

Verizon Wireless

Proposal



Verizon Wireless
7600 Montpelier Road
Laurel, MD 20723

Mr. Clement Ng
Bay Area UASI
10 Lombard Street, Suite 410
San Francisco, CA 94111

Subject: *San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications*

Dear Clement:

Verizon Wireless is pleased to have the opportunity to respond to the Bay Area's supplemental questions regarding its Request for Information, issued September 29, 2009.

As previously noted, Verizon Wireless shares the Bay Area's vision for effective, reliable communications and we are committed to helping you realize that vision through our expansive capabilities and expertise. Our objective is to become the Bay Area's long-term wireless provider and to provide best-in-class options that will enable you to make an informed decision in selecting solutions that meet your needs with the best possible value.

Verizon Wireless is very proud of the relationships we have developed with our Public Safety customers and the communities that they serve. We believe we offer many unique attributes that will assist in assuring a high-probability of success with your solution:

- Industry leadership in deploying advanced broadband networks and an aggressive plan to launch LTE service this year, including in portions of the Bay Area. This provides the Bay Area an opportunity to pilot and leverage first-hand knowledge in order to accelerate your deployment
- A dedicated Government support organization focused on meeting your needs and serving the Public Safety community on; expediting and facilitating wireless solutions and in-depth capability for business continuity-disaster recovery and crisis response
- Access to the LTE open development lab to test and certify current and future data solutions before and during the build of a network
- Development of devices and roaming arrangements for Public Safety's D-Block requirements
- Ability for the Bay Area to leverage the tremendous investment in Verizon Wireless' networks and expertise in order to reduce costs and accelerate implementation
- Future LTE network enhancements specific to Public Safety requirements
- Award winning customer support and the industry knowledge to exceed expectations



February 16, 2010
Mr. Clement Ng
Bay Area UASI

PAGE TWO

Regardless of which solution the Bay Area ultimately chooses to satisfy its need for effective, reliable broadband communications, Verizon Wireless is confident that trialing your applications on our commercial network, combined with our dedicated account teams, will set us apart from all other competitors. We look forward to your favorable review of our response and commencing our discussion about how we can make the best service in the wireless industry today even better for the Bay Area tomorrow.

Should you have any questions or need further clarification on any aspect of this response, please contact Verizon Wireless' National Account Manager, Jim Hennessy, at 925-279-6771, or by e-mail at jim.hennessy@verizonwireless.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Dominic R. DeMark".

Dominic R. DeMark
Public Safety Strategy
Enterprise & Government Markets

Enclosures

Overview of Verizon Wireless Proposal

In its initial response, Verizon Wireless presented various ways in which it could partner with the Bay Area to implement its proposed Broadband Network. These included assisting the Bay Area in its efforts to construct, operate and maintain a private network for dedicated use by Public Safety and other government users in the Bay Area, establishing a "shared wireless broadband network" that would result in a shared network utilizing both Bay Area and Verizon Wireless resources (including spectrum), and use of Verizon Wireless' commercial network(s) for one or more Bay Area pilot projects, regardless of whether a private or shared network arrangement is ultimately chosen. In the event that the Bay Area were to decide to construct a private network, Verizon Wireless noted that there were a number of ways it could support such an initiative, including: (1) sharing of commercial infrastructure (e.g., towers, buildings, backhaul, etc.) to lower the cost of Bay Area's deployment; (2) roaming services and devices that would provide expanded access to broadband service for Bay Area users and ensure the Bay Area's Broadband Network would be fully interoperable with other Public Safety private networks across the country; and (3) construction, operation, and maintenance of Bay Area's Broadband Network ("Managed Services").

Verizon Wireless previously noted that each of these options, independently or in combination, may represent viable alternatives for the Bay Area. However, each would involve varying levels of cost, effort, and risk on the part of the Bay Area and the municipalities which comprise it. In this subsequent response, Verizon Wireless assumes that the Bay Area will construct, operate and maintain its own private network, and makes a specific proposal for how it can support such a network through infrastructure sharing, roaming services, and device development and sales. Verizon Wireless' provision of Managed Services to the Bay Area (i.e., construction, operation, and maintenance of the private network for the Bay Area) remains a viable option. However, there are significant details regarding such an arrangement that would need to be more clearly defined before Verizon Wireless could provide a detailed proposal.

We look forward to working with the Bay Area and commencing our discussions regarding the proposed Bay Area Broadband network. If you should have any questions or need further clarification on any aspect of this response, please contact Verizon Wireless' National Account Manager, Jim Hennessy, at 925-788-8400, or by e-mail at jim.hennessy@verizonwireless.com.

As required, please see Verizon Wireless' responses to the Bay Area's request for additional information as detailed below. In addition, please note the dates shown are for planning purposes only. Adjustments may be required to accommodate technical and operational development work.

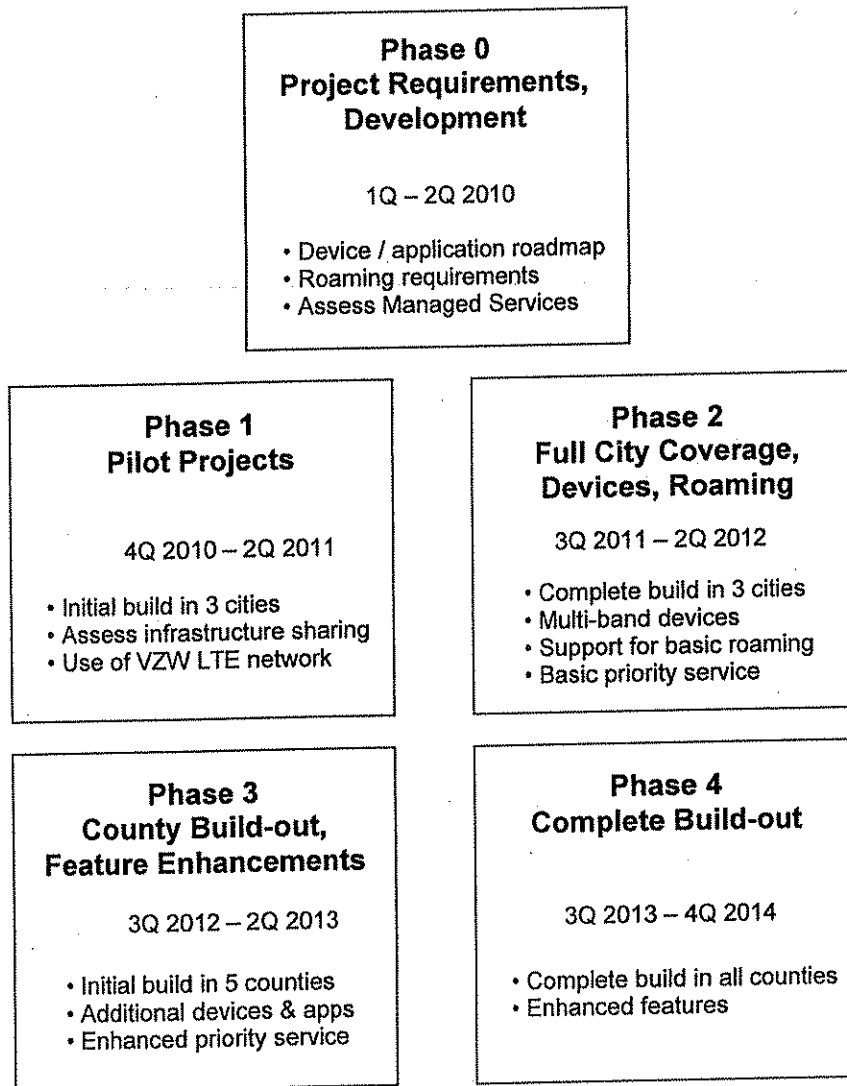
Verizon Wireless recognizes that Bay Area intends to seek federal funds under the American Recovery and Reinvestment Act of 2009 ("ARRA"). If Bay Area intends to seek a grant under ARRA and include references to Verizon Wireless in its application, Verizon Wireless requests review of said references prior to submission.

1.) Address how your company would structure a partnership with the Public Safety participants in the San Francisco Bay Area UASI Region

Verizon Wireless Response:

In order to support the Bay Area's efforts to construct, operate, and maintain a Broadband Network for use by Public Safety and other government users in the Bay Area, Verizon Wireless proposes to provide Bay Area with services and support that could include the following: (1) infrastructure sharing arrangements; (2) roaming services; (3) device development and sales; and (4) use of Verizon Wireless' commercial network(s) for one or more Bay Area pilot projects. We propose a phased approach to achieving the Bay Area's objectives. This phased approach will enable the Bay Area to move ahead quickly with a level of cost, effort, and risk that is manageable, while also providing the flexibility to pursue a variety of future options, once its needs and available funding are better understood. This proposed phased approach is illustrated in Figure 1 below and described in more detail in the sections that follow.

Figure 1. Project Overview



Phase 0 (Project Requirements, Development)

Timeline: 1Q 2010 through 2Q 2010

Primary Objectives:

- 1) Develop device and applications roadmap;
- 2) Develop roaming requirements to meet Bay Area objectives; and
- 3) Evaluate viability of Verizon Wireless Managed Services arrangement.

Project Details:



**San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications
February 16, 2010**

Device and Application Roadmap. Verizon Wireless will work with Bay Area to develop a device and application roadmap that includes applications used on Verizon Wireless' commercial network(s) for the pilot projects (Phase 1) and multi-band devices (Band Classes 13 and 14, Verizon Wireless' current CDMA bands) for use on Bay Area's Broadband Network beginning with Phase 2. Verizon Wireless will provide all funding to support development of dual-band devices.

Roaming Services Requirements. Verizon Wireless will work with Bay Area to develop detailed network and device requirements to enable roaming between Bay Area's Broadband Network and Verizon Wireless' commercial network(s) with a target implementation of 3Q 2011. Verizon Wireless will provide all funding to support development of roaming requirements.

Verizon Wireless Managed Services. As already noted, Verizon Wireless has the experience and core competencies necessary to effectively build, operate, and maintain an advanced wireless broadband network for the Bay Area ("Managed Services"). Leveraging these capabilities would likely reduce the costs and burdens imposed on the Bay Area and the state/local governments which comprise it. While Verizon Wireless cannot provide a detailed proposal for providing such Managed Services at this time, it recommends that the Bay Area and Verizon Wireless work together prior to implementation of the proposed project to determine whether a Verizon Wireless Managed Services arrangement would help the Bay Area achieve its objectives.

Phase 1 (LTE Pilot Projects)

Timeline: 4Q 2010 through 2Q 2011

Primary objectives:

- 1) Begin initial build-out of Bay Area Broadband Network in San Francisco, Oakland, and San Jose;
- 2) Assess infrastructure sharing and collocation arrangements; and
- 3) Use Verizon Wireless' commercial network(s) to gain a better understanding of LTE and various network and device requirements that will impact its future build-out of a Broadband Network.

Project Details:

Initial Build. As outlined in its initial response, Verizon Wireless proposes to use a combination of government and Verizon Wireless sites to support the proposed Broadband Network. Consistent with the Bay Area's goal of initiating pilot projects in San Francisco, Oakland, and San Jose, Verizon Wireless proposes the following build-out and coverage objectives for Phase 1:

City	# Gov Sites	# VZW Sites	% Area Covered (Forward Link)		
			>=-75 dBm	>=-85 dBm	>=-95 dBm
San Francisco	4	0	97.9	100	100
Oakland	3	0	95	99	100
San Jose	6	2	96	98	100

Limiting the initial build to these sites will ensure a more manageable approach to constructing the Broadband Network, and thus, limits the Bay Area's investment, effort, and risk during the first phase of the project.

Infrastructure Sharing and Collocation. A partnership with Verizon Wireless that leverages its considerable investments in buildings, towers, communications networks, ancillary facilities, and other physical assets will enable the Bay Area to substantially reduce the costs of building and maintaining its Broadband Network. However, such arrangements are not commonplace, and may present challenges that are not fully understood today. By

Information contained herein is considered proprietary and confidential and not for disclosure to any third parties without Verizon Wireless' written permission.

**San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications
February 16, 2010**

employing a limited number of Verizon Wireless sites during Phase 1, both the Bay Area and Verizon Wireless will be able to more fully assess the opportunity for infrastructure sharing and collocation arrangements and determine those arrangements that best achieve the partnership's objectives. Detailed RF engineering of planned cell sites will occur in this phase to assure the requirements are met and best use of government of Verizon Wireless cell sites is determined.

Use of Verizon Wireless Commercial Network(s). In the 4th Qtr of 2010, Verizon Wireless plans to launch a 4th Generation LTE wireless network that will cover parts of the Bay Area, as well as numerous other major U.S. cities. By the end of 2013, it intends to have commercial LTE service available over its entire network footprint, which covers nearly 290 million people. Since the Public Safety community has endorsed LTE as its preferred 4G standard, the availability of an extensive, reliable commercial LTE network will be an important complement to the Bay Area's Broadband Network over the long term.

The Bay Area does not have to wait to reap the benefits of a commercial LTE network. Given Verizon Wireless' aggressive plan to launch LTE service in 2010, including in portions of the Bay Area, there is a significant opportunity for the Bay Area to utilize this network as part of its proposed pilot projects. Such use will allow the Bay Area to learn more about LTE technology, the types of public safety applications that LTE will enable, and the manner in which a dedicated public safety network using LTE must be built to accommodate such applications. Moreover, since Verizon Wireless' LTE service will also provide interconnectivity to its current 3rd Generation CDMA EV-DO network, Bay Area users will be assured of reliable broadband data service throughout the Bay Area.

Importantly, considerations related to the design, construction, and operations of a wireless broadband network are substantially different than that of a traditional land mobile radio network. This is especially true for an advanced technology like LTE, since it has not yet been commercially deployed. By incorporating use of Verizon Wireless' LTE network into the proposed pilot project, the Bay Area can more fully assess its own Broadband Network requirements at the early stages of the planning process, before substantial investments have already been made.

Verizon Wireless proposes that Bay Area utilize its commercial networks as part of a pilot project that would achieve the following objectives in Phase 1:

- Trial specific public safety applications provided by the Bay Area to gain experience with LTE
- Update device & application roadmap based on experience gained
- Assess data traffic requirements and incorporate into network design
- Assess coverage requirements and incorporate into network design

Phase 2 (Full City Coverage, Devices, Roaming)

Timeline: 3Q 2011 through 2Q 2012

Primary objectives:

- 1) Completion of build-out subject to zoning and other requirements in cities of San Francisco, Oakland, and San Jose.
- 2) Provide at a minimum, one USB dongle that supports Verizon Wireless' Upper C Block spectrum (Band Class 13) as well as the Public Safety broadband spectrum and the 700 MHz D Block (Band Class 14);
- 3) Implement, test, and refine basic roaming arrangements between Bay Area Broadband Network and Verizon Wireless' commercial network(s);
- 4) Implement, test, and refine priority access arrangements on both Bay Area's Broadband Network and Verizon Wireless' commercial network(s) subject to appropriate regulations;

**San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications
February 16, 2010**

- 5) Transition Bay Area users from Verizon Wireless' commercial network to Bay Area Broadband Network, as appropriate; and
- 6) Use of Verizon Wireless' commercial network(s) for roaming, extended coverage and continued efforts to refine Bay Area network requirements.

Project Details:

Supplemental Build. Phase 2 would involve the completion of build-out in the cities of San Francisco, Oakland, and San Jose. Verizon Wireless proposes the following build-out and coverage objectives by the end of Phase 2:

City / County	# Gov Sites	# VZW Sites	% Area Covered (Forward Link)		
			>=-75 dBm	>=-85 dBm	>=-95 dBm
San Francisco	21	5	95.9	99.8	100
Oakland	14	0	90.5	99	100
San Jose	18	19	93.3	99	100

Devices. Verizon Wireless will provide at a minimum, one USB dongle that support Verizon Wireless' Upper C Block spectrum (Band Class 13) as well as the Public Safety broadband spectrum and the 700 MHz D Block (Band Class 14) by 3Q 2011. The type, number, and price of such devices will be determined based on further consultation with Bay Area representatives.

Roaming. Verizon Wireless will target implementation of basic roaming onto its commercial network(s) by 3Q 2011, subject to Bay Area compatible network equipment and architecture. Roaming will be supported both inside the geography area served by the Bay Area Broadband Network and outside that area. Phase 2 will be used to refine the roaming services provided to the Bay Area.

Priority Access. Verizon Wireless will provide a basic level of priority access to Bay Area users on its commercial network by 3Q 2011. Further enhancements will be dependent on development of industry standards, and will be incorporated into later phases of the project as appropriate.

Phase 3 (County Build-out; Feature Enhancements)

Timeline: 3Q 2012 through 4Q 2013

Primary objectives:

- 1) Completion of build-out subject to zoning and other requirements in counties of Alameda, Contra Costa, Marin, San Mateo, and Santa Clara and begin limited build-out in Napa, Solano, Sonoma, and Santa Cruz counties;
- 2) Provide additional multi-band devices (Band Classes 13 and 14, Verizon Wireless CDMA) and applications in accordance with device and applications roadmap;
- 3) Incorporate enhancements to priority access arrangements, as determined by industry standards and appropriate regulations;
- 4) Transition Bay Area users from Verizon Wireless' commercial network to Bay Area Broadband Network, as appropriate; and
- 5) Use of Verizon Wireless' commercial network(s) for roaming, extended coverage and continued efforts to refine Bay Area's network requirements.

Information contained herein is considered proprietary and confidential and not for disclosure to any third parties without Verizon Wireless' written permission.

Project Details:

Supplemental Build. Phase 3 would involve extending coverage into Bay Area counties of Alameda, Contra Costa, Marin, San Mateo, and Santa Clara. Verizon Wireless proposes the following build-out and coverage objectives by the end of Phase 3:

City / County	# Gov Sites	# VZW Sites	% Area Covered (Forward Link)		
			>=-75 dBm	>=-85 dBm	>=-95 dBm
San Francisco	21	5	95.9	99.8	100
Oakland	14	0	90.5	99	100
San Jose	18	19	93.3	99	100
Alameda County	54	10	77.4	95.7	99.8
Contra Costa County	24	31	71.8	91.6	98.9
Marin County	2	23	75.6	95.2	99.8
San Mateo County	16	10	90.2	99	99.9
Santa Clara County	26	22	90.7	99.6	100

Phase 4 (Complete Build-out)

Timeline: 4Q 2013 through 4Q 2014

Primary objectives:

- 1) Completion of build-out subject to zoning and other requirements in Napa, Solano, Sonoma, and Santa Cruz counties
- 2) Update device and applications roadmap, as appropriate.
- 3) Transition Bay Area users from Verizon Wireless' commercial network to Bay Area Broadband Network, as appropriate; and
- 4) Use of Verizon Wireless' commercial network(s) for roaming, extended coverage, and to continue efforts to understand and refine Bay Area's Broadband Network requirements.

Project Details:

Supplemental Build. Phase 4 would involve extending coverage into Bay Area counties of Napa, Santa Cruz, Solano, and Sonoma. Verizon Wireless proposes the following build-out and coverage objectives by the end of Phase 4:

City / County	# Gov Sites	# VZW Sites	% Area Covered (Forward Link)		
			>=-75 dBm	>=-85 dBm	>=-95 dBm
San Francisco	21	5	95.9	99.8	100
Oakland	14	0	90.5	99	100
San Jose	18	19	93.3	99	100
Alameda County	54	10	77.4	95.7	99.8
Contra Costa County	24	31	71.8	91.6	98.9
Marin County	2	23	75.6	95.2	99.8

San Mateo County	16	10	90.2	99	99.9
Santa Clara County	26	22	90.7	99.6	100
Napa County	3	16	79.4	97.2	100
Santa Cruz County	0	19	75.4	93.6	99.4
Solano County	0	31	94.2	99.8	100
Sonoma County	13	30	93.5	99	100

2.) Describe how your company would address the National Public Safety Telecommunications Council (NPSTC) Broadband Task Force Recommendations

Verizon Wireless Response:

NPSTC recommendations will be addressed as fully as possible by Verizon Wireless. The main recommendation of deploying an LTE network has already been met since VZW has stated the strategic direction for 4G is LTE. Verizon Wireless has already started building a commercial LTE network. The compliance with the recommendations will be affected by how the public/private partnership between Verizon Wireless and the Bay Area is structured. Many of the recommendations are already part of the LTE standards so those should be implemented. Some recommendations cannot be implemented on day one but can be added later. The LTE standards are evolving over time and many of the recommendations may become part of the standards. Some requirements such as use of the 700mhz D-block spectrum and the system hand-over requirements that will be unique to public safety and NPSTC will need to be developed with device manufacturers. NPSTC recommendations and Verizon Wireless comments are detailed below.

**NPSTC Recommendations Detail
February 9, 2010**

Verizon Wireless will work with the Bay Area to implement a private network in a public/private partnership as recommended in the NPSTC report and recommendations. We expect that we should be able to follow the recommendations since they are in line with 3GPP and 3GPP2 standards and specifications. There are unique requirements due to the use of the public safety spectrum in band class 14. Details on the recommendations are in the document below.

Note: Please refer to item #1 above for expected timeframes indicated by the phase 1, 2, 3 and 4 in this section. These are planned timeframes and may vary as development progresses.

6.1 General

6.1.1 Regional Operator Advisory Group – Verizon Wireless will work with the Bay Area to form this panel to guide the public/private partnership as we move forward.

6.1.2 D Block Spectrum – The Bay Area has already filed a waiver request to gain access to this spectrum. Verizon Wireless will work with the Bay Area to ensure success in gaining access to the spectrum to start the build-out of the private network.

6.1.3 Public/Private Partnership - Verizon Wireless will work with the Bay Area to form this partnership in the mode necessary to ensure success of the private network and the partnership. We should review the options and select the direction which best meets the Bay Area objectives and cost limits.

6.1.4 Common Clearinghouse – Verizon Wireless is researching the necessity of a common clearinghouse. This may not be needed as this is an all IP network and the roaming could be handled by routing protocols within the networks. Verizon Wireless will work with the Bay Area on this requirement.

6.1.5 Equipment and Features Test Facility - Verizon Wireless currently has multiple initiatives in place to work with developers of hardware and software for new devices and applications. This includes the Verizon Developer Community and the LTE Innovation Center to promote the development and testing of new applications equipment and devices for the LTE network. These new organizations and facilities can be utilized by the partnership for the purpose of testing devices and equipment.

6.2 Operations

6.2.1 Internet Access – This will be provided in the network in phase 1.

6.2.2 VPN Access to any Authorized Site and to Home Networks – This should be accomplished through the use of VPN client software provided by the Bay Area on the devices and will be available in phase 1.

6.2.3 Status/Information "Homepage" – The requirements should be reviewed to determine the best approach for development. This should be in phase 3.

6.2.4 Status/Information "SMS-MMS Messaging" – SMS and EMS will be provided in the network in phase 1. MMS is projected to be in phase 3 to 4.

6.2.5 Access to Responders under Incident Command System (ICS) – The ICS should be deployed by the Bay Area and be accessible on the internet or direct connection within the private network. The requirements should be reviewed to determine the best approach for development.

6.2.6 LMR Gateway Devices – Targeted to be implemented in phase 4.

6.2.7 Field-Based Server Applications – These servers should be deployed by the Bay Area for the private network with access from the internet. Roaming users should be able to access through the internet.

6.2.8 Location Based Data Capability – Will be part of location based services with expected availability in phase 2.

6.2.9 One-to-Many Communications – Multicast capability is in the 3GPP standard. This will need to be reviewed.

6.2.10 LMR Voice – Targeted to be implemented in phase 4.

6.2.11 PSTN Voice - Targeted to be implemented in phase 2.

6.3 Technical

6.3.1 System Identifiers – The VZW network will comply with 3GPP standards and will support PLMN IDs in phase 1.

6.3.1.1 Phone Numbers – Phase 1.

6.3.1.2 Required Interfaces - The VZW network will comply with 3GPP standards and will support these interfaces in phase 1.

6.3.1.3 Handover Recommendations – Several unique requirements exist since the private network and partner network are overlapping. These requirements are being reviewed, and we expect the partnership to work with device vendors on this capability.

6.3.1.4 Interwork Connectivity Recommendations – This requirement will need to be reviewed with the Bay Area for the best approach.

6.3.1.5 Devices – Unique devices supporting band class 14 will need to be developed. The Bay Area and Verizon Wireless will need to work with device manufacturers to define and develop these devices.

6.3.1.6 Standards Testing - Verizon Wireless works with and follows the 3GPP standards and the equipment will be certified.

6.3.2 Minimum Applications – Please see above for items on internet access, VPN, home page and text messaging.

3.) Address how your company will assume technology risk involved with the following:

a.) Future requirements for interoperability with a national network

Verizon Wireless Response:

Implementation of a broadband LTE network in accordance with industry standards will ensure that Bay Area's Broadband Network is fully interoperable with any other network based on the same standards. Verizon Wireless' commercial LTE network will be based on those standards as well, and thus, will be fully interoperable with any private LTE network deployed by Public Safety. By utilizing standardized technologies that are widely deployed by commercial operators, Bay Area can be assured that its Broadband Network will evolve as commercial networks evolve, incorporating technology upgrades and enhancements as they are available.

b.) Future impact of the D-block on the 700MHz Public Safety Broadband Frequencies

Verizon Wireless Response:

Verizon Wireless believes that the 700 MHz D Block is important in enabling the Bay Area and other state/local governments to adequately address their broadband communications needs. It has publicly advocated that the D Block be reallocated to Public Safety and the proposal described herein is based on that assumption. While the basic partnership framework we recommend could be implemented without the D Block, proposed device development plans and roaming arrangements could be significantly affected. Additionally, performance to the Bay Area's end users will be significantly reduced if limited to the 700 MHz Public Safety Broadband spectrum. Verizon Wireless is currently planning to develop devices and roaming arrangements based on Public Safety's use of the D Block, and intends to assume the costs and risks associated with such development. It will continue to assess the situation and make contingency plans as necessary.

c.) Future requirements of any other governing body that imposes requirements on waiver or license holders

Verizon Wireless Response:

Verizon Wireless believes that the Federal Communications Commission (FCC) is the only governing body with the authority to impose specific requirements on Public Safety licensees, subject of course to directions provided to the FCC by Congress. As a licensee, or as a spectrum lessee that has a contractual arrangement with the licensee, Bay Area would be subject to any rules the FCC establishes, including any requirements imposed as a condition to grant of a waiver of those rules. Verizon Wireless recognizes that final action by the FCC or Congress regarding disposition of the D Block may not occur before the proposed start date of the Bay Area project. Nonetheless, Verizon Wireless is prepared to support Phase 1



**San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications
February 16, 2010**

of the project without such final resolution. Further commitment to later phases of the project, however, may be affected by continued uncertainty regarding the disposition of the D Block.

4.) Describe how your design will leverage existing public assets

Verizon Wireless Response:

An initial system design was completed by our network engineers to identify towers that will be needed to provide the desired coverage in the Bay Area. The engineering design made use of public assets where possible with the use of Verizon Wireless sites to fill in the coverage. The design has a total of 407 cell sites to cover the 10 county area and provide the service described in the RFI. Out of the 407 sites, 191 are public locations offered in the RFI. These sites will need to have fiber optic cable installed for a backhaul from these sites to the mobile switching centers to provide the expected performance. Other necessary resources such as power, space, security and jurisdictional requirements will need to be evaluated and if necessary brought up to standards. Antennas that cover the Band Class 14 spectrum will need to be installed at all of these sites. The structures at these sites need to be able to support these antennas. Keep in mind that this was an initial design and more analysis and work will need to be completed to develop a final design. For example, based upon detailed site engineering, a different mix of cell sites may reduce implementation timelines and/or costs. Details of this design can be shared when Verizon Wireless is selected as the partner by the Bay Area.

Please note that Verizon Wireless is planning to launch its commercial LTE service in greater number of cell sites in this same geographic area. So, differences may exist in coverage (especially in-building) and performance between the Bay Area's private network and the Verizon Wireless commercial LTE network.

5.) Address the grant match requirement

Verizon Wireless Response:

Some of what Verizon Wireless proposes to offer the Bay Area might be considered "in-kind contributions" for the purposes of evaluating an ARRA grant application.

6.) Address the grant National Environmental Protection Act (NEPA) and National Historical Preservation Act (NHPA) requirements

Verizon Wireless Response:

Verizon Wireless currently has internal compliance programs in place that ensure its compliance with both the National Environmental Protection Act (NEPA) and National Historical Preservation Act (NHPA) requirements.

7.) Address issues of system operation, management, sustainment and ownership.

Verizon Wireless Response:

Verizon Wireless assumes that Bay Area will build, operate, and maintain its own dedicated Public Safety Broadband Network. However, as already noted, Verizon Wireless has the experience and capabilities to perform such functions for the Bay Area, or to perform such functions jointly as part of a combined partnership. Verizon Wireless would welcome an opportunity to further discuss how such a partnership could be structured.

Managing and operating an LTE network to cover the 10 county area specified in the RFI is complex and requires systems and personnel resources to monitor the network and be onsite at any of the 407 cell sites when needed to resolve issues or problems in a timely manner. Verizon Wireless does have the organizations to operate and manage the system in the same fashion that it does the commercial network. System operation and management is handled by our Network Operations Center (NOC), National Repair Bureau (NRB) and Customer Care. Verizon Wireless' two Network Operations Centers (NOCs) serve as the hubs of the company's regional network

Information contained herein is considered proprietary and confidential and not for disclosure to any third parties without Verizon Wireless' written permission.

**San Francisco Bay Area 2009-DEM01 RFI for Wireless Mobile Broadband Network, Questions and Clarifications
February 16, 2010**

operations. The NOCs are located in Bedminster, NJ and Southlake, TX, and operate 24 hours a day, 7 days a week, 365 days a year. The NOCs are capable of detecting network failures, diagnosing the failure, sending out repair personnel and tracking the problem to conclusion. The NOCs monitor cell sites, mobile switching centers, mobile data switching systems, and transmission facilities for potential problems. Equipment electronically tracks system alarms and immediately reports them. If an outage does occur, a field engineer is dispatched to correct the problem and bring the cell site back on line. The NRB's (Network Repair Bureau) goal is to work diligently to provide the most efficient service to all customers. The NRB is a network organization that supports both voice and data services. Verizon Wireless monitors all facilities, cell sites and switches across the Verizon Wireless network. Our Customer Service Organization is responsible for ensuring our commitment to Customers First. Through our quality, technology and process improvements, we are creating a culture of service excellence throughout Verizon Wireless. The Wireless Data Technical Support group (WDTS) goal is to assist customers with wireless data connectivity support and problem resolution. The WDTS is available 24/7 by a toll free number. VZW can work with the Bay Area to set service level goals for the public/private partnership network.

8.) Address how your company would work with the San Francisco Bay Area UASI Region to develop a mutually agreeable contract for the delivery of project milestones

Verizon Wireless Response:

The experienced Verizon Wireless Government contracting team will work with the Bay Area to formalize an agreement. Verizon Wireless anticipates that the parties would execute an agreement with mutually agreed upon terms and conditions that will govern the relationship between the parties. The agreement would contain mutually agreeable milestones and anticipated timelines. Verizon Wireless can agree regarding more specifics, such as to how Bay Area would like the phases structured for the 10 counties once a decision is made on which model Bay Area has chosen. To avoid potential conflicts of terms, Verizon Wireless prefers not to incorporate documents in their entirety, such as the entire RFI response. In the event of a discrepancy between the executed agreement and this RFI response, the executed agreement shall prevail. Verizon Wireless' legal, real estate and network staff, would work together with Bay Area and their contract attorneys to discuss the agreements, Statement of Work, and timeline to finalize the agreement. This response is issued by Cellco Partnership, d/b/a Verizon Wireless, a Delaware general partnership that is a joint venture of Verizon Communications (NYSE: VZ) and Vodafone (NYSE and LSE: VOD). This response should in no way be interpreted as an endorsement of or commitment to any thing contained herein. This response is nonbinding and is not a legal offer capable of acceptance.

The information in this document and in any attached documentation is the property of Verizon Wireless, contains confidential and proprietary information of Verizon Wireless and its affiliates, and is submitted to The San Francisco Bay Area in confidence. This information may be used by San Francisco Bay Area and its representatives which include third party advisors, agents and consultants (together "Customer") solely for the purpose of evaluating Verizon Wireless' products and services proposed herein. Customer agrees to treat this information and any attached documentation, including, without limitation, any pricing, terms and conditions, and any information relating to Verizon Wireless' technology, business affairs, or marketing or sales plans, as strictly confidential. Customer agrees not to copy this information or attached documentation, in whole or in part, or disclose such information to others, except to persons who have a need to know for the evaluation purpose stated above. Customer agrees to return this information and any attached documentation to Verizon Wireless upon written request. Customer agrees that in the event of a breach or threatened breach of confidentiality, in addition to other remedies, Verizon Wireless shall be entitled to specific performance and injunctive or other equitable relief. Customer review, use, or disclosure of this information and attached documentation shall constitute acceptance of the terms above.

9.) Address the issues with priority access and preemption

Verizon Wireless Response:

Verizon Wireless is currently working with the WPS and GETS forums to develop a method to provide priority access and pre-emption on the LTE system. Industry Requirements (IR) efforts are presently being led by the National Communications System (NCS), and the IRs are scheduled to be completed in the second quarter of 2010. These provisions would facilitate priority access for different classes of users on the dedicated Public Safety Broadband Network, as well as Bay Area access to Verizon Wireless' commercial LTE network. The LTE standards contain provisions for Allocation and Retention Priority (ARP), Pre-emption Vulnerability (PVI) and Pre-emption Capability (PCI) but no details of implementing ARP, PVI and PCI are defined in the standards. To that end, we are working with the government priority services standards body to determine the best way to implement these functions. We are also working through the regulations to assure that we comply with all appropriate regulations in the deployed service. We expect to launch priority access and pre-emption capabilities when this development is complete.

10.) Address disaster resiliency

Verizon Wireless Response:

Depending on the partnership arrangement that is implemented, the dedicated Public Safety Broadband Network can be modeled after the Verizon Wireless commercial network for resiliency. Service protection and restoration strategies are an integral part of Verizon Wireless' network management. Mobile Switching Centers (MSCs) and cell sites are automatically and continuously monitored for numerous factors, from call processing to room temperature. All MSCs and cell sites have battery backup and most (75% or more) have permanent generators. We also maintain and utilize a fleet of dozens of Cells on Wheels (COWS) and Cells on Light Trucks (COLTS), and generators on trailers (GOaTS) that can be rolled into hard-hit locations or areas that need extra network capacity in a given area. In addition we also maintain towers on wheels and portable generators. Verizon Wireless has implemented Telecommunication Service Priority (TSP) capabilities on critical backhaul circuits, which provides priority service restoration if a circuit is disrupted. The internal Verizon Wireless network is designed with high levels of redundancy. While Verizon Wireless does not manage the Public Switched Network (PSTN) or the Internet, the services provided by these networks are typically designed with high levels of availability. In most cases, if one component or segment of these networks is disrupted, alternate communications paths are available to provide communications services to the subscriber.

11.) Address the issue of job creation

Verizon Wireless Response:

This question cannot be answered at this time as the Bay Area's selection of approach and scope of its requirements has not been defined. However, once the project requirements have been determined, Verizon Wireless will work with the Bay Area to identify resources that would be required to implement this project.