



**MARYLAND**  
**INTEROPERABILITY**  
**PROGRAM MANAGEMENT OFFICE**

*MARTIN O'MALLEY*  
Governor

*ANTHONY BROWN*  
Lieutenant Governor

August 1, 2012

Marlene H. Dortch, Secretary  
Federal Communications Commission  
Office of the Secretary  
445 12th Street, SW  
Washington, DC 20554

RE: DA 12-1170 - Docket 06-229

Dear Ms. Dortch:

The State of Maryland has reviewed the Public Notice of the Federal Communications Commission (“Commission”) dated July 20, 2012 as well as the filing of the State of Louisiana of July 3, 2012 and offers these comments for the record in this matter. Maryland recognizes and appreciates the importance of the Commission’s rules relative to 700 MHz spectrum efficiency<sup>1</sup>. Additionally, the State is currently implementing the first phase of Maryland FiRST, our statewide public safety radio network, and planning the next phase which will serve State and local first responders in much the same manner as the Louisiana Wireless Information Network (“LWIN”). Accordingly, Maryland recognizes and appreciates the purpose of the Commission’s rules as well as the practical operational issues identified in the LWIN Petition.

Louisiana is not the first licensee to raise the issue of 700 MHz spectrum efficiency; however, it is the first, to the best of our knowledge, to raise the issue relative to “state” 700 MHz channels<sup>2</sup> which Maryland believes to be substantially different from the General Pool 700

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<sup>1</sup> See 47 CFR §90.535

<sup>2</sup> See 47 CFR §90.531(b)(5)



MHz channels<sup>3</sup> for which the Regional Planning Committees<sup>4</sup> are responsible. In these comments, Maryland will mainly offer comments relative to “state” 700 MHz channels which we believe to be critically important state public safety assets that require prudent management because all of the states, as well as federal territories and the District of Columbia, share the very same ninety-six P25 frequency pairs.

In crafting Maryland FiRST, the State has learned that the “state” frequencies do not provide abundant spectral support due to the proximity and communications requirements of neighbors also using these channels. Additionally, natural resources, such as the Chesapeake Bay, greatly extend the signal contours of 700 MHz stations beyond the distances that would be typically served over land masses.

As a general rule and to the extent that LWIN operations remain within Louisiana and geographically separated from state border areas, Maryland believes that the State and LWIN should have the discretion to manage “state” 700 MHz spectrum based upon operational requirements. To that end, Maryland is in support of the LWIN Petition and asks the Commission to grant the relief requested in the instant case. Notwithstanding this support for LWIN, Maryland wishes to emphasize that our support for LWIN does not necessarily extend to other petitioners that have asked for 700 MHz spectrum efficiency relief. To be clear, Maryland believes that the requested relief in the instant case should be limited to “state” 700 MHz channels as used within Louisiana.

It is possible that others will seek similar relief in the future and to that end, Maryland offers comments for the Commission to consider if other states or licensees file a similar Petition.

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<sup>3</sup> See 47 CFR §90.531(b)(6)

<sup>4</sup> See 47 CFR §90.527

### **Management of State 700 MHz Spectrum**

The Commission has allocated ninety-six P25 700 MHz frequency pairs identified for statewide operation under a geographic license. Every state, territory, and the District of Columbia share the very same 700 MHz “state” frequencies. From Maryland’s experience, it is extremely critical to work with neighboring states in crafting voluntary agreements relative to the use of these channels reserved for the use by the states. Maryland has enjoyed excellent cooperation from our neighbors in the development of a channel plan for Maryland FiRST and believes that continuing discussions with neighbors benefit not only technical communications matters, but also homeland security communications interoperability plans.

While generally supportive of the LWIN Petition, Maryland is concerned that the filing does not differentiate those areas internal to Louisiana and areas in the border where the State must share spectrum with neighbors. While Louisiana must be the master of its internal spectrum requirements, the inefficient use of spectrum in border areas can adversely affect neighboring state governments that may have requirements for channels necessitating the spectral efficiency for which the Commission’s rules were adopted. Maryland believes that future state petitions for spectral efficiency relief would be strengthened by supporting letters from the neighboring states that have reviewed the plans of a Petitioner and approve of spectrum deployment strategies in the bordering areas.

### Mitigation of Interference

With respect to the spectrum use in border areas, it is extremely difficult, if not impossible, for any state to develop a statewide 700 MHz land mobile radio system that limits interference contours identified in Commission guidance<sup>5</sup> within its borders. The Commission recognized this fact and stated that “*State Licensees may operate facilities in interstate boundary areas so long as the field strength of station transmissions is limited to 40 dBu/m at the licensee’s geographic border. Adjoining states may agree to alternate field strengths at their common border* (emphasis supplied)”<sup>6</sup>. Maryland and its neighbors utilized alternate field strengths to craft the allotment of state channels in border areas.

Maryland followed DA 01-406 as a general guide to the development of channel allotment plans between the states, but realized that greater interference protection contours were needed. While Maryland and its neighboring states started at 22 dBu to identify “interference contours”, Maryland’s experience has suggested that more protection is needed and we have migrated to a 5 dBu contour to define interference for intra-Maryland allotments of “state” spectrum.

Maryland would encourage future Petitioners and their neighbors to carefully consider interference contour issues as one factor that minimizes the potential of destructive interference to stations in border areas of neighboring states. However, interference contours are not the only factor in establishing the allotment of spectrum between the states as natural formations such as the Chesapeake Bay in Maryland’s case, can greatly impact predicted radio propagation. To demonstrate that “state” 700 MHz spectrum has been used efficiently, future Petitions would benefit from background information provided by the Petitioner and neighbors that documents the efforts of neighboring states to carefully craft “state” channel plans.

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<sup>5</sup> See DA 01-406 Attachment A, GENERAL OPERATING AND TECHNICAL REQUIREMENTS.

While the Computer Assisted Pre-coordination Resource and Database (“CAPRAD”) system sponsored by the National Institute of Justice may be a helpful tool for Regional Planning Committees as well as states in the allotment of spectrum, the tool is largely mathematical and does not take into account unique geographical features that affect propagation. The development of effective channel plans that fully and efficiently utilize spectrum require significant human review to ensure that allotments are appropriate, do not cause interference, and use spectrum to its highest and best purpose. As such, Maryland would recommend that future petitions requesting spectral efficiency relief be accompanied by sufficient narrative to assure the Commission that channel plans were developed analytically with sufficient human review to prevent interference and maximize spectral efficiency relative to the needs of a state.

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<sup>6</sup> See *Third MO&O and Third R&O*, 15 FCC Rcd at 19873 ¶ 67 & n. 207 citing 47 C.F.R. § 73.699, Fig. 10.

### **Participation of the Regional Planning Committees**

Our State would have been unable to construct Maryland FiRST without the support of Region 20 and the General Pool channels that the Region has approved for use where “state” spectrum was unavailable. Recognizing the limitations of the State spectrum that LWIN seeks to exempt from spectral efficiency requirements, the Petition states that Louisiana also uses a combination of State and General Pool 700 MHz channels.

It is not entirely clear in the Petition if the Request for Waiver in LWIN’s Petition extends only to “state” 700 MHz channels or both “state” and “General Pool”; “*LWIN utilizes both State and General Use 700 MHz frequencies*”<sup>7</sup>. State governments have no authority over the activities of the Regional Planning Committees. Maryland believes that future Petitions filed by other states, if any, would be strengthened by supporting comments filed by the Regional Planning Committee having jurisdiction over the General Pool channels in the state submitting the Petition.

Through the record established by adjoining states as well as the Regional Planning Committees, the Commission can assess the efforts of a state to achieve the most practical spectral efficiency in the border areas where inefficient use might adversely overly consume channels and negatively impact neighbors.

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<sup>7</sup> See Petition at IV

### **State Autonomy over Operations in Emergencies and Events Requiring Interoperability**

Perhaps the main argument of LWIN is that jurisdictions in Louisiana have invested large amounts of public funding into the network. This is an important practical reality that may affect states differently. Using the LWIN Petition as an example, Maryland offers its support for the granting of the Petition because each of the states has the best understanding of its public safety communications requirements as well as fiscal capabilities.

#### **§ 90.535 Modulation and spectrum usage efficiency requirements.**

(d) The following provisions apply to licensees operating in the channels designated in §§ 90.531(b)(5) or 90.531(b)(6).

(1) With the exception of licensees designated in paragraph (d)(2) of this section, after December 31, 2014, licensees may only operate in voice mode in these channels at a voice efficiency of at least one voice path per 6.25 kHz of spectrum bandwidth.

(2) Licensees authorized to operate systems in the voice mode on these channels from applications filed on or before December 31, 2014, may continue operating in voice mode on these channels (including modification applications of such licenses granted after December 31, 2014, for expansion or maintenance of such systems) at a voice efficiency of at least one voice path per 12.5 kHz of spectrum bandwidth until December 31, 2016.

(3) The licensees designated in paragraph (d)(2) of this section must, no later than January 31, 2017, file a declaration through the Universal Licensing System that they are operating these channels at a voice efficiency of at least one voice path per 6.25 kHz of spectrum bandwidth.

After December 31, 2016, “*licensees may only operate in voice mode in these channels at a voice efficiency of at least one voice path per 6.25 kHz of spectrum bandwidth*”. There are, however, thousands of first responder radios in Maryland that currently can only be operated using P25 Phase I technology and cannot achieve this spectral efficiency.

Maryland FiRST recognizes that these devices cannot normally be used on the State’s system and as such, regularly participating users are required to utilize a P25 Phase II radio capable of Time Division Multiple Access (“TDMA”) technology to achieve the spectral efficiency required by Subpart 535(d). However, we want the State to have the flexibility to waive this practice in the event of an emergency or situation requiring interoperability through the use of P25 Phase I devices. This is an extremely important requirement for effective first

responder communications. Over time, as more and more TDMA radios are purchased, the need for this protocol will become less important.

Maryland would encourage the Commission to amend Subpart 535(d) or issue supplemental guidance to allow states and licensees providing systems that support emergencies and interoperable communications with the flexibility to permit P25 Phase I operations when required after December 31, 2016.

### **Extending the Date Mandating 700 MHz Spectrum Efficiency**

As Maryland has stated, we support the Louisiana Petition. However, there is a much broader question related to spectral efficiency affecting both state and General Pool channels. The issue has become perhaps even more important with passage of Title VI of the Jobs Act<sup>8</sup> and the future elimination of the T-Band.

Maryland does not believe that a blanket nationwide policy change to extend the date for spectrum efficiency of 700 MHz channels is an appropriate strategy. In the areas where T-Band operations have been authorized in the past, the Commission should very carefully assess issues affecting spectral efficiency in both the 700 and 800 MHz frequency bands in anticipation of current T-Band users migrating to these bands. Because there are two areas in Maryland where T-Band operations have been authorized<sup>9</sup>, the State urges careful Commission study before extending the date for spectral efficiency of “state” 700 MHz channels.

In addition to the “state” channels, General Pool channels would also benefit by careful study before the Commission acts to extend any effective dates for spectral efficiency. Spectrum management in New York City or Los Angeles is significantly different from many less populated parts of the country. Maryland encourages the consideration of a localized approach to spectrum efficiency. Much as we have encouraged the cooperative management of “state” spectrum in consultation with neighboring states, perhaps Regional Planning Committees could assume responsibility for negotiating with adjoining Regions and amending Regional Plans if the first responders and other authorized users wish to manage the issue of spectrum efficiency. After the nationwide debate over the “D” Block, most state and local public safety communications officials recognize that it is highly unlikely that any new spectrum will be

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<sup>8</sup> See Middle Class Tax Relief and Job Creation Act of 2012 § 6203(b)(1)(A), Pub. L. No. 112-96, 126 Stat. 156 (2012)(Spectrum Act).

<sup>9</sup> Baltimore UASI as well as counties meeting the distance requirements to the District of Columbia

identified for public safety and that users must take maximum advantage of the spectrum currently identified in Part 90. Assuming that the Commission agreed to permit decentralized management of issues such as spectrum efficiency management, national oversight for an appropriate level of operational consistency could be maintained if Regional Planning Committees were required to address this issue in their Plans.

### **Schedule to Implement Spectrally Efficient Operations**

Recently the Commission provided guidance<sup>10</sup> to licensees requiring additional time to comply with narrowbanding requirements<sup>11</sup> relative to the use of certain radio frequencies. Many of the recommended steps in narrowbanding the 150-512 MHz channels are equally applicable when considering the granting of waivers for 700 MHz spectrum efficiency. Some of the relevant criteria issued for VHF and UHF narrowbanding included, but were not limited to, the bulleted topics below.

Maryland believes that the Commission's steps outlined in its guidance on the narrow banding matter are also relevant in assessing the value of changing rules related to spectral efficiency. To that end, the State would recommend that the Commission consider incorporating the requirements below which arose from narrow banding into future waiver requests by states and others seeking relief relative to spectral efficiency. Petitioners should address:

- Steps already taken to plan for, initiate, and complete the transition to spectrally efficient operations
- A description of system size and complexity
- Whether system equipment is P25 Phase II or 6.25 KHz capable or must be replaced or upgraded
- Whether the licensee plans additional system upgrades or improvements in addition to converting to P25 Phase II or 6.25 KHz operation

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<sup>10</sup> See DA 11-1189 issued July 13, 2011.

<sup>11</sup> See Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Second Report and Order and Second Further Notice of Proposed Rulemaking*, WT Docket No. 99-87, RM-9332, 18 FCC Rcd 3034 (2003) (*Second R&O*); Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Third Memorandum Opinion and Order, Third Further Notice of Proposed Rule Making and Order*, WT Docket No. 99-87, RM-9332, 19 FCC Rcd 25045 (2004) (*Third MO&O*); Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Order*, WT Docket No. 99-87, RM-9332, 25 FCC Rcd 8861 (2010) (*Narrowbanding Waiver Order*); see also 47 C.F.R. §§ 90.203(j), 90.209(b).

- Whether funding sources have been identified, including does the licensee's budget require government approval or a multi-year budget process
- Whether the licensee's schedule to achieve spectral efficiency is affected by neighboring systems due to interoperability relationships or other interdependencies

### Summary

1. Maryland supports issuance of the relief requested by Louisiana in the instant case.
2. If future Petitions are submitted seeking similar relief, the Petition should demonstrate that the Petitioner and the neighboring states have worked to craft an efficient allotment of 700 MHz frequencies in border areas.
3. Recognizing that efficient spectrum management in border areas is critical, future Petitions should include information that conveys an understanding that the appropriate technical assessments have been incorporated in planning to ensure the efficient allotment of 700 MHz frequencies in border areas.
4. When states also use General Pool channels in a statewide radio system, any documents filed with the Commission seeking spectrum efficiency relief should be accompanied by statements of supports from the affected RPCs.
5. States and other licensees should have flexibility to relax spectrum efficiency requirements during emergencies and other events requiring interoperability.
6. The Commission should not adopt blanket nationwide policies to relax spectral efficiency requirements until the impact of the future loss of T-Band frequencies is carefully evaluated.
7. Petitioners seeking a relaxation of spectral efficiency requirements should provide a schedule in which compliance with Subpart 535(d), as currently written, would be realized.

On behalf of the State of Maryland and the Maryland FiRST system, we appreciate the opportunity to submit these comments and hope that they are helpful to the Commission in considering the important issue of 700 MHz spectral efficiency.

Respectfully submitted,

*Ray Lehr*

Ray Lehr

Director of Maryland FiRST and  
State Interoperability Coordinator