

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

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In the Matter of )

The Enterprise Wireless Alliance and )  
Pacific DataVision, Inc. )

RM-11738

Petition for Rulemaking Regarding )  
Realignment of 900 MHz Spectrum )

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**COMMENTS OF SPACE DATA CORPORATION**

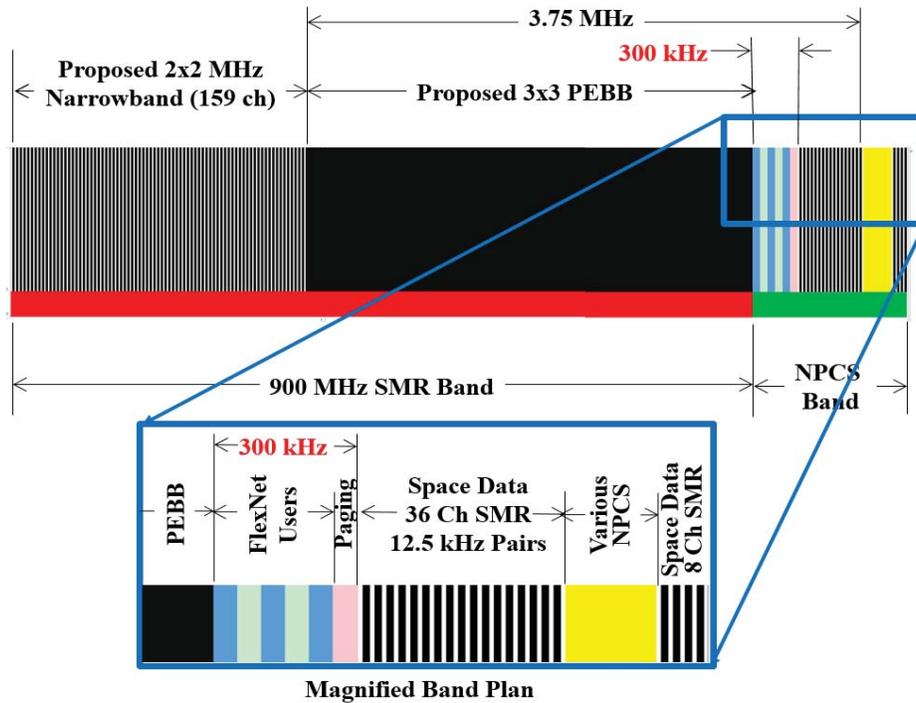
Space Data Corporation (“Space Data”) is pleased to submit these reply comments in the above-referenced proceeding regarding the Petition for Rulemaking filed by the Enterprise Wireless Alliance (“EWA”) and Pacific DataVision, Inc. (“PDV”) (collectively, the “Petitioners”) proposing to realign the 900 MHz Business/Industrial, Land and Transportation (“B/ILT”) spectrum and the 900 MHz Specialized Mobile Radio (“SMR”) Commercial Mobile Radio System (“CMRS”) spectrum to create a Private Enterprise Broadband (“PEBB”) allocation.<sup>1</sup> Space Data does not take a position on the merits of the Petitioners’ proposal at this time, but notes that there is a potential for harmful interference to Space Data’s Narrowband Personal Communications Service (“NPCS”) operations depending on technical rules that could ultimately be adopted. Space Data also proposes alternative solutions to concerns raised by commenters regarding how the proposal, if adopted, would be implemented, and potential solutions to various other issues unique to Critical Infrastructure Industry (“CII”) networks that have been highlighted in this proceeding.

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<sup>1</sup> FCC Public Notice, *Wireless Telecommunications Bureau Seeks Comment on Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition For Rulemaking Regarding Realignment of 900 MHz Spectrum*, RM-11738, DA No. 14-1723 (rel. Nov. 26, 2014).

**I. A PEBB ALLOCATION COULD CAUSE INTERFERENCE TO SPACE DATA'S NPCS OPERATIONS DEPENDING ON THE TECHNICAL RULES**

Space Data is a licensee of Nationwide 900 MHz spectrum in the NPCS band. A portion of its licenses covers the frequencies 901.300-901.750 MHz and 940.300-940.750 MHz on a nationwide basis, which is 300 kHz above the 3x3 PEBB allocation proposed by the Petitioners. Space Data operates near-space wireless networks on its NPCS spectrum from balloon-borne platforms (SkySite® Platforms) in a noise-limited network. To the degree that the creation and deployment of equipment onto a new 3x3 MHz PEBB allocation increases the noise floor more than 300 kHz away from the proposed PEBB allocation edge, it could negatively impact Space Data's operations. Insufficient technical details are available at this time to determine what, if any, impact the PEBB network would have. Figure 1 below shows where Space Data's NPCS channels are in relative proximity to the proposed 3x3 PEBB allocation.



**FIGURE 1: Location of Space Data's NPCS holdings (shown as 12.5 kHz SMR ch.) relative to the proposed PEBB allocation and other NPCS users.**

As highlighted in the comments by NextEra Energy, Inc., the typical guard band allocations at 700 MHz are 1 MHz.<sup>2</sup> Thus, the potential certainly exists for interference at less than one-third of a megahertz separation. The level of interference and whether it would negatively impact Space Data's services cannot be quantified at this time with the information currently available. To the extent the Commission considers moving forward with the Petitioners' proposal, Space Data would work with the Commission and interested parties to define technical rules that would minimize the impact on Space Data's current and planned operations.

## **II. THE SECONDARY MARKET COULD HELP IMPLEMENT A REALIGNMENT OF THE 900 MHz BAND IF CONCEPTS CONTAINED IN THE PROPOSAL ARE ADOPTED**

A portion of Space Data's licenses are available on the secondary market and may ease implementation issues if the Commission chooses to move forward with some version of the proposed realignment of the 900 MHz SMR band.<sup>3</sup> Several commenters highlighted that the proposal would reduce the number of narrowband B/ILT channels from the current 199 channels to 159 channels, potentially leave insufficient channels in highly congested areas to accomplish the proposed realignment.<sup>4</sup> Space Data's NPCS licenses could be configured to create up to 44 12.5 kHz x 12.5 kHz SMR channels with the same 39 MHz offset between receive and transmit as SMR as shown in the map in Figure 2 below.

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<sup>2</sup> See NextEra Energy, Inc. Comments at 4-5.

<sup>3</sup> *Space Data looks to monetize Narrowband PCS spectrum to fund LTE deployments*, FierceWireless, (Jan. 23, 2015), available at <http://www.fiercewireless.com/story/space-data-looks-monetize-narrowband-pcs-spectrum-fund-lte-deployments/2015-01-23>.

<sup>4</sup> See Lower Colorado River Authority Comments at 5; NextEra Energy, Inc. Comments at 11; Westar Energy Inc. Comments at 5; Salt River Project Comments at 2; JVCKenwood USA Corporation Comments at 7, 9. The Utilities Telecommunications Council also noted that channel availability is a concern near the U.S. borders. Utilities Telecommunications Council Comments at 12. Space Data has sixteen 12.5 kHz SMR channels available in the Canadian and Mexican Border areas.



band of operation. Based on conversations with various manufacturers about TETRA equipment for NPCS channels, Space Data also believes that rebanding of 800 MHz TETRA radios to 900 MHz could be accomplished with little or no technical risk.

Several commenters highlighted that current B/ILT 900 MHz systems rely on cavity filters within the tower antenna systems that require at least 250 kHz to as much as 500 kHz of separation between adjacent channels and that achieving this separation within the proposed 2x2 narrowband allocation could be challenging.<sup>6</sup> If the proposed 2x2 narrowband allocation were paired with some portion of Space Data's available NPCS channels, there would be a selection of channels with a separation of over 3000 kHz available to address this issue.

Other commenters have referenced the extra channels that would be needed on a “temporary” basis (as was required during the process of reconfiguring the 800 MHz band) so as not to interrupt service of existing CII networks.<sup>7</sup> Through secondary market mechanisms Space Data’s NPCS channels could be made available on a short term lease to accommodate a realignment by minimizing any interruption of service on existing narrowband networks during the process.

### **III. MANY APPLICATIONS REQUIRING BROADBAND ARE CURRENTLY IMPLEMENTED BY CII COMPANIES ON NPCS SPECTRUM**

Virtually all the commenters in this proceeding have highlighted the increasing demand by the CII for wireless data networks for various applications. Several utilities are already using NPCS spectrum, which they acquired from Space Data on the secondary market, for these types

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<sup>6</sup> See Lower Colorado River Authority Comments at 5; Salt River Project Comments at 2; Utilities Telecommunications Council Comments at 10.

<sup>7</sup> See JVCKenwood USA Corporation Comments at 10.

of applications.<sup>8</sup> Space Data has aggregated several adjacent NPCS channels to create bandwidths up to 450 kHz wide across the nation, facilitating data rates exceeding 1 Mbps. Several radio manufacturers have type-approved equipment for transmitting high speed data over NPCS including: General Electric / Microwave Data Systems, CalAmp, FullSpectrum, and 4RF.<sup>9</sup>

#### **IV. CII NEED FOR RELIABLE WIRELESS NETWORKS THAT WORK DURING AND AFTER DISASTERS COULD BE AIDED BY SPACE DATA'S SKYSITE TECHNOLOGY**

Several commenters have also highlighted the high level of robustness often needed for CII networks to ensure they operate during and after disasters. Space Data has developed a near space communications system that can rapidly deliver critical communications after a catastrophic event. Proven systems that continued operations during and after Hurricane Katrina for Space Data's commercial network have proven the robustness of the technology. Space Data offers a unique solution to the problems first responders and other CII emergency personnel face in the aftermath of a natural disaster or terrorist strike. Indeed, Space Data's inexpensive, commercial off-the-shelf near space<sup>10</sup> communications system provides coverage across wide

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<sup>8</sup> See, e.g., ULS File Numbers: 0005471700 and 0005471715 (PHI Service Company); 0005555222 and 0005555241 (Bolivar Energy Authority); 0005520557 and 0005520556 (Pacific Gas and Electric Company); 0005424556 and 0005424532 (Cleco Power LLC); 0006000923 and 0006000926 (Regency Field Services LLC); 0003931640 (M&FC Holding, LLC).

<sup>9</sup> GE/MDS radios model SD-9, model x790 and MDS Master Station; CalAmp Viper SC, Viper SC+ , Viper SC Base Station and Viper SC+ Base Station; FullSpectrum radio model FullMAX models BS1000, FS4000, and MS4000, and 4RF radio models Apsria SR+ and Aprisa XE. Sensus FlexNet Smart Meter radios.

<sup>10</sup> "Near space" is a relatively new term that encompasses proven technologies that have been integrated into a new type of wireless infrastructure platform: (1) weather balloons that have flown for more than 80 years at a rate of over 800,000 launches per year from 880 sites throughout the world; (2) GPS receivers that allow the weather balloons to be controlled at a specific altitudes above 65,000 feet; and (3) picocells and femtocells that are now of the weight and power class needed to turn a weather balloon into a 20-mile high wireless site. This integrated solution was pioneered by Space Data and used commercially in the South Central United States to provide messaging services to the energy industry. This near space technology also has been deployed by the U.S. Air Force under a \$49 million Near Space Communications System contract.

areas and in difficult terrain, capabilities that previously could only be delivered by satellite communications. Space Data has been active in proposing a similar approach to restore public safety communications after disasters.<sup>11</sup> SkySite Platforms would be an innovative and effective way of restoring critical communications after disasters, which has been fully proven by the US military.<sup>12</sup> GPS receivers on the SkySite Platforms also allow tight control of transmissions, protocol timing, and power near service area borders.<sup>13</sup> Because of the altitude at which SkySite Platforms fly, they are not affected by adverse weather conditions.<sup>14</sup>

Space Data is actively working with various communications infrastructure and user device manufactures to test fly a Fourth Generation (4G) Long Term Evolution (LTE) version of its SkySite Platform. In 2013, Space Data in combination with Oceus Networks successfully flew a full Ericsson LTE macro cell at 70,000-foot altitudes over Denver in a test with the National Institute of Science and Technology (“NIST”) Public Safety Communications Research (“PSCR”) group on 700 MHz Special Temporary Authorization provided by FirstNET.<sup>15</sup> This

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Near space technology, which many companies are pursuing, can take several forms, including tethered blimps, high-altitude manned airplanes, high-altitude unmanned airships, unmanned solar airplanes and Space Data’s balloon-borne miniature wireless base stations.

<sup>11</sup> See Comments of Space Data Corporation in the Matter of Utilizing Rapidly Deployable Aerial Communications Architecture in Response to an Emergency, PS Docket No. 11-15, 25 July 2012

<sup>12</sup> *Marines Use Helium Balloons to Talk to Harrier Jump Jets Over Libya*, DefenseTech (Mar. 26, 2011), available at <http://defensetech.org/2011/03/26/marines-use-helium-balloons-to-talk-to-harrier-jump-jets-in-libya/#ixzz1IPFNe4HW>.

<sup>13</sup> Further information regarding Space Data’s SkySite network is available in the construction showing for one of Space Data’s narrowband PCS licenses. See ULS File No. 0001900882 (filed Oct. 13, 2004, accepted Jan. 13, 2005).

<sup>14</sup> For example, Space Data’s network operated without interruption over its entire coverage area, including much of Louisiana, during Hurricane Katrina. See Statement of Gerald Knobloch, Space Data, before the Commission’s Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks (Mar. 7, 2006 & Supp. Nov. 18, 2005), at <http://www.fcc.gov/pshs/docs/advisory/hkip/GSpeakers060306/ACT1046.pdf> and <http://www.fcc.gov/pshs/docs/advisory/hkip/GSpeakers060306/ACT1049.pdf>.

<sup>15</sup> See Notice of Ex Parte Filing, by Oceus Networks and Space Data Corporation, PS Docket No. 11-15 (Feb. 4, 2014) available at <http://apps.fcc.gov/ecfs/document/view?id=7521070849>, as well as DACA Experiment Report, available at <http://apps.fcc.gov/ecfs/document/view?id=7521070850>.

test demonstrated that from a LTE SkySite at 20,000 meters (65,617 feet) a coverage diameter of 196 km (122 miles) can be provided to standard user devices. Similar systems have been developed for various digital push-to-talk technologies, such as MotoTRBO, and for various high speed data radios compatible with NPCS as highlighted above.

## **V. CONCLUSION**

While not taking a position on the merits of the proposed realignment of the 900 MHz SMR band, Space Data highlights two issues that should be considered if the proposed realignment is pursued by the Commission: (1) there is a potential for interference depending on what technical rules are finally developed, and (2) secondary markets may aid in implementing any 900 MHz realignment by offering the opportunity of additional narrowband channels to CII organizations. The growing CII need for robust high speed wireless data networks is already being served through alternative means such as private networks that use NPCS spectrum. The CII need for robust wireless networks that can operate during and after disasters can be met through the innovative near-space platforms that Space Data has proven with the U.S. Military for critical voice and data applications.

Respectfully submitted,

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January 27, 2015