

# REQUEST FOR INFORMATION



<b>RFI No.:</b>	N/A	<b>Close Date:</b>	Nov. 3, 2011	<b>Time:</b>	5 p. m. – Close of Business
<b>Description:</b>	<b>Oregon Public Safety Broadband Network (OPSBN)</b>				
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## Request for Information – Expression of Interest (RFI-EI) Draft Questions for Industry Comment – Oregon Public Safety Broadband Network (OPSBN)

Please provide comments on the attached Draft RFI-EI questions.

Send responses to: Colin Murphy, State Radio Project Procurement  
[colin.t.murphy@odot.state.or.us](mailto:colin.t.murphy@odot.state.or.us)

The State of Oregon's Department of Transportation, Major Projects Branch (MPB) is especially interested in areas that are felt to be missing, unclear, or require additional emphasis.

With regard to length of responses, MPB requests that industry comments on the attached Draft RFI-EI be limited to a suggested page count of five (5) and a maximum of ten (10) pages. ***The answers and comments on the Draft RFI-EI are publicly releasable and shall not include proprietary information.***

***Note that the Draft RFI-EI questions themselves do not require a response at this point in time.***

Staffing contacts are:

Colin Murphy | 503-934-6072  
Steve Noel | 503-934-6940

**Request for Information – Expression of Interest (RFI-EI)**  
**Draft Questions for Industry Comment – Oregon Public Safety Broadband Network (OPSBN)**

Please answer the questions below. Answers to questions should be typed beneath the corresponding question. Retain the same outline numbering. Questions indicating (Y/N) should be limited to a Yes or No answer. Bullet items indicate suggested topics but are not intended to limit your response. Responders are encouraged to provide additional information where appropriate that will assist the Major Projects Branch in developing a future Request for Information (RFI).

**1. Regulatory Technology Requirements**

- 1.1. Does your solution meet all requirements of the FCC order 10-79 of May 11, 2010, and successive orders (Y/N)?

This include requirements relating to

- 3GPP LTE Release 8 or higher
- Out-of-Band Emissions
- Devices
- Interoperability
- Interoperability Testing
- Security
- Virtual Private Networking (VPN) Support

- 1.2. Please list and explain all elements, indicating which are met and unmet as of today. Indicate whether they would be met in time for a pilot test bed in September 2012.

**2. Technology and Technical Specifications**

- 2.1. Please list and provide concise details of the elements of your solution, indicating their availability September 2012, including

- 2.2. Infrastructure (Core and RAN), (In Band Class 14: PSST and D-block spectrum)

- 2.3. Terminals such as

- Portables
- Mobiles
- Specialized Data terminals
- Data modems such as USB dongles
- Integrated devices, such as P25/LTE terminals
- Other devices, as available

Also indicate if the hardware available in September 2012 will support the next release of LTE, including MIMO technology, without modification.

**3. Operations Integration**

- 3.1. For each of the terminal types above, indicate and discuss whether they
- Operate in frequency bands owned by commercial carriers as well
    - If so, operate in LTE or 3G mode in the commercial bands, or both
  - Will roam seamlessly between the public safety and commercial carriers' systems as well as how and by whom the roaming will be controlled

- 3.2. Discuss how network management and maintenance will be handled in your system.

- 3.3. Describe the accounting/billing capabilities of your system, noting any ability to aggregate usage by agency or jurisdiction, access to both pre-formatted and ad hoc reporting capabilities, and other features.

#### **4. Applications and Interoperation with Public Safety**

- 4.1. In addition to Internet access, e-mail, and messaging,
  - List available data applications that can be provided for operations
  - Discuss over-the-air firmware updating
  - Discuss over-the-air software updating
  - Indicate if each of these applications or services are proprietary or standardized
  - Where applicable, indicate whether the application will be integrated with the state's Public Safety Dispatch, CAD, and RMS systems
- 4.2. Discuss the availability of Push-to-talk voice and associated services such as broadcast voice call, encryption, compatibility with P25, etc.

#### **5. Capacity, Coverage, and Bandwidth**

The FCC, in its 3<sup>rd</sup> Report and Order, has required minimum data rates outdoors of 256 kbps uplink and 768 kbps downlink at the cell edge for a single user at a uniform sector loading of 70%. Please discuss the following:

- 5.1. Using the above criteria, what would be the appropriate parameters to define a Mission Support broadband data deployment, with a lower availability/reliability, compared to Mission Critical deployment?
- 5.2. What is the expected range of cell sizes for portable terminals and mobile terminals in real deployments for Mission Support purposes? Differentiate for rural and urban areas.
- 5.3. What is the expected maximum one-way latency?
- 5.4. What additional margins would be appropriate for coverage into buildings and inside basements for portables?
- 5.5. State your opinion as to whether current coverage acceptance testing methods specified in TIA TSB-88 are appropriate for LTE, or indicate an alternative industry approved method that should be used.
- 5.6. Use this space to offer any other recommendations or relevant information regarding this topic you wish to share with the State.

#### **6. Service Level Agreements (SLA), Quality of Service (QoS), Priority**

- 6.1. What Service Level Agreement (SLA) do you plan to provide for public safety? Please discuss with reference to
  - Public Safety spectrum deployments
  - Shared spectrum deployments in the D-block
  - When operating in commercial wireless carrier frequencies
- 6.2. Describe how capacity and throughput will be controlled as the network loading increases in these networks.
- 6.3. List the priority classes supported in Public Safety Spectrum Trust (PSST), D-block and commercial services.

- 6.4. Describe the availability and operation of preemption support in PSST, D-block and commercial services.
- 6.5. Attach your SLA document separately as representative of your proposed terms.

## **7. Network, Information Security, and Information Assurance**

- 7.1. Specify what information security and information assurance (IA) will be provided with Long Term Evolution (LTE) as part of a standard installation.
- 7.2. Will the installation be FIPS 140-2 compliant (Y/N)?
- 7.3. Will the network operate using IP-V4 or IP-V6,
  - in the infrastructure
  - over the air
- 7.4. What encryption will be used over the air and end-to-end?
- 7.5. Describe how terminal and infrastructure IP addresses will be managed.

## **8. Operational Reliability**

- 8.1. Please discuss infrastructure and backhaul reliability and availability in PSST installations, D-block shared spectrum installations and commercial carrier networks and backhaul links, including
  - Reliability and availability
  - Battery backup and backup time
  - Generator backup
- 8.2. Will off-site storage be provided for all electronic data and records in all these networks (Y/N)? Please describe.

## **9. Financial Business Models**

- 9.1. Describe the business model for a Business Owned and Operated systems model with leased services.
  - What is the financial model for system upgrades?
  - What is the financial model for terminal upgrades?
    - For hardware
    - For software, including firmware, applications in laptop-like terminals and apps in tablet terminals
- 9.2. How would bandwidth sharing be implemented and paid for in a shared spectrum model in the D-block?
- 9.3. For the purposes of business case justification of long term service leases, what do you see as existing performance gaps in the public safety mission that the use of broadband services will close?
  - What are the system capabilities that will address these gaps and what quantifiable gains in accomplishing the public safety mission will result from the met requirements?
  - How do these gains translate into tangible benefits?

## 10. Public Safety LTE Pilot Proposal

The questions below refer to a limited duration service pilot in Oregon, with an expected trial start in the September 2012 timeframe.

- 10.1. For your proposed pilot network, provide a network architecture diagram illustrating the location and type of major network elements in the core, backhaul, and radio access segments.
- 10.2. Will your proposed pilot network consist of more than one adjacent eNodeB to enable assessing hand-off, etc. during the pilot period (Y/N)? Describe your proposed configuration.
- 10.3. List the end user devices and features/capabilities that will be available for use during the pilot.
  - Indicate which devices also operate using commercial frequencies and so can be used to test roaming capabilities between public safety and commercial bands.
- 10.4. List and describe what applications you can make available for the pilot.
  - We are especially interested in trialing innovative applications that illustrate new or enhanced public safety uses, and not simply Internet access, e-mail, or text messaging.
- 10.5. Describe the security capabilities that will be in operation and can be assessed during the pilot.
- 10.6. Describe your capabilities and approach to network operations support during the pilot, including trouble resolution and escalation process as well as availability (8x5 normal working hours, 24x7, etc.) and location of tiered support.
- 10.7. For your proposed pilot geography, indicate your approach to routine maintenance and call-out repair, including "home" location of maintenance staff and non-labor resources such as spares caches, repair vehicles, and specialized equipment (e.g., bucket trucks) during the pilot period.
- 10.8. Indicate your approach to network management, monitoring, and surveillance for the pilot. Describe what capabilities Oregon public safety staff will have to monitor, change priority, and manage and report.
- 10.9. Indicate how service provisioning is handled, describing what capabilities Oregon public safety staff will have to provision devices services, including the ability remotely query and "push" configurations to end devices.
  - We are especially interested in services provisioning, priorities, pre-emption, user admission, etc, to better understand administration and control aspects during operation.
- 10.10. Describe the accounting/billing capabilities of your system, noting any ability to aggregate usage by agency or jurisdiction, access to "canned" and ad hoc reporting capabilities, and other features.
- 10.11. Describe the business model for the pilot.
  - If you propose any charges to the State or user agencies, list a schedule of costs, billing periodicity, and anticipated responsible organization.

- 10.12. List the types and level of cost data and performance metrics that you plan to collect during pilot operation that will be available to the State for analysis.
- 10.13. Of the listed performance metrics, indicate which key metrics translate into tangible benefits and how they may be used for deployment business case development.