~	~~Rolling Hills Transit_RHT~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~$ -~~
A.6.1	San Dimas_SDW	6,510	-	$ 2,000	$ 974	-	-	-	-	-	$ 9,484	$ 948	$ 8,536
A.6.1	Verdugo Peak City_VPC	6,510		$ 2,000	$ 974	-	-	-	-	-	$ 9,484	$ 948	$ 8,536
~~A.6.1~~	~~FS 54_LACF054 (replacing SOGTPD)~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~-~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~$ -~~
Total for Additional Sites (Amendment No. 8)		**$ 19,530**	**$ -**	**$ 12,124**	**$ 12,675**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 44,329**	**$ 4,432**	**$ 39,897**
	ADDITIONAL SITES (AMENDMENT NO. 9)												
A.6.1	Installation and Commission:												
~~A.6.1~~	~~Baldwin Hills_BAH~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~$ -~~
~~A.6.1~~	~~Compton Court Building_CCB~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~$ -~~	~~$ -~~	~~$ -~~
~~A.6.1~~	~~FS 69_LAFD069 (Replacing LAFD019)~~	~~$ -~~	~~$ -~~	~~#~~	~~#~~	~~$ -~~		~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~
A.6.1	FS 12_LBFD012(N) (Replacing LBFD012(O))	$ 6,510	$ 13,819	$ -	$ -	$ 8,765	$ 6,926	$ -	$ -	$ -	$ 36,020	$ 3,602	$ 32,418
A.5.1	~~City of Long Beach 911 Dispatch_LBECOC (Replacing LBFD026)~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~
A.6.1	City of Los Angeles DWP_LDWP243 (Replacing LDWP220)	$ 6,510.00	# #	$ 4,062	$ 10,727	# #	# #	$ -	$ -	$ -	$ 59,209	$ 5,921	$ 53,288
Total for Additional Sites (Amendment No. 9)		**$ 13,020**	**$ 36,038**	**$ 4,062**	**$ 10,727**	**$ 17,530**	**$ 13,852**	**$ -**	**$ -**	**$ -**	**$ 95,229**	**$ 9,523**	**$ 85,706**
	ADDITIONAL SITE (AMENDMENT NO. 11)												
A.6.1	Installation and Commission:												
A.6.1	Parking Lot at Pasadena PD_PASDNPD	2,184	# #	$ 2,000	$ 974	# #	# #	-	-	-	$ 38,883	$ 3,888	$ 34,995
Total for Additional Site (Amendment No. 11)		**$ 2,184**	**$ 18,034**	**$ 2,000**	**$ 974**	**$ 8,765**	**$ 6,926**	**$ -**	**$ -**	**$ -**	**$ 38,883**	**$ 3,888**	**$ 34,995**
	ADDITIONAL SITE (AMENDMENT NO. 11)												
A.6.1	Installation and Commission:												
A.6.1	Los Angeles Port Police_LAPP001 (Replacing LAFD049)	6,510	# #	$ 2,000	$ 974	# #	# #	-	-	-	$ 38,994	$ 3,899	$ 35,095
Total for Additional Site (Amendment No. 11)		**$ 6,510**	**$ 13,819**	**$ 2,000**	**$ 974**	**$ 8,765**	**$ 6,926**	**$ -**	**$ -**	**$ -**	**$ 38,994**	**$ 3,899**	**$ 35,095**

SCHEDULE OF PAYMENTS
EXHIBIT C.5 - PHASE 4 - PSBN IMPLEMENTATION

Deliverable/ Task No./ Subtask No./ Section No. (Exhibit A, B, or Base Document)	Deliverable	Installation and Commission Details: Cabinet Installation	LTE Antenna Installation	Backhaul Installation	Site Commissioning Backhaul	Site Commissioning LTE	Project Administration Per Site Note 1	Unilateral Option Sum Note 2	Credits Note 3	Unused Credits	Contract Sum - Payable Amount Note2	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
ADDITIONAL RF EMISSION REPORTS (AMENDMENT NO. 16)													
A.3.5.3	Provide Additional RF Emissions Tests/Reports for 12 PSBN Sites	-	-	$ -	$ -	-	-	-	-	-	$ 3,300	$ -	$ 3,300
Total for Additional RF Emission Reports (Amendment No. 16)		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,300**	**$ -**	**$ 3,300**
OPTIMIZATION (CLUSTER TUNING) (AMENDMENT NO. 19)													
A.6.1	Optimization (Cluster Tuning)	-	-	$ -	$ -	-	-	-	-	-	$ 550,000	$ 55,000	$ 495,000
Total for Optimization (Cluster Tuning) (Amendment No. 19)		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 550,000**	**$ 55,000**	**$ 495,000**
TOTAL FOR PHASE 4 - PSBN IMPLEMENTATION:		**$ 423,234**	**$ 1,298,995**	**$ 207,660**	**$ 268,838**	**$ 534,665**	**$ 526,376**	**$ -**	**$ 245,506**	**$ 35,144**	**$ 7,181,025**	**$ 708,966**	**$ 6,472,059**

Note 1: Project Administration costs for removed sites will be handled via the Amendment process set forth in Section 2 (Changes to Agreement) of the Base Document.

Note 2: Pursuant to Amendment No. 5, effective as of September 17, 2014, the Authority exercised the Unilateral Options for all Work pertaining to Phase 4. In connection therewith, the Unilateral Option Sum for Phase 4 of $21,899,970 was converted into a Contract Sum.

Note 3: Pursuant to Amendment No. 6, effective as of October 3, 2014, the Authority removed 3 PSBN Sites from the PSBN Design. Additionally, the Network Manangement System and Inventory Management Systems were credited $1,000 ($500 per System, the Fuctional Test was credited $7,500 ($2,500 per site), and the Documentation was credited $7,480 ($2,493 per site) all to account for the removal of 3 PSBN Sites. As such, credits were realized in the amount of $211,362.

Note 4: Pursuant to Amendment No. 8, effective February 17, 2015, Exhibit C.5 (Schedule of Prices - PSBN Implementation) was amended by Amendment No. 8 to reflect (a) the removal of thirty-six (36) sites, and (b) the conversion of Unilateral Option Sum to Contract Sum for the addition of six (6) PSBN System Sites.

Note 5: Pursuant to Amendment No. 9, effective March 23, 2015, Exhibit C.5 (Schedule of Prices - PSBN Implementation) was amended by Amendment No. 9 to reflect (a) the removal of twenty-four (24) sites, and (b) the conversion of Unilateral Option Sum to Contract Sum for the addition of six (6) PSBN System Sites.

Note 6: Pursuant to Amendment No. 12 Exhibit C.5 (Schedule of Prices - PSBN Implementation) was amended to reflect (a) the removal of forty-two (42) sites. These reductions to the Contract Sum are for the removal of 42 construction sites from the program. The reductions are from the Contract price for each site, adjusted by the agreed percentage completion for that site, as was jointly determined by the Authority and the Contractor. These reductions do not reflect any Contractor claims for additional above-scope work at any of these site. Review of those Contractor claims is still ongoing and will, if warranted, be reflected in future Contract amendments. In addition, the total Contract amounts for the Contractor's Project Management attributed to each site is presently being left in the Contract Sum, and will later be adjusted, as necessary, as part of the resolution of the Contractor's claims for Project Management expenses.

Note 7: Pursuant to Amendment No. 17, Exhibit C.5 (Schedule of Prices - PSBN Implementation) was amended to reflect the removal of Waterway Coverage Testing, Freeway Coverage Testing, Special Operational Testing, and PSBN Burn-In Testing for a total amount of $931,936.

SCHEDULE OF PAYMENTS
EXHIBIT C.7 - ADDITIVE ALTERNATES

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Unilateral Option Sum (Notes 1 & 2)	Contract Sum - Payable Amount (Notes 1 & 2)	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
ADDITIVE ALTERNATE NO 1. - HOME SUBSCRIBER SERVER (HSS)					
B.8.1	Price to deliver all of Phase 1 – System Design Work for the Home Subscriber Server (HSS)	$ -	$ 73,888	$ 7,389	$ 66,499
B.8.1	Price to deliver all of Phase 2 – Site Construction and Site Modification Work for the Home Subscriber Server (HSS)	$ -	$ 55,121	$ 5,512	$ 49,609
B.8.1	Price to deliver all of Phase 3 – Supply PSBN Components Work for the Home Subscriber Server (HSS)	$ -	$ 635,527	$ 63,553	$ 571,974
B.8.1	Price to deliver all of Phase 4 – PSBN Implementation Work for the Home Subscriber Server (HSS)		$ 196,352	$ 19,635	$ 176,717
Subtotal for Additive Alternate No. 1 - Home Subscriber Server (HSS)		**$ -**	**$ 960,888**	**$ 96,089**	**$ 864,799**
ADDITIVE ALTERNATE NO 2. - REDUNDANT EVOLVED PACKET CORE					
B.8.2	Price to deliver all of Phase 1 – System Design Work for the Redundant Evolved Packet Core	$ -	$ 321,156	$ 32,116	$ 289,040
B.8.2	Price to deliver all of Phase 2 – Site Construction and Site Modification Work for the Redundant Evolved Packet Core	$ -	$ -	$ -	$ -
B.8.2	Price to deliver all of Phase 3 – Supply PSBN Components Work for the Redundant Evolved Packet Core	$ -	$ 2,198,506	$ 219,851	$ 1,978,655
B.8.2	Price to deliver all of Phase 4 – PSBN Implementation Work for the Redundant Evolved Packet Core		$ -	$ -	$ -
Subtotal for Additive Alternate No. 2 - Redundant Evolved Packet Core:		**$ -**	**$ 2,519,662**	**$ 251,967**	**$ 2,267,695**
ADDITIVE ALTERNATE NO 3. - LOCATION SERVICES					
B.8.3	Price to deliver all of Phase 1 – System Design Work for Location Services	$ -	$ -	$ -	$ -
B.8.3	Price to deliver all of Phase 2 – Site Construction and Site Modification Work for Location Services	$ -	$ -	$ -	$ -

SCHEDULE OF PAYMENTS
EXHIBIT C.7 - ADDITIVE ALTERNATES

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Unilateral Option Sum (Notes 1 & 2)	Contract Sum - Payable Amount (Notes 1 & 2)	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
B.8.3	Price to deliver all of Phase 3 – Supply PSBN Components Work for Location Services	$ -	$ -	$ -	$ -
B.8.3	Price to deliver all of Phase 4 – PSBN Implementation Work for Location Services	$ -	$ -	$ -	$ -
Subtotal for Additive Alternate No. 3 - Location Services:		**$ -**	**$ -**	**$ -**	**$ -**
TOTAL FOR ADDITIVE ALTERNATE NOS. 1 TO 3:		**$ -**	**$ 3,480,550**	**$ 348,056**	**$ 3,132,494**

Note 1: Pursuant to Amendment No. 2, effective April 7, 2014, the Authority exercised the Unilateral Option Sum for Phase 1 for both Additive Alternate No. 1, System Design for the Home Subscriber Server (HSS), and Additive Alternate No. 2, System Design for the Redundant Evolved Packet Core (EPC). In connection therewith, the Unilateral Option Sum for System Design for Phase 1 for both Additive Alternate No. 1 and Additive Alternate No. 2, in a total amount of $359,044 was converted into a Contract Sum. The cost for the System Design for Phase 1 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 2. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

Note 2: Pursuant to Amendment No. 4, effective July 16, 2014, the Authority exercised the Unilateral Option Sum for all Work pertaining to (i) Phase 2 for Additive Alternate No. 1, Site Construction and Site Modification for Home Subscriber Server (HSS), (ii) Phase 3 for Additive Alternate No. 1, Supply PSBN Components for the HSS, (iii) Phase 2 for Additive Alternate No. 2, Site Construction and Site Modification for the Redundant Evolved Packet Core (EPC), and (iv) Phase 3 for Additive Alternate No. 2, Supply PSBN Components for the Redundant EPC. In connection therewith, the Unilateral Option Sum for (i) Phase 2 for Additive Alternate No. 1, Site Construction and Site Modification for the HSS, (ii) Phase 3 for Additive Alternate No. 1, Supply PSBN Components for the HSS, (iii) Phase 2 for Additive Alternate No. 2, Site Construction and Site Modification for the Redundant Evolved Packet Core (EPC), and (iv) Phase 3 for Additive Alternate No. 2, Supply PSBN Components for the Redundant EPC; all in a total amount of $2,962,648 was converted into a Contract Sum. The cost for the Site Construction and Site Modification for Phase 2 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 4. The cost for Supplying PSBN Components for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C.7 (Additive Alternates) as amended and restated in Amendment No. 4. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

Note 3: Pursuant to Amendment No. 5, effective September 17, 2014, the Authority exercised the Unilateral Option Sum for all Work pertaining to (i) Phase 4 for Additive Alternate No. 1, PSBN Implementation Work for the Home Subscriber Server (HSS), and (ii) Phase 4 for Additive Alternate No. 2, PSBN Implementation Work for the Redundant EPC. In connection therewith, the Unilateral Option Sum for (i) Phase 4 for Additive Alternate No. 1, PSBN Implementation Work for the HSS, and (ii) Phase 4 for Additive Alternate No. 2, PSBN Implementation for the Redundant EPC, all in a total amount of $1,184,562 was converted into a Contract Sum. The cost for the PSBN Implementation Work for Phase 4 for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C. 7 (Additive Alternates) as amended and restated in Amendment No. 5. The cost for PSBN Implementation Work for both Additive Alternate No. 1 and Additive Alternate No. 2 are reflected in Exhibit C.7 (Additive Alternates) as amended and restated in Amendment No. 5. The balance of the remaining Unilateral Option Sum for Additive Alternate No. 1 and Additive Alternate No. 2 is reflected in Exhibit C.7 (Additive Alternates).

SCHEDULE OF PAYMENTS
EXHIBIT C.12 - CELL ON WHEELS (COWs)

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Quantity	Unilateral Option Sum	Contract Sum - Payable Amount	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
PHASE 1 (SYSTEM DESIGN) COST PER COW						
A.3.3.1.15[1,2]	Construction Drawings	15	-	$ 4,214	$ 421	$ 3,793
A.3.1[1]	Site Design Visit (2 Visits)	15	-	$ 1,348	$ 135	$ 1,213
A.3.3.13[1]	Site Survey with 1A/2C for FAA	15	-	$ 3,934	$ 393	$ 3,541
A.4.1.2.12[1]	Permit Preparation	15	-	$ 563	$ 56	$ 507
A.3.3.15.1[1]	Power Study	15	-	$ 2,203	$ 220	$ 1,983
A.4.2.1[1]	Hygienist	15	-	$ 2,203	$ 220	$ 1,983
A.2.1.1[1]	Project Management	15	-	$ 6,500	$ 650	$ 5,850
A.2.1.1[1]	System Engineering	15	-	$ 6,500	$ 650	$ 5,850
Total Cost for Phase 1 Per COW		**15**	**$ -**	**$ 27,465**	**$ 2,745**	**$ 24,720**
PHASE 1 (SYSTEM DESIGN)						
	COW Site - BLR2DPW	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - CHPNWHLL	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - CHPWVLLY	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - LADPW38	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - LASDMVS	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCECART	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site -SCELNIDO	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCELGNBL	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCEMADR	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCEMERC	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCEMESA	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCEMNRV	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCEMRGO	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCELONG	1	-	$ 27,465	$ 2,745	$ 24,720
	COW Site - SCESTUD	1	-	$ 27,465	$ 2,745	$ 24,720
TOTAL COST FOR PHASE 1 FOR 15 COW SITES		**15**	**$ -**	**$ 411,975**	**$ 41,175**	**$ 370,800**
PHASE 2 (SITE CONSTRUCTION AND SITE MODIFICATION) COST PER COW						
A.4.2[4]	Site Preparation & General Conditions	15	-	$ 5,250	$ 525	$ 4,725
A.4.3[4,5]	Electrical Installation - Power Protection Cabinet, XFR Switch, Cabinet Wiring, Overhead Drop to Disconnect	15	-	$ 26,250	$ 2,625	$ 23,625
A.4.3[4]	Radio Frequency System Installation	15	-	$ 13,125	$ 1,313	$ 11,812
A.4.3[4]	Fencing	15	-	$ 5,250	$ 525	$ 4,725

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Quantity	Unilateral Option Sum	Contract Sum - Payable Amount	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
A.4.3[4]	On-Site Setup	15	-	$ 13,650	$ 1,365	$ 12,285
A.4.3[4]	24 Hour GenSet	15	-	$ 41,832	$ 4,183	$ 37,649
A.4.3[4]	Cabinet & Generator Installation, Conduit, and Cabling	15	-	$ 16,275	$ 1,628	$ 14,647
Total Cost for Phase 2 Per COW		**15**	**$ -**	**$ 121,632**	**$ 12,164**	**$ 109,468**
PHASE 2 (SITE CONSTRUCTION AND SITE MODIFICATION)						
	COW Site - BLR2DPW	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - CHPNWHLL	1	-	$ -	$ -	$ -
	COW Site - CHPWVLLY	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - LADPW38	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - LASDMVS	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCECART	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site -SCELNIDO	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCELGNBL	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCEMADR	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCEMERC	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCEMESA	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCEMNRV	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCEMRGO	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCELONG	1	-	$ 121,632	$ 12,164	$ 109,468
	COW Site - SCESTUD	1	-	$ 121,632	$ 12,164	$ 109,468
TOTAL COST FOR PHASE 2 FOR 15 COW SITES		**15**	**$ -**	**$ 1,702,848**	**$ 170,296**	**$ 1,532,552**
PHASE 3 (SUPPLY PSBN COMPONENTS) COST PER COW						
A.5.1[4]	Backhaul Equipment	15	-	$ 24,675	$ 2,468	$ 22,207
A.5.1[4]	Cisco 819 Aircard Router	15	-	$ 1,575	$ 158	$ 1,417
A.5.1[4,6]	ITS SR55 Trailer	15	-	$ 83,727	$ 8,373	$ 75,354
A.5.1[4,7]	Battery Backup System Configuration Modification for Routers	15	-	$ 3,591	$ 359	$ 3,232
A.5.1[4]	Shipping	15	-	$ 3,994	$ 399	$ 3,595
A.5.1[4]	SP415 Radio Frequency Kit	15	-	$ 4,309	$ 431	$ 3,878
A.5.1[4]	2x2 eNB	15		$ 97,271	$ 9,727	$ 87,544
A.5.1[4]	eNB Battery Backup Cabinets	15		Included in eNB price		
A.5.1[4]	Line Kits 2x2	15		$ 3,018	$ 302	$ 2,716
A.5.1[4]	Tax & Registration on Trailer	15	-	$ 8,033	$ 803	$ 7,230
Total Cost for Phase 3 Per COW		**15**	**$ -**	**$ 230,193**	**$ 22,217**	**$ 199,943**
PHASE 3 (SUPPLY PSBN COMPONENTS)						
	COW Site - BLR2DPW	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - CHPNWHLL	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - CHPWVLLY	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - LADPW38	1	-	$ 230,193	$ 22,217	$ 207,976

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Quantity	Unilateral Option Sum	Contract Sum - Payable Amount	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
	COW Site - LASDMVS	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - SCECART	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site -SCELNIDO	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - SCELGNBL	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - SCEMADR	1	-	$ 230,193	$ 22,217	$ 207,976
	COW Site - SCEMERC	1	-	$ 230,193	$ 23,019	$ 207,174
	COW Site - SCEMESA	1	-	$ 230,193	$ 23,019	$ 207,174
	COW Site - SCEMNRV	1	-	$ 230,193	$ 23,019	$ 207,174
	COW Site - SCEMRGO	1	-	$ 230,193	$ 23,019	$ 207,174
	COW Site - SCELONG	1	-	$ 230,193	$ 23,019	$ 207,174
	COW Site - SCESTUD	1	-	$ 230,193	$ 23,019	$ 207,174
TOTAL COST FOR PHASE 3 FOR 15 COW SITES		**15**	**$ -**	**$ 3,452,895**	**$ 338,067**	**$ 3,114,828**
PHASE 4 (PSBN IMPLEMENTATION) COST PER COW						
A.6.1[4]	Installation and Commissioning	15	-	$ 4,200	$ 420	$ 3,780
A.6.3[4]	Acceptance Testing	15	-	$ 2,625	$ 263	$ 2,362
A.6.4[4]	Training	15	-	$ 1,000	$ 100	$ 900
A.6.5[4]	Documentation	15	-	$ 520	$ 52	$ 468
Total Cost for Phase 4 Per COW		**15**	**$ -**	**$ 8,345**	**$ 835**	**$ 7,510**
PHASE 4 (PSBN IMPLEMENTATION)						
	COW Site - BLR2DPW	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - CHPNWHLL	1	-	$ -	$ -	$ -
	COW Site - CHPWVLLY	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - LADPW38	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - LASDMVS	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCECART	1	-	$ 8,345	$ 835	$ 7,510
	COW Site -SCELNIDO	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCELGNBL	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCEMADR	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCEMERC	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCEMESA	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCEMNRV	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCEMRGO	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCELONG	1	-	$ 8,345	$ 835	$ 7,510
	COW Site - SCESTUD	1	-	$ 8,345	$ 835	$ 7,510
TOTAL COST FOR PHASE 4 FOR 15 COW SITES		**15**	**$ -**	**$ 116,830**	**$ 11,690**	**$ 105,140**
TOTAL COST FOR COW SITES (PHASES 1 -4)		**$5,684,548**				

[1] **Phase 1 Scope of Work for COWs Includes - Perform site visits and surveys, assists with planning and engineering for oveall project, participate in meetings and design review aimed at finalizing project scopes and delivery dates, prepare construction drawings, provide structural analysis for wind-load including stamped engineering, assist with power and Telco coordination, prepare update schedules throughout effort; all as applicable to the Work performed related to the COWs in Exhibit C.12.**

Deliverable/ Task No./ Subtask No./ Section No. *(Exhibit A, B, or Base Document)*	Deliverable	Quantity	Unilateral Option Sum	Contract Sum - Payable Amount	10% Holdback Amount	Payable Amount Less 10% Holdback Amount

[2] **Does not include topography drawings.**

[3] **Includes over-the-counter planning review.**

[4] **Exhibit A references are only for work as it relates to the reasonable delivery and setup of a deployable Cell Site on Wheels. Backhaul, Site Alarms/Monitoring, Backup Power, and Grounding specifications will differ from fixed PSBN sites and will be defined to during design review but shall not exceed prices set forth in Exhibit C.12.**

[5] **If trenching and/or a conduit for power/fiber is required, Contractor shall provide a quote, and upon the Authority's approval, the costs for said work will be deducted from the line item for Phase 2, Subtask A.4.3, Electrical Installation (Power Protection Cabinet, XFR Switch, Cabinet Wiring, Overhead Drop to Disconnect).**

[6] **SR55 Trailer price is based on purchase of 15 units. Price may increase with purchase of fewer units.**

[7] **Site Router and Site Controlers will go in Radio Base Station (RBS). RBS Battery Backup System will be modified to hold Secondary Router and Spread Spectrum microwave Indoor Unit where necessary.**

SCHEDULE OF PAYMENTS
EXHIBIT C.15 - SITE CONSTRUCTION (CX) CHANGES

Change Reference No.	COR Category	Site ID	Category	Sub-Category	Contract Sum - Payable Amount Note 1	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
Amendment No.12							
LARICSLTE-009		LAPP001	Site Design Visit	2nd Site Design Visit	$ 674	$ 67	$ 607
LARICSLTE-009		LAPP001	Site Design Visit	3rd Site Design Visit	$ 674	$ 67	$ 607
LARICSLTE-048		LAPDFTH	Site Design Visit	2nd Site Design Visit	$ 674	$ 67	$ 607
LARICSLTE-320		LAFD081	Site Design Visit	Site Design visit -tower location change	$ 674	$ 67	$ 607
LARICSLTE-741		LAN	Site Design Visit	2nd Site Design Visit	$ 674	$ 67	$ 607
LARICSLTE-874		FS5	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-092R01	007	LACF078	Power Company Payments	SCE Power Company Payments SCE	$ 327	$ 33	$ 294
LARICSLTE-092R01	007	LACF140	Power Company Payments	SCE Power Company Payments SCE	$ 327	$ 33	$ 294
LARICSLTE-092R01	007	GARD001	Power Company Payments	SCE Power Company Payments SCE	$ 327	$ 33	$ 294
LARICSLTE-092R01	007	LACF024	Power Company Payments	SCE Power Company Payments SCE	$ 412	$ 41	$ 371
LARICSLTE-092R01	007	LACF081	Power Company Payments	SCE Power Company Payments SCE	$ 560	$ 56	$ 504
LARICSLTE-092R01	007	LACF098	Power Company Payments	SCE Power Company Payments SCE	$ 899	$ 90	$ 809
LARICSLTE-092R01	007	LACF090	Power Company Payments	SCE Power Company Payments SCE	$ 997	$ 100	$ 897
LARICSLTE-092R01	007	LACF086	Power Company Payments	SCE Power Company Payments SCE	$ 1,022	$ 102	$ 920
LARICSLTE-092R01	007	LACF087	Power Company Payments	SCE Power Company Payments SCE	$ 1,434	$ 143	$ 1,291
LARICSLTE-092R01	007	LASDCSN	Power Company Payments	SCE Power Company Payments SCE	$ 1,681	$ 168	$ 1,513
LARICSLTE-092R01	007	LACF146	Power Company Payments	SCE Power Company Payments SCE	$ 1,778	$ 178	$ 1,600
LARICSLTE-092R01	007	LACF016	Power Company Payments	SCE Power Company Payments SCE	$ 1,896	$ 190	$ 1,706
LARICSLTE-092R01	007	LACF058	Power Company Payments	SCE Power Company Payments SCE	$ 2,056	$ 206	$ 1,850
LARICSLTE-092R01	007	LACF095	Power Company Payments	SCE Power Company Payments SCE	$ 2,222	$ 222	$ 2,000
LARICSLTE-092R01	007	LBFD012N	Power Company Payments	SCE Power Company Payments SCE	$ 2,320	$ 232	$ 2,088
LARICSLTE-092R01	007	LACF132	Power Company Payments	SCE Power Company Payments SCE	$ 2,560	$ 256	$ 2,304
LARICSLTE-092R01	007	LACF059	Power Company Payments	SCE Power Company Payments SCE	$ 2,972	$ 297	$ 2,675
LARICSLTE-092R01	007	LAFD042	Power Company Payments	DWP Power Company Payments	$ 3,486	$ 349	$ 3,137
LARICSLTE-092R01	007	LACF092	Power Company Payments	SCE Power Company Payments SCE	$ 4,420	$ 442	$ 3,978
LARICSLTE-092R01	007	LAPDFTH	Power Company Payments	DWP Power Company Payments LA	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAPDNED	Power Company Payments	DWP Power Company Payments LA	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAPDNHD	Power Company Payments	DWP Power Company Payments LA	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAPDNWT	Power Company Payments	DWP Power Company Payments LA	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAFD047	Power Company Payments	DWP Power Company Payments	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAFD084	Power Company Payments	DWP Power Company Payments	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	LAFD094	Power Company Payments	DWP Power Company Payments	$ 4,950	$ 495	$ 4,455
LARICSLTE-092R01	007	SWP	Power Company Payments	DWP Power Company Payments	$ 5,500	$ 550	$ 4,950
LARICSLTE-092R01	007	LAFD076	Power Company Payments	DWP Power Company Payments	$ 5,591	$ 559	$ 5,032
LARICSLTE-092R01	007	LAFD081	Power Company Payments	DWP Power Company Payments	$ 5,752	$ 575	$ 5,177
LARICSLTE-092R01	007	LAPDWIL	Power Company Payments	DWP Power Company Payments LA	$ 5,798	$ 580	$ 5,218
LARICSLTE-092R01	007	LAPDHLB	Power Company Payments	DWP Power Company Payments LA	$ 5,824	$ 582	$ 5,242
LARICSLTE-092R01	007	LAFD101	Power Company Payments	DWP Power Company Payments	$ 5,968	$ 597	$ 5,371
LARICSLTE-092R01	007	LAFD066	Power Company Payments	DWP Power Company Payments LA	$ 6,303	$ 630	$ 5,673
LARICSLTE-092R01	007	LAPDTOP	Power Company Payments	DWP Power Company Payments	$ 6,655	$ 666	$ 5,989

SCHEDULE OF PAYMENTS
EXHIBIT C.15 - SITE CONSTRUCTION (CX) CHANGES

Change Reference No.	COR Category	Site ID	Category	Sub-Category	Contract Sum - Payable Amount Note 1	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
LARICSLTE-092R01	007	LAPDWVD	Power Company Payments	DWP Power Company Payments	$ 6,655	$ 666	$ 5,989
LARICSLTE-092R01	007	LAFD080	Power Company Payments	DWP Power Company Payments	$ 6,655	$ 666	$ 5,989
LARICSLTE-092R01	007	AZPD001	Power Company Payments	Azusa Power Company Payments	$ 6,150	$ 615	$ 5,535
LARICSLTE-092R01	007	LAFD074	Power Company Payments	DWP Power Company Payments	$ 8,272	$ 827	$ 7,445
LARICSLTE-869		LAPP001	Site Survey	2nd Topo Survey and 1A Letter	$ 3,934	$ 393	$ 3,541
Site Construction Change Orders Amendment 12 Subtotal:					**$ 150,740**	**$ 15,074**	**$ 135,666**
Amendment No.13							
		CEN	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		CPTFD04	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LAPDDVN	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LAPDHWD	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LAPDNHD	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LAPDNWT	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LAPDWIL	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDALD	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDCSN	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDLKD	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDLNX	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDNWK	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		LASDTEM	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		MLM	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		SEP	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		SWP	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		VEFD001	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		VEFD003	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
		WHD	Tower Platforms	Tower Platforms	$ 6,087	$ 609	$ 5,478
GDIT-COR 007	007	LAPDRAM	Power Company Payments	DWP Power Company Payments	$ 6,655	$ 666	$ 5,989
GDIT-COR 007	007	FCCF	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	PLM	Power Company Payments	SCE Power Company Payments	$ 5,482	$ 548	$ 4,934
GDIT-COR 007	007	ELMNTPD	Power Company Payments	SCE Power Company Payments	$ 446	$ 45	$ 401
GDIT-COR 007	007	BMT	Power Company Payments	SCE Power Company Payments	$ 653	$ 65	$ 588
GDIT-COR 007	007	LASDSCV	Power Company Payments	SCE Power Company Payments	$ 4,698	$ 470	$ 4,228
GDIT-COR 007	007	CEN	Power Company Payments	SCE Power Company Payments	$ 9,094	$ 909	$ 8,185
GDIT-COR 007	007	LASDSDM	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	LASDIDT	Power Company Payments	SCE Power Company Payments	$ 118	$ 12	$ 106
GDIT-COR 007	007	LASDNWK	Power Company Payments	SCE Power Company Payments	$ 8,086	$ 809	$ 7,277
GDIT-COR 007	007	LASDPRV	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	LASDTEM	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	ARCPD01	Power Company Payments	SCE Power Company Payments	$ 2,501	$ 250	$ 2,251
GDIT-COR 007	007	LASDALD	Power Company Payments	SCE Power Company Payments	$ 3,911	$ 391	$ 3,520
GDIT-COR 007	007	LASDCVS	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850

SCHEDULE OF PAYMENTS
EXHIBIT C.15 - SITE CONSTRUCTION (CX) CHANGES

Change Reference No.	COR Category	Site ID	Category	Sub-Category	Contract Sum - Payable Amount Note 1	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
GDIT-COR 007	007	CPTFD04	Power Company Payments	SCE Power Company Payments	$ 327	$ 33	$ 294
GDIT-COR 007	007	WHD	Power Company Payments	SCE Power Company Payments	$ 2,320	$ 232	$ 2,088
GDIT-COR 007	007	WAL	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	LHS	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	LAN	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
GDIT-COR 007	007	LASDLNX	Power Company Payments	SCE Power Company Payments	$ 327	$ 33	$ 294
GDIT-COR 007	007	LASDLKD	Power Company Payments	SCE Power Company Payments	$ 6,783	$ 678	$ 6,105
GDIT-COR 007	007	MOR	Power Company Payments	SCE Power Company Payments	$ 327	$ 33	$ 294
GDIT-COR 007	007	FS5	Power Company Payments	SCE Power Company Payments	$ 2,320	$ 232	$ 2,088
GDIT-COR 007	007	LBPDHQ	Power Company Payments	SCE Power Company Payments	$ 2,056	$ 206	$ 1,850
LARICSLTE-0032	020	PASA001	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-0033	020	LAPDWVD	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-0054	003	LACHAR	Structural Analysis - Tower Mapping	Structural Analysis of Self Supported Towers less than 500 feet (on rooftop)	$ -	$ -	$ -
LARICSLTE-0057	020	FCCF	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-0078	039	LAPDNED	Phase II Limited Subsurface Investigation	Phase II Limited Subsurface Investigation	$ 17,339	$ 1,734	$ 15,605
LARICSLTE-0083	003	LAPDVNS	Structural Analysis - Tower Mapping	Structural Analysis Roof Tops (With building drawings provided by owner)	$ -	$ -	$ -
LARICSLTE-0103	020	CULV001	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-0214	034	LACOLV	Structural Analysis-Site Investigation	Site investigation necessary to develop structural analysis (cases where adequate as-built documentation is not provided)	$ 2,675	$ 268	$ 2,407
LARICSLTE-0230	034	LAPDVNS	Structural Analysis-Site Investigation	Site investigation necessary to develop structural analysis (cases where adequate as-built documentation is not provided)	$ 2,675	$ 268	$ 2,407
LARICSLTE-0239	034	PASDNPD	Structural Analysis-Site Investigation	Site investigation necessary to develop structural analysis (cases where adequate as-built documentation is not provided)	$ 2,675	$ 268	$ 2,407
LARICSLTE-0384	035	LAFD085	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0388	035	LAPDFTH	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-0390	035	LAPDNWT	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0483	003	LACHAR	Structural Analysis - Tower Mapping	Tower Mapping (up to 350ft)	$ -	$ -	$ -
LARICSLTE-0545	039	LAPDNED	Expedited contaminated soil removal and disposal	Expedited contaminated soil removal and disposal	$ 16,335	$ 1,634	$ 14,701
LARICSLTE-0584	003	SCH	Structural Analysis - Tower Mapping	Structural Analysis of Self Supported Towers less than 500 feet	$ -	$ -	$ -
LARICSLTE-0585	003	SCH	Structural Analysis - Tower Mapping	Tower mapping (up to 350 ft)	$ -	$ -	$ -
LARICSLTE-0850	020	LHS	Tower Retrofit Design	Tower Retrofit Design	$ 1,967	$ 197	$ 1,770
LARICSLTE-0875	035	LHS	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-0877	035	PLM	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0879	035	WAL	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507

SCHEDULE OF PAYMENTS
EXHIBIT C.15 - SITE CONSTRUCTION (CX) CHANGES

Change Reference No.	COR Category	Site ID	Category	Sub-Category	Contract Sum - Payable Amount Note 1	10% Holdback Amount	Payable Amount Less 10% Holdback Amount
LARICSLTE-0881	035	LASDCVS	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0883	035	LAPDTOP	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-0898	035	LAPDPAC	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0901	035	LAPDWLA	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-0903	035	LAPDWVD	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-0908	035	LASDIDT	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0912	035	LASDPRV	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-0918	035	SLA	2nd Permit preparation for a co-locate site	2nd Permit preparation for a co-locate site	$ 563	$ 56	$ 507
LARICSLTE-1286	035	LASDSCV	2nd Permit preparation for a new tower site	2nd Permit preparation for a new tower site	$ 563	$ 56	$ 507
LARICSLTE-1910	001R	LACF016	Fiber Backhaul Conduit	Primary Fiber Installation	$ 11,427	$ 1,143	$ 10,284
LARICSLTE-1911	001R	LACF061	Fiber Backhaul Conduit	Primary Fiber Installation	$ 12,466	$ 1,247	$ 11,219
LARICSLTE-1912	001R	LACF078	Fiber Backhaul Conduit	Primary Fiber Installation	$ 18,699	$ 1,870	$ 16,829
LARICSLTE-1915	001R	LACF095	Fiber Backhaul Conduit	Primary Fiber Installation	$ 3,117	$ 312	$ 2,805
LARICSLTE-1916	001R	LACF114	Fiber Backhaul Conduit	Primary Fiber Installation	$ 17,660	$ 1,766	$ 15,894
LARICSLTE-1917	001R	LACF117	Fiber Backhaul Conduit	Primary Fiber Installation	$ 10,388	$ 1,039	$ 9,349
LARICSLTE-1918	001R	LACF132	Fiber Backhaul Conduit	Primary Fiber Installation	$ 44,047	$ 4,405	$ 39,642
LARICSLTE-1920	001R	LACF031	Fiber Backhaul Conduit	Primary Fiber Installation	$ 3,358	$ 336	$ 3,022
LARICSLTE-1921	001R	LACF048	Fiber Backhaul Conduit	Primary Fiber Installation	$ 26,865	$ 2,687	$ 24,178
LARICSLTE-1922	001R	LACF050	Fiber Backhaul Conduit	Primary Fiber Installation	$ 10,074	$ 1,007	$ 9,067
LARICSLTE-1923	001R	LACF065	Fiber Backhaul Conduit	Primary Fiber Installation	$ 3,492	$ 349	$ 3,143
LARICSLTE-1924	001R	LACF092	Fiber Backhaul Conduit	Primary Fiber Installation	$ 40,297	$ 4,030	$ 36,267
LARICSLTE-1925	001R	LACF140	Fiber Backhaul Conduit	Primary Fiber Installation	$ 18,805	$ 1,881	$ 16,924
Site Construction Change Orders Amendment 13 Subtotal:					**$ 468,879**	**$ 46,900**	**$ 421,979**
Amendment No. 14							
N/A	007A	ONK	Power Payments	SCE Power Payments	$ 2,320	$ 232	$ 2,088
N/A	007A	PASA001	Power Payments	INDP Power Payments	$ 3,516	$ 352	$ 3,164
N/A	007A	PASDNPD	Power Payments	INDP Power Payments	$ 6,797	$ 680	$ 6,117
N/A	007A	PHN	Power Payments	SCE Power Payments	$ 2,056	$ 206	$ 1,850
N/A	007A	SDW	Power Payments	SCE Power Payments	$ 3,024	$ 302	$ 2,721
N/A	007A	VEFD001	Power Payments	INDP Power Payments	$ 11,823	$ 1,182	$ 10,641
N/A	007A	VEFD003	Power Payments	INDP Power Payments	$ 5,883	$ 588	$ 5,294
N/A	007A	LAFD035	Power Payments	DWP Power Payments	$ 1,540	$ 154	$ 1,386
N/A	007A	LAFD044	Power Payments	DWP Power Payments	$ 8,782	$ 878	$ 7,904
N/A	007A	LAFD061	Power Payments	DWP Power Payments	$ 5,026	$ 503	$ 4,523
N/A	007A	LAFD096	Power Payments	DWP Power Payments	$ 12,376	$ 1,238	$ 11,139
N/A	007A	LAFD105	Power Payments	DWP Power Payments	$ 3,765	$ 377	$ 3,389
N/A	007A	LAPDOLY	Power Payments	DWP Power Payments	$ 6,655	$ 666	$ 5,990
N/A	007A	LAPP01	Power Payments	DWP Power Payments	$ 6,655	$ 666	$ 5,990
Site Construction Change Orders Amendment 14 Subtotal:					**$ 80,218**	**$ 8,024**	**$ 72,196**
Site Construction Change Orders Grand Total:					**$ 699,837**	**$ 69,998**	**$ 629,841**

Note 1: The above identified Contractor Order Requests have been fully negotiated between the Authority and the Contractor, and the above amounts represent a full and final resolution of all claims contained in those

ADMINISTRATION OF AGREEMENT

1. Authority Key Personnel

1.1 Authority Project Director

Scott Edson
LA-RICS Interim Executive Director
2525 Corporate Place, Suite 100
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Authority Project Director Designees:

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Wendy Stallworth-Tait
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1.2 Authority Project Manager

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Authority Project Manager Designee:

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LA-RICS Project Manager, Radio System Technology
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Email: Justin.Delfino@jacobs.com

2. Contractor Key Personnel

2.1 Contractor Project Director

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Los Angeles, CA 90017
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2.2 Contractor Project Manager

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2.3 Contractor Site Work Design Manager

Site Design and Construction Manager
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Construction Management Director (Pyramid Network Services)
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Telephone No.: (801) 745-7156
Email: tsauthoff@pyramidns.com

Mitchell J. Campagna
Site Architect Manager (Mitchell J. Architecture subcontracted to Pyramid Network Services)
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San Diego, CA 92111
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2.4 Contractor Security Designees

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Los Angeles, CA 90017
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Norm Folger
Motorola Project Director
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Los Angeles, CA 90017
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2.5 Authorized Agents

Norm Folger
Motorola Project Director
725 S. Figueroa Street, Suite 1855
Los Angeles, CA 90017
Telephone No.: (817) 343-8288
Email: norm.folger@motorolasolutions.com

Signature: _____

Authority Limit: An Amendment that does not increase the Maximum Contract Sum by more than $1,000,000.

Howard Chercoe
Senior Director US Central & Western Regions Services
10680 Treena Street, Suite 200
San Diego, CA 92131
Telephone No.: (858) 368-3267
Email: h.chercoe@motorolasolutions.com

Signature: _____

Authority Limit: An Amendment that does not increase the Maximum Contract Sum by more than $10,000,000.

John Kedzierski
Corporate Vice President
North America Commercial Markets, Channels and Services
224 South Michigan Avenue
7th floor, Chicago, IL 60604
Telephone No.: (847) 833-0312
Email: john.kedzierski@motorolasolutions.com

Signature: _____

Authority Limit: An Amendment that does not increase the Maximum Contract Sum by more than $25,000,000.

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2.6 Contractor's Office

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LA-RICS

LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

2525 Corporate Place, Suite 100
Monterey Park, California 91754
Telephone: (323) 881-8291
http://www.la-rics.org

SCOTT EDSON
EXECUTIVE DIRECTOR

October 5, 2017

Board of Directors
Los Angeles Regional Interoperable Communications System Authority (the "Authority")

Dear Directors:

APPROVE NO-COST AGREEMENT WITH MUTUALINK, INC.

SUBJECT

Board approval is requested to delegate authority to the Executive Director to execute a No-Cost Agreement with Mutualink, Inc. (Mutualink) to accept the loan of certain equipment, goods, and/or services (Loaned Resources) that exceeds $100,000 in value, on a gratis basis, for the purposes of testing and evaluating compatibility and functionality on the Public Safety Broadband Network (PSBN) and the Land Mobile Radio (LMR) Early Deployment System for special events, such as the West Hollywood Halloween Carnaval Parade and the 2018 Tournament of Roses Parade. The agreement is consistent with the template previously approved by your Board.

RECOMMENDED ACTIONS

It is recommended that your Board:

1. Delegate authority to the Executive Director to execute a No-Cost Agreement between the Authority and Mutualink, in substantially similar form to the Enclosure, to allow the Authority to accept the loan of certain equipment, goods, and/or services, on a gratis basis, for the purposes of testing and evaluating compatibility and functionality of the Loaned Resources on the PSBN and the LMR Early Deployment System until January 31, 2018.

2. Delegate authority to the Executive Director, or his designee, to approve and execute amendments to the No-Cost Agreement, provided that they are approved as to form by counsel to the Authority.

AGENDA ITEM I

BACKGROUND

On June 1, 2017, Authority staff presented an item to your Board to request delegated authority for the Executive Director to execute agreements to accept the loan of certain equipment, goods, and/or services on a gratis basis for the purposes of testing and evaluating compatibility and functionality on the PSBN and the LMR Early Deployment System (i.e. No-Cost Agreement). That item contained a template agreement for use with these No-Cost Agreements. Your Board approved an amended motion, which required Authority staff to (1) return to your Board to request approval to enter into a No-Cost Agreement where the individual or collective value of equipment, goods, and/or services from a single company exceeds $100,000; and (2) provide a Quarterly Report to your Board regarding the Authority's acceptance of any equipment, goods, and/or services on a gratis basis.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The purpose of the recommended action is to allow the Executive Director to accept the use of Loaned Resources from Mutualink on a gratis basis, with a collective value exceeding the $100,000 threshold of delegated authority. Mutualink is allowing the Authority to test the functionality of its platform and associated equipment, on a gratis basis, to share and stream LMR and PSBN communication and data content among various agencies in a secure manner, for use at upcoming special events such as the West Hollywood Halloween Carnaval Parade and the 2018 Tournament of Roses Parade.

The value of the Mutualink equipment is approximately $145,000. In accordance with your Board's direction, we are seeking your approval to delegate authority to the Executive Director to enter into a No-Cost Agreement with Mutualink for an initial term anticipated to start from the date of execution until January 31, 2018. Entering into a No-Cost Agreement with Mutualink would not only allow the Authority to accept Loaned Resources, but also protect the Authority against liability resulting from use of the Loaned Resources, in particular to the extent of the Authority's negligence while in the Authority's possession.

As with any No-Cost Agreement executed, the Authority will not guarantee and will not imply any commitment to purchase or procure any equipment, goods, and/or services from Mutualink.

FISCAL IMPACT/FINANCING

There is no fiscal impact associated with the recommended actions. The total value of the Mutualink's Loaned Resources is approximately $145,000, but will be loaned to the Authority on a gratis basis.

CONCLUSION

The recommended actions will authorize the Executive Director to execute and amend a No-Cost Agreement with Mutualink for the acceptance of the Loaned Resources contemplated in this Board Letter, on a gratis basis.

Respectfully submitted,

SCOTT EDSON
EXECUTIVE DIRECTOR

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Enclosure

c: Counsel to the Authority

AGENDA ITEM I

AGREEMENT TO ACCEPT THE LOAN
OF CERTAIN EQUIPMENT, GOODS, AND/OR SERVICES
ON A GRATIS BASIS
BETWEEN THE AUTHORITY AND MUTUALINK, INC.

This Agreement entered into this ___ day of _____, 2017, between Mutualink, Inc. (hereinafter referred to as "Provider") and the Los Angeles Regional Interoperable Communications System Authority (hereinafter referred to as "LA-RICS" or the "Authority").

RECITALS

WHEREAS, the Provider is willing to provide certain equipment, goods, and/or services (hereinafter "Loaned Resources") to the Authority on a gratis and no obligation basis; and

WHEREAS, the Authority is willing to accept the Provider's Loaned Resources; and

WHEREAS, the Provider understands that providing Loaned Resources to the Authority on a gratis basis does not guarantee or imply a commitment for any purchase or procurement of any equipment, goods, and/or services; and

NOW THEREFORE, in consideration of the mutual covenants and conditions contained herein, Provider and Authority hereby agree as follows:

1. INCORPORATION OF RECITALS

The Recitals contained herein are contractual in nature and are not merely recitals, and are incorporated as terms of this Agreement.

2. CONDITION(S) OF USE

2.1 Exhibit A (Equipment/Goods/Services Details List) shall identify all the equipment, goods, and/or services (Loaned Resources) that the Provider and Authority agree to loan the Authority on a gratis basis.

2.2 Title to equipment, accessories, and other items provided hereunder remain with Provider. Provider shall attach stickers or other visible means of identification which clearly identifies all equipment and items as "Loan Equipment Property of Mutualink" or similar markings.

2.3 The Authority will not use Loaned Resources for any purpose other than to test, demonstrate, and evaluate compatibility, functionality, and interoperability with the Public Safety Broadband Network (PSBN) and/or the Land Mobile Radio (LMR) Early Deployment System.

2.4 Information of a proprietary nature concerning the Loaned Resources will be safeguarded by Authority against disclosure thereof. Upon request of Authority, Provider will identify any information considered to be proprietary.

2.5 Authority will assign appropriately qualified personnel for the operation, handling, and maintenance of the Loaned Resources. All parts and/or materials required to maintain and/or support the Loaned Resources during the term of this Agreement shall be the responsibility of the Provider.

2.6 At the conclusion or earlier termination of this Agreement, Provider shall, at no cost to Authority, de-install, package and arrange for return of Loaned Resources, as may be applicable.

2.7 Holdover of Loaned Resources shall not be deemed as rental or an obligation to purchase.

2.8 Should the Authority elect to purchase equipment, goods, and/or services from the Provider, such purchase shall be consistent with Authority rules and policies.

2.9 Provider shall, at no cost to Authority, promptly correct any and all defects in the Loaned Resources provided.

3. TERM OF AGREEMENT

3.1 The Agreement shall commence upon execution by both parties and shall continue to January 31, 2018. This Agreement may be extended by mutual agreement of the parties hereto.

3.2 Notwithstanding the foregoing, either party shall have the option of terminating this Agreement at any time for any reason upon giving the cancelled party notice in writing at least thirty (30) calendar days in advance of such termination. All Loaned Resources set forth in Exhibit A (Equipment/Goods/Services Details List) must be returned prior to conclusion of the 30 calendar day notice, or as otherwise determined by the Authority, in its sole discretion.

4. CONSIDERATION

4.1 In furtherance of public safety goals, this Agreement is granted on a gratis basis, including but not limited to, tax, equipment, initial consumables and accessories, delivery, shipping and handling, and installation (if necessary). Consideration for this Agreement is a parties' full and faithful compliance with the mutual promises, covenants, terms, and conditions set forth herein.

4.2 All transportation, rigging and packing charges in delivering Loaned Resources to and from the Authority facility shall be paid by Provider, if applicable. Necessary packing cases together with all costs of crating for return of Loaned Resources shall be paid by Provider.

4.3 Installation, instruction and/or training, use and de-installation of Loaned Resources shall be at no cost to Authority.

4.4 The Authority's sole obligation shall be to evaluate and assess whether Loaned Resources has potential use by the Authority. The results of such evaluation shall be at Authority's sole discretion, and Authority is not required to provide reports, analysis, comments and the like.

4.5 The Authority has no obligation for endorsement, to provide a Provider reference or to acquire Loaned Resources.

5. AUTHORITY EQUIPMENT ADMINISTRATOR

5.1 Authority Equipment Administrator:

Los Angeles County Sheriff's Department
LA-RICS Project Team
Sergeant Sven Crongeyer
2525 Corporate Place, Suite 200
Monterey Park, CA 91754
Email: sacronge@lasd.org
Phone: (323) 881-8310

5.2 Authority Equipment Administrator Designee:

Los Angeles County Sheriff's Department
LA-RICS Project Team
Deputy Shawn Moreno
2525 Corporate Place, Suite 200
Monterey Park, CA 91754
Email: srmoreno@lasd.org
Phone: (323) 881-8312

5.3 Provider Equipment Administrator:

Mutualink, Inc.
Robert Wright, Business Development Director
1269 South Broad Street
Wallingford, CT 06492
rwright@mutualink.net
(201) 832-8507

5.4 Provider Equipment Administrator Designee:

Mutualink, Inc.
John Parker, Project Manager
1269 South Broad Street
Wallingford, CT 06492
jparker@mutualink.net
(203) 741-5606

6. INDEMNITY, HOLD HARMLESS, AND LIABILITY

6.1 Provider shall indemnify, defend, and hold harmless Authority, it's elected and appointed officers, member agencies, employees, contractors and agents from and against any and all liability, including but not limited to demands, claims, actions, fees, costs, and expenses (including attorney and expert witness fees), arising from or connected with the Provider's acts and/or omissions arising from and/or relating to this Agreement. Provider shall also be responsible for any harm caused by Provider's Loaned Resources to the Public Safety Broadband Network (PSBN) and/or the Land Mobile Radio (LMR) Early Deployment System.

6.2 Except for damage due to Authority's negligence while equipment is in Authority's possession, Authority shall have no liability for loss or damages to Loaned Resources or items provided hereunder.

6.3 Authority's liability hereunder shall be limited to the extent of Authority's negligence (apportionment). In no event shall Authority be liable for indirect, special or consequential damages even if Authority was advised of the possibility of such. Further, Authority's liability shall not exceed the cost of replacement or repair of equipment.

6.4 Authority shall have no liability for loss or damage resulting from causes beyond Authority's reasonable control.

7. INDEPENDENT STATUS

This Agreement is by and between Provider and Authority and is not intended and shall not be construed to create the relationship of agent, servant, employee, partnership, joint venture or association as between Provider and Authority.

8. ASSIGNMENT

This Agreement is personal to Authority and the Provider, and, in the event the Provider or Authority shall attempt to assign or transfer the same in whole or in part, all rights hereunder shall immediately terminate.

9. DEFAULT

Parties agree that if either party defaults on any of the terms or conditions herein contained, the non-defaulting party may forthwith revoke and terminate this Agreement.

10. WAIVER

10.1 Any waiver by either party of the breach of any one or more of the covenants, conditions, terms and Agreements herein contained shall not be construed to be a waiver of any other breach of the same or of any other covenant, condition, term or Agreement herein contained, nor shall failure on the part of either party to require exact, full and complete compliance with any of the covenants, conditions, terms or Agreements herein contained be construed as in any manner changing the terms of this Agreement or stopping either party from enforcing the full provisions thereof.

10.2 No option, right, power, remedy, or privilege of either party shall be construed as being exhausted by the exercise thereof in one or more instances. The rights, powers, options, and remedies given either party by this Agreement shall be cumulative.

11. INTERPRETATION

Unless the context of this Agreement clearly requires otherwise: (i) the plural and singular numbers shall be deemed to include the other; (ii) the masculine, feminine and neuter genders shall be deemed to include the others; (iii) "or" is not exclusive; and (iv) "includes" and "including" are not limiting.

12. GOVERNING LAW, JURISDICTION, AND VENUE

This Agreement shall be governed by, and construed in accordance with, the laws of the State of California. The parties agree and consent to the exclusive jurisdiction of the courts of the State of California for all purposes regarding this Agreement and further agree and consent that venue of any action brought hereunder shall be exclusively in the County of Los Angeles.

13. SEVERABILITY

If any provision of this Agreement is held invalid, the remainder of this Agreement shall not be affected thereby if such remainder would then continue to conform to the terms and requirements of applicable law.

14. HAZARDOUS MATERIALS

Provider warrants that it complies with all federal, state and local laws, rules, ordinances and regulations concerning hazardous materials and toxic substances.

15. COMPLIANCE WITH LAWS

The Provider shall comply with all applicable provisions of Federal. State and Local laws, rules, regulations, ordinances, and directives, and all provisions required thereby to be included in this Agreement are hereby incorporated herein by reference.

16. NON-EXCLUSIVITY

Nothing herein is intended nor shall it be construed as creating any exclusive arrangement with Provider. This Agreement shall not restrict the Authority from acquiring similar, equal or like goods and/or services from other entities or sources.

17. AMENDMENTS

All changes, modifications, or amendments to this Agreement must be in the form of a written Amendment duly executed by authorized representatives of the Authority and Provider.

18. FACSIMILE REPRESENTATIONS

The Provider and the Authority hereby agree to regard facsimile representations of original signatures of authorized officers of each party, when appearing in appropriate places on the Agreement and/or amendments to the Agreement, and received via communications facilities, as legally sufficient evidence that such original signatures have been affixed to Agreements and/or any amendments to this Agreement, such that the parties need not follow up facsimile transmissions of such documents with subsequent (non-facsimile) transmission of “original” versions of such documents.

19. ENTIRE AGREEMENT

This Agreement, Exhibit A, and any executed Amendments, between the parties hereto, and no addition or modification of any terms or provisions shall be effective unless set forth in writing, signed by both the Provider and the Authority.

(Signature Page – following page)

AGREEMENT TO ACCEPT THE LOAN
OF CERTAIN EQUIPMENT, GOODS, AND/OR SERVICES
ON A GRATIS BASIS

IN WITNESS WHEREOF, Authority has executed this Agreement or caused it to be duly executed, and Provider, by Order of its authorizing body, has caused this Agreement to be executed on its behalf by its duly authorized representatives, on the dates written below.

MUTUALINK, INC.

_____ _____
CEO/Chairman, Mark Hatten Date

LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

_____ _____
Executive Director, Scott Edson Date

EXHIBIT A

EQUIPMENT/GOODS/SERVICES DETAILS LIST

Type of Equipment/ Goods/Service (Ex: Radio, Router, etc.)	**Quantity** (if applicable)	**Asset/ Serial Number** (if applicable)	**Date Equipment/ Goods Loaned or Service Provided to Authority**	**Signatures for: Delivered by Provider ---------- Accepted by Authority**	**Date Equipment/ Goods Loaned Returned to Provider** (if applicable)	**Signatures for: Returned by Authority ---------- Accepted by Provider**
Interoperable WorkStation (IWS)	4					
2x Radio Network Interface Controllers	4					
Video Network Interface Controllers	4					
Telephony Interface Controller	1					
Mutualink EDGE slots	20					
Total value of the above-listed equipment loaned to the Authority on a gratis basis is $145,000.						