Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Petition for Rulemaking of	)	RM-11738
The Enterprise Wireless Alliance	)	
And Pacific DataVision, Inc.	)	
	)	
Realignment of the	)	
896-901/935-940 MHz Band	)	
to Create a Private Enterprise	)	
Broadband Allocation	)	

To: Chief, Wireless Telecommunications Bureau

COMMENTS OF SENSUS USA INC.
IN RESPONSE TO PUBLIC NOTICE DATED MAY 13, 2015

Julian P. Gehman
Gehman Law PLLC
910 17th Street NW, Ste 800
Washington, DC 20006
(202) 223-1177
julian@gehmanlaw.com

Counsel to Sensus

George Uram
Executive Vice President,
Industry and Regulatory Affairs
Sensus USA Inc.
717 Ivy Street
Pittsburgh, PA 15232
(412) 736-6013
george.uram@sensus.com

June 29, 2015

TABLE OF CONTENTS

SUMMARY …… iii

I. INTRODUCTION ……...……. 1

A. Interest of Sensus ……... 2
B. The Suggested Rules Are Not Ripe For An NPRM ……... 4

II. THE SUGGESTED RULES WOULD ALLOW HARMFUL INTERFERENCE …….…. 6

A. The Suggested Rules Would Allow Significant Adjacent-Channel Interference …… 6
1. Method of calculating noise …… 7
2. Coexistence model and assumptions……..…….. 8
3. Protection level and noise floor ……... 13
B. The Interference Would Be Harmful Interference …….…..….. 14

III. FLEXNET™ USERS HAVE A RELIANCE INTEREST …… 17

A. Expectation of Continued Use of Frequencies …….… 17
B. FlexNet™ Users' Reliance Interest is Reasonable ……..…. 19

IV. PETITIONERS PROPOSE A RADICAL CHANGE ….……... 21

A. The Change Is More Radical Than That Suggested By Emission Masks ……..… 21
B. Petitioners Should Follow the Precedent of Sprint Nextel In the *800 MHz Proceeding* . …….….. 23
C. Suggested Rules Mandate a Spectrum Grab …… 25

Conclusion ……. 27

Exhibit 1 Real Wireless Analysis
Exhibit 2 Sensus FlexNet Deployments Noise Floor Data
Exhibit 3 Portland, OR Harmful Interference
Exhibit 4 Purcell, OK Harmful Interference
Exhibit 5 Incumbent Part 90 SMR System Impact
Exhibit 6 OOBE Comparison Chart

SUMMARY

Sensus' FlexNet™ systems operate over narrowband PCS (NPCS) frequencies at 901/940 MHz, immediately adjacent to the broadband allocation suggested by Petitioners. More than 800 electric, natural gas and water utilities operate FlexNet™ systems over NPCS frequencies. These utilities use FlexNet™ for advanced metering infrastructure and smart grid applications, including: automatic metering, alarms and outage management, demand response, SCADA and distribution automation, voltage regulation, and street lighting control.

Many of the above operations require real time data with no interruption. Public safety could be endangered if harmful interference were to delay a FlexNet™ outage or overload alarm. Utilities rely on FlexNet™ to manage their distribution networks in real time; loss of real-time network management function would harm service to the public.

More than 15 million FlexNet™ endpoints are operating on NPCS channels throughout the continental United States. That number will rise substantially, as Sensus has a large order book (one customer alone is deploying two million additional endpoints), and Sensus continues to add new FlexNet™ customers every month.

Petitioners' Suggested Rules would allow widespread harmful interference to FlexNet™ systems, thereby endangering these critical infrastructure industry (CII) operations. FlexNet™ systems have experienced isolated instances of harmful interference from substantially less noise than what would be permitted under the Suggested Rules. Two incidents cited in these comments (including one where the Enforcement Bureau intervened), demonstrate that FlexNet™ systems suffered harmful

interference from OOBE of approximately ***one one hundredth*** (1/100) the noise power that Petitioners' Suggested Rules would allow.

Petitioners presented to the Commission their own LTE-to-FlexNet™ coexistence model, on which Petitioners based their conclusions that their proposed OOBE limits would protect FlexNet™ users. However, Sensus' technical experts, Real Wireless, Ltd, found that Petitioners used ten questionable or unsupportable assumptions. For example, Petitioners assumed that only one handheld LTE device would be operating at a time when, more realistically, three or four could be operating simultaneously. Real Wireless used more realistic assumptions and found that Petitioners significantly understated OOBE. For the uplink scenario (LTE user equipment interferes with FlexNet™ base station), Petitioners understated OOBE by at least 27 dB under a moderate interference case and 54 dB under a challenging interference case. Petitioners similarly understated interference for the downlink scenario. Further, Petitioners' model assumes that its LTE system would be used exclusively for mobile service (where units move around and briefly interfere) and ignores machine-to-machine traffic causing non-stop interference.

FlexNet™ users have a reliance interest in the continued use of their licensed frequencies, originally purchased at auction, operating with the noise floor the same as it has been for the last ten years. In reliance on their exclusive use licenses and low OOBE from the narrowband channel, FlexNet™ users have invested over one billion dollars in FlexNet™ systems on which they depend for critical utility functions. Sprint Nextel's iDEN systems (with 23 million subscribers) operated on the adjacent narrowband channels up until a year or two ago. With millions of subscribers packed onto a relatively small number of narrowband land mobile channels, iDEN phones had to be designed with

tight protection for OOBE to prevent intra-system interference. While using the 900 MHz Part 90 spectrum for its allocated purpose – narrowband land mobile – Sprint Nextel successfully co-existed with adjacent band licensees, including FlexNet™ users, in the NPCS band.

Now, Petitioners propose a dramatic change in the OOBE profile for the Part 90 narrowband land mobile spectrum. The actual change in OOBE is much larger than would be suggested by simply comparing the Petitioner's suggested emission mask to the Part 90 emission mask: the economics of commercial narrowband land mobile service required Sprint Nextel to use equipment with tighter emissions than required by Part 90 rules.

Before reallocating spectrum for flexible use, the Commission must find that it will not result in harmful interference. However, the Commission cannot make this finding here. Petitioners have the burden to adequately demonstrate that their broadband service – both mobile and fixed – can be provided on this narrowband Part 90 land mobile spectrum without harmful interference to adjacent band users. Unless and until Petitioners meet this burden, which they have not done, the Commission should decline to revisit existing rules or initiate a rulemaking proceeding.

The Suggested Rules would confiscate Auctioned SMR licenses in six MTAs, with no compensation for the value of these licenses, and no opportunity for the licensees to object or negotiate. This gives the appearance of a spectrum grab.

When it sought wideband authorization, Sprint Nextel proposed realistic measures that far exceeded Part 90 rules and that addressed adjacent narrowband channel concerns. Petitioners could help their case in this proceeding by following that precedent. Here,

such measures would include emission limitations at the band edge that fully protect against interference to FlexNet™ systems, as well as more effective and timely harmful interference mitigation procedures.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Petition for Rulemaking of	)	RM-11738
The Enterprise Wireless Alliance	)	
And Pacific DataVision, Inc.	)	
	)	
Realignment of the	)	
896-901/935-940 MHz Band	)	
to Create a Private Enterprise	)	
Broadband Allocation	)	

To: Chief, Wireless Telecommunications Bureau

COMMENTS OF SENSUS USA INC.
IN RESPONSE TO PUBLIC NOTICE DATED MAY 13, 2015

Sensus USA Inc., through counsel, hereby responds to the Public Notice of the Wireless Telecommunications Bureau.[1] The Public Notice solicits comments on the submission of suggested rules, dated May 3, 2015, by The Enterprise Wireless Alliance and Pacific DataVision, Inc. ("PDV") (together, the "Petitioners") in the captioned proceeding.

I. INTRODUCTION

On November 14, 2014, Petitioners submitted a Petition for Rule Making (the "Petition") urging realignment and reallocation to broadband of the 896-901/935-940 MHz Band, including a so-called Private Enterprise Broadband (PEBB) license in each

[1] Wireless Telecommunications Bureau Seeks Comment on Supplement to Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition for Rulemaking Regarding Realignment of 900 MHZ Spectrum, *Public Notice*, RM-11738, 29 FCC Rcd 14424, DA 15-157 (May 13, 2015).

market.[2] The Petitioners' most recent submission, dated May 3, 2015, transmitted their suggested rules for the requested spectrum reallocation (the "Suggested Rules").[3]

Sensus opposes Petitioners' Suggested Rules because Petitioners have failed to demonstrate that the rules would prevent PEBB systems from causing significant harmful interference to adjacent-channel operations of critical infrastructure industries (CII). In fact, evidence discussed below establishes that significant harmful interference **will** result if the Suggested Rules are adopted.

A. Interest of Sensus

As described in its initial Comments in this proceeding, Sensus designs, manufactures, installs, operates and services its FlexNet™ system for advanced metering infrastructure (AMI) and smart grid applications.[4] Sensus and other FlexNet™ users hold Narrowband PCS (NPCS) licenses at 901/940 MHz, immediately adjacent to the Petitioners' proposed PEBB allocation. FlexNet™ users are utilities that distribute electric power, natural gas and/or water to residences and businesses. These are quintessential CII services. One of the advantages of FlexNet™ is that it facilitates development and use of smart grid functionality by utilities, large or small, including those operating in rural areas.

---

[2] Petition for Rulemaking of the Enterprise Wireless Alliance and Pacific DataVision, Inc., filed Nov. 17, 2014.

[3] Realignment of the 896-901/935-940 MHz Band to Create a Private Enterprise Broadband Allocation, Petition for Rulemaking of the Enterprise Wireless Alliance and Pacific DataVision, Inc., RM-11738, Proposed Rules, filed May 3, 2015.

[4] Comments of Sensus USA Inc. 3, filed January 12, 2015.

More than 800 electric, natural gas and water utilities operate FlexNet™ systems over NPCS frequencies. These utilities use FlexNet™ for advanced metering infrastructure and smart grid applications, including: automatic metering, alarms and outage management, demand response, SCADA and distribution automation, voltage regulation, and street lighting control.

Although FlexNet™ sends repeat messages for meter reading, many of the above operations require real time data with no interruption. For example, public safety could be endangered if harmful interference were to delay a FlexNet™ outage notification or overload alarm. Similarly, utilities rely on FlexNet™ to manage their distribution networks in real time. Repeat messaging cannot be relied on for alarm or network management functions.

More than 15 million FlexNet™ endpoints are operating on NPCS channels throughout the continental United States. That number will rise substantially, as Sensus has a large order book (one customer alone is deploying two million endpoints), and Sensus continues to add new FlexNet™ customers every month.

FlexNet™ is a unique, innovative fixed communications network that is not designed or operated like a narrowband land mobile radio system. A FlexNet™ system is a critical machine-to-machine network. It requires highly reliable fixed communications links to (often difficult to reach) static locations. The design of a FlexNet system cannot be based on the statistics of mobility to overcome coverage deficiencies.

FlexNet™ endpoints transmit at up to 1.4 watts ERP. FlexNet™ systems transmit at relatively low power in exclusively-licensed spectrum that is generally interference-free, thereby conserving spectrum and allowing utilities to deliver services to large and/or

remote service territories with less infrastructure. Utilizing lower power conserves spectrum by permitting more FlexNet™ systems to operate within a given geographic area over the same frequencies. This is consistent with the mandate of the Communications Act of 1934, as amended, that radio stations "shall use the minimum amount of power necessary to carry out the communication desired."[5]

In the United States, FlexNet™ operates at 900 MHz over 50 kHz X 50 kHz channels. FlexNet™ subdivides this spectrum and internally assigns channel widths of between 1.6 kHz and 25 kHz, depending on the specific functions needed by the utility. FlexNet™ receivers automatically adjust to the bandwidth of the desired signal and do not "look into" the adjacent channel. In other words, this is different from the GPS/LightSquared situation, where GPS receivers looked into the licensed spectrum of LightSquared: FlexNet™ successfully coexisted with millions of iDEN subscribers in the immediately adjacent channels. FlexNet™ delivers smart grid applications to CII entities[6] over a fraction of the spectrum that the proposed PEBB band would occupy. For these reasons, FlexNet™ is very different from the broadband, higher power LTE system that Petitioners now propose to operate in the adjacent band.

B. The Suggested Rules Are Not Ripe For An NPRM

The Commission has authority to allocate spectrum for "flexibility of use" where it finds, after notice and opportunity to comment, that the proposed allocation "would not

[5] 47 U.S.C. § 324 (2015).

[6] These are the same entities that PDV intends to target and deploy local LTE systems upon request by the CII customer.

result in harmful interference among users."[7] The Commission's rules define "harmful interference" as "[i]nterference that . . . seriously degrades, obstructs or repeatedly interrupts a radio communications service."[8] Consistent with the language of this rule, in making a harmful interference determination, the Commission has focused on whether the interference complained of is perceptible to, or noticed by, the users.[9]

Operation of an LTE system under the Suggested Rules has the potential to seriously obstruct FlexNet™ operations, resulting in harmful interference to FlexNet™ users. As described in greater detail below, in the field, FlexNet™ systems have experienced harmful interference from receiving less than ***one one hundredth*** (1/100) the noise that the Suggested Rules would allow. In one case where the harmful interference

---

[7] 47 U.S.C. § 303(y) (2015). Petitioners' Suggested Rule Section 90.1415 describes a flexible use arrangement, triggering the requirements of Section 303(y) of the Communications Act of 1934, as amended. Neither Congress nor the Commission appears to have defined the term "flexibility of use." In its 1999 Spectrum Policy Statement, the Commission gave examples of flexibility with respect to spectrum allocation: "Flexibility can be permitted through the use of relaxed service rules, which would allow licensees greater freedom in determining the specific services to be offered. Another way is to allow flexibility in use of spectrum is to allow licensees to negotiate among themselves arrangements for avoiding interference . . .." *In the Matter of Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millenium*, Policy Statement, 14 FCC Rcd 19868, 19870 (Nov 22, 1999). Petitioners' proposed rule 90.1415 would establish the PEBB Licensee as a sort of band manager. The PEBB Licensee would negotiate with CII entities and others to do "build to suit" systems of as yet indeterminate type or use, with flexible ownership, operating and licensing arrangements, to be negotiated by the parties (proposed rule 90.1415(a)(3)), and a sliding scale of priority of access to spectrum among potential users (proposed rule 90.1415(b)). Under this arrangement, the Commission would not "[p]rescribe the nature of service to be rendered by each class of licensed stations and each station within any class." *See* 47 U.S.C. § 303(b) (2015). Thus, the Commission's authority to make the proposed spectrum allocation would derive from Section 303(y) and its attendant requirement of making certain findings, and not from the more general authority of Section 303(b). Nevertheless, even if proceeding under Section 303(b), the Commission would need to make the same finding of no harmful interference, in fulfillment of the agency's general mission of regulating to prevent harmful interference.

[8] 47 C.F.R. § 1.907 (2015).

[9] *See, e.g., Northpoint Tech., Ltd. v. FCC,* 414 F.3d 61, 68-69 (D.C. Cir. 2005) (affirming FCC standard for harmful interference: whether DBS subscribers would notice the interference).

disrupted ongoing FlexNet™ operations, it resulted in loss of 70% of message traffic at affected FlexNet™ base stations.[10] Clearly, this is interference that is perceptible to and noticed by FlexNet™ users.

Given that Petitioners' proposal could result in the loss of 70% or more of message traffic on FlexNet systems as a result of disruptions caused by out of band emissions (OOBE), it is clear that operation of PEBB systems would create harmful interference, and therefore the Commission would lack authority to promulgate the Suggested Rules.

II. THE SUGGESTED RULES WOULD ALLOW HARMFUL INTERFERENCE

Operation of an LTE system under the Suggested Rules has a significant potential to cause harmful interference because: (1) the Suggested Rules would allow significant adjacent-channel interference to FlexNet™ systems, and (2) this interference would seriously degrade and interrupt FlexNet™ radio communications thereby constituting harmful interference. Each of these points is reviewed in turn below.

A. The Suggested Rules Would Allow Significant Adjacent-Channel Interference

Depending on the assumptions used, operation of an LTE system under the Suggested Rules are predicted to put significant amounts of power into FlexNet™ receivers. As described in the next section, even at the low end of the projected OOBE range, this amount of noise is proven to cause harmful interference.

[10] Given that FlexNet™ SLAs require a 98.5% to 99.9% message delivery rate (*infra*, n23), within the stated time period, loss of most of the traffic at a single base station would cause the entire FlexNet™ system for a utility to breach the SLA.

1. Method of calculating noise

Petitioners have presented no evidence of laboratory or field testing of how their intended operations would impact FlexNet™ receivers in the adjacent NPCS bands. Therefore, the methodology and assumptions used to project the amount of noise becomes critical. Generally, there are three parts to these calculations:

1. The emission mask and other technical specifications intended to limit noise entering the licensed spectrum of FlexNet™ users from the proposed PEBB. Petitioners suggested an emission mask consisting of attenuation of 55+10log(P) dB relative to the in-band transmit power in a 30 kHz band segment. This translates into -70 dBm/Hz ERP of power emitted into the frequencies used by FlexNet™.[11]
2. The coexistence model used to project the strength and type of LTE signals reaching FlexNet™ receivers. In other words, starting with the -70 dBm/Hz ERP entering the FlexNet™ frequencies, how much power is left over to hit the FlexNet™ receivers once the signal dissipates through free space loss and other factors? Sensus and Petitioners agree on the overall structure of the model but do not agree on key assumptions. On the uplink (LTE UE to FlexNet™ base station), Petitioners told the FCC that no more than -168 dBm/Hz would hit FlexNet™ receivers, while Real Wireless more realistically projects -139 dBm/Hz under a moderate interference case, and -

[11] Suggested Rule § 90.1419 does not specify whether the limit would apply on an ERP or EIRP basis. The analysis presented herein assumes ERP. If in fact the limit were intended on an EIRP basis, it would increase interference by approximately 2 dBm/Hz.

114 dBm/Hz under a challenging interference case.[12] On the downlink (LTE base station to FlexNet™ UE), Real Wireless projects -147 dBm/Hz for the moderate interference case and -138 dBm/Hz for the challenging case.[13]

3. The protection level to which noise from the LTE system should be attenuated in the NPCS band so that FlexNet™ systems can continue to perform their mission without interruption or degradation. Citing ambiguous studies, Petitioners claim that FlexNet™ systems should be protected only to -160.5 dBm/Hz. By contrast, FlexNet™ users' ten years of experience with actual noise floors indicates the protection level should be -168 dBm/Hz for a moderate interference case and -170 dBm/Hz for a challenging interference case.

The coexistence model and protection level are discussed below.

2. Coexistence model and assumptions

Petitioners developed a spreadsheet-based, LTE-to-FlexNet™ coexistence model and presented the high level conclusion of that model to the Commission in claiming to protect FlexNet™ users.[14] As noted, based on their model, Petitioners told the Commission that no more than -168 dBm/Hz would hit the FlexNet™ receivers. But is

[12] Real Wireless' moderate and challenging interference cases are explained *infra*, at 9-10.

[13] Petitioners' calculations, leading to their *ex parte* presentation of March 23, 2015, apparently added the gain of their base station antenna systems to the proposed emission limits. The analysis herein corrects for Petitioners' apparent mistake and interprets the proposed limits as ERP.

[14] Letter from Elizabeth R. Sachs to Marlene H. Dortch, Secretary, Federal Communications Commission, transmitting *ex parte* presentation of Enterprise Wireless Alliance and Pacific DataVision Inc., slide 10 (Mar 25, 2015).

that model reliable?[15] Sensus' consultants, Real Wireless Ltd., found that many of the Petitioners' assumptions were unrealistic or, in one case, unsupportable.[16] Real Wireless' assessment is that Petitioners presented a very optimistic case to the FCC that has a low probability of actually occurring in a purely mobile deployment (and a nearly zero probability with substantial machine-to-machine traffic).

In response, Real Wireless prepared two projections – a "challenging" interference case, and a "moderate" interference case. Both cases use Petitioners' model but with differing assumptions. The challenging case was intended as a counter-weight to Petitioners' overly optimistic case. Like Petitioners' case, the challenging case has a lower probability of occurring; and the challenging case demonstrates what happens when more conservative assumptions are used. The Commission should consider Real Wireless' challenging case because the Suggested Rules are premised on Petitioners' low probability case. Fairness dictates that the Commission should consider Real Wireless' conservative, lower-probability analysis along with Petitioners' optimistic, lower-probability analysis.

Real Wireless prepared its "moderate" case to represent what a higher probability case would look like. Real Wireless developed its moderate case in consultation with Southern Company, a major FlexNet™ user, and SouthernLINC Wireless, which is deploying an LTE system. The moderate case is based on those companies' operational experiences as to an interference case with a higher probability of occurring.

---

[15] Petitioners' inability to define the equipment to be used in PEBB systems precludes laboratory or field-testing at this time. This absence of real-world testing forces reliance on models and calculations. Since LTE interference modeling is relatively new with little real-world experience against which to compare the model, the Commission should err on the side of caution when assessing whether certain assumptions, used as LTE model inputs, are "realistic."

[16] Real Wireless' analysis is set out at Exhibit 1, hereto.

Sensus believes that any emission masks for PEBB systems must fully protect - at the edge of the 900 MHz Band - against the likely potential for interference as depicted by Real Wireless' moderate case. In any event, rules for PEBB would need clear and effective procedures to mitigate actual interference, including: (i) mobile interference depicted by Real Wireless' challenging case, and (ii) machine-to-machine interference.

Petitioners' proposed service offering includes a significant machine-to-machine component. Petitioners' suggested rule section 90.1415 describes a build-to-suit arrangement with priority given to CII entities. CII entities rely heavily on machine-to-machine traffic. If they are indeed serious about serving CII entities, Petitioners likely would be building substantial machine-to-machine systems. Similarly, Petitioners' Suggested Rule § 90.635 specifies power limits for fixed stations; and Suggested Rule § 90.149 specifies an emission mask for fixed stations. However, Petitioners' model assumes strictly mobile user equipment (UE), where a UE might interfere for a short period of time, but then the person carrying the handheld, or vehicle with a mobile unit, moves to another location and the interference lessens or ceases. By contrast, with machine-to-machine traffic, the endpoints typically are fixed and can operate non-stop, 24 hours per day, seven days a week. For example, Sensus utilizes machine-to-machine cellular modems to provide backhaul from FlexNet systems, and these modems run mostly 24 X 7. This feature eliminates the location and call duration probability calculations inherent in a mobility model.

Consistent with the old computer saying "garbage in, garbage out", the amount of noise a model projects depends on the assumptions used. Summarized below is Real Wireless' analysis of questionable assumptions in Petitioners' model.

#	**PETITIONERS' OVERSTATED ASSUMPTIONS** ***Petitioners' Assumed Parameter* and Real Wireless Comment**	**Unit**	**Petitioners' Parameters**	**RW Challenging Case Parameter**	**RW Moderate Case Parameter**
1	***UE antenna gain and body loss*** - Body shielding prompts greater transmit power by UE, negating effect of shielding.	dBi	-10.0	0	-3.0
2	***UE power back off*** – Petitioners rely on wide area statistics not relevant to analysis of individual UE interference.	dB	9.0	0	3.0
3	***Effect of UE power control on OOBE*** - OOBE doesn't always scale w/ fundamental power.	dB per dB	1.0	0	1.0
4	***LTE eNodeB cable loss*** - Phantom parameter to artificially lower interference calculation; UE feeder loss is properly included in separate UE antenna gain category.		4.0	0	0.0
5	***Number of simultaneous UE*** - Only 1 UE transmitting at a time out of 15 resource blocks? Not a high-probability scenario.	# UEs	1.0	15	3.0
6	***Protection level*** - Petitioners extrapolated noise floor from generalized studies while FlexNet users have 10 years of actual data.	dBm/Hz	-160.0	-170	-168.0
7a	***FlexNet base station antenna boresight gain*** - Petitioners quote non-existent antenna pattern.	dBi	12.2	12.2	12.2
7b	***FlexNet base station antenna pattern*** - same: Petitioners quote non-existent antenna pattern.		Unknown pattern per Petitioners' model	Amphenol, BCD-871010-6-25 (6 elec. downtilt)	Amphenol, BCD-871010-3 with 3 degree elec. Downtilt

8	***FlexNet base station antenna height*** - Petitioners chose a non-typical antenna height that coincidentally would reduce projected interference.	feet	147.6'	60'	110'
9	***Propagation model*** - Inappropriate for short distances.		W-I LOS	Free Space	Free Space
10	***Maximum antenna attenuation*** - Real world operation fills in null spaces.	dB	Unlimited	20	Unlimited

Petitioners assumed that just a single UE device would be operating in a given area at any one time. However, in an actual deployment, seldom -- if ever -- would just one handheld be operating at a time, and some models assume full loading of mobiles in contrast to Petitioners' assumption of just a single operating unit.[17] Similarly, Petitioners assumed the use of an antenna that is not suitable for an LTE system but, conveniently, allowed Petitioners to calculate a lower amount of noise. Petitioners also assumed antenna heights that do not match FlexNet deployments, but which facilitated Petitioners' calculation of reduced OOBE. Petitioners further made overly optimistic assumptions on power back-off (which might not materially impact OOBE) and body shielding (which in any event would not be applicable to machine-to-machine communications).

As these and other parameters illustrate, one can get a wide variation of possible OOBE projections depending on the assumptions used. In the absence of real world equipment, performance histories and test data, the Commission should be skeptical of

[17] *See, e.g.,* Commerce Spectrum Management Advisory Committee, Final Report, Working Group 1 – 1695-1710 MHz Meteorological Satellites, Jan 22, 2013, Appendix 3-2 (simplifying assumptions, used in modeling LTE uplink characteristics, include 100% loading and use of propagation curves that may result in higher calculated power).

Petitioners' modeling claims. The Commission should weigh carefully Real Wireless' challenging case, as well as the moderate case.

Real Wireless re-stated Petitioners' inputs using more realistic assumptions. For the uplink scenario (LTE UE transmits to FlexNet base station, degrading receiver performance and impacting performance of all FlexNet endpoints), Real Wireless finds that Petitioners understated OOBE by at least 29 dB in the moderate interference case and 56 dB in the challenging interference case.[18] For the downlink scenario (LTE base station transmits to nearby FlexNet endpoints), Petitioners understated OOBE by 22 dB in the moderate interference case and 32 dB in the challenging interference case.[19] Even at the lower ends of these ranges, 22 dB and 29 dB of additional interference will cause harmful interference to FlexNet systems.

3. Protection level and noise floor

An essential element in determining the appropriate protection levels for adjacent band operations is the establishment of a realistic noise floor. Petitioners, however, do not present any evidence of the actual noise floor for the spectrum in question. Rather, Petitioners claim a noise floor of -160.5 dBm/Hz, citing only to "environmental noise values analyzed [and] normalized from government sponsored studies in the U.S.,

[18] As indicated at n9, *supra*, Suggested Rule § 90.1419 does not specify emission limits in terms of ERP or EIRP, and the analysis presented herein assumes ERP. If the limit were in terms of EIRP, the understatement is 2dB lower in each case.

[19] This is when the proposed emission limits are expressed as ERP and the aggressor base station antenna gain is not added to the limit. *See* n11, *supra*. Adopting Petitioners' method of calculation and interpreting as EIRP adds a further 10 dB to the level of understatement of interference in both cases.

England and the EU."[20] Petitioners further concede that studies that might support their assumed noise floor "were difficult to find," that the studies they did find delivered only "mean or median values from a limited amount of samples," and that "some cases had to be extrapolated for [Petitioners'] analysis to develop a *generalized* threshold for the use in modeling and determining a baseline ceiling reference" value.[21]

At Exhibit 2 hereto, Sensus presents empirical evidence that the actual noise floor in which the FlexNet systems operate equals or is lower than -168.5 dBm/Hz at the overwhelming majority of FlexNet™ base stations in the United States. Each FlexNet™ system is designed for the noise floor that it encounters in any given location. Nationwide, the proper protection level for FlexNet™ operations is -168 dBm/Hz for a moderate interference case and -170 dBm/Hz for a challenging interference case, as identified by Sensus' technical consultants, Real Wireless.[22] This is more realistic than the -160 dBm/Hz, which may have been purposefully selected by Petitioners in order to minimize their filtering requirements. The Commission should consider the actual noise floor in the spectrum it regulates, rather than Petitioners' citation to studies that Petitioners admit are of limited utility.

B. The Interference Would Be Harmful Interference

Noise coming from Petitioners' systems would degrade and disrupt radio communications of FlexNet™ systems. This would be harmful interference under 47

---

[20] Letter from Elizabeth R. Sachs to Marlene H. Dortch, Secretary, Federal Communications Commission, transmitting *ex parte* presentation of Enterprise Wireless Alliance and Pacific DataVision Inc., Slide 4 (Mar 25, 2015).

[21] *Id*. at Slide 14 ("Bibliography") (emphasis added).

[22] Exhibit 1 hereto, Slides 28, 29, 30, 37.

C.F.R. § 1.907. FlexNet™ systems are designed to meet and operate under ongoing service level agreements (SLA), or a performance standard that was satisfied upon placement into operation.[23] The failure of a FlexNet™ system to satisfy an SLA (where the system had been satisfying the SLA prior to Petitioners' OOBE) constitutes an objective measure that the interference is harmful under FCC rules.

FlexNet™ systems experience occasional instances of harmful interference (from wireless internet service providers, wireless baby monitors and from other devices and systems) sufficient to degrade performance and to require field investigations. Two examples illustrate the levels of OOBE that cause harmful interference to FlexNet™ systems. In both illustrations, FlexNet™ base stations received (on the uplink) power spectral density of approximately -162 dBm/Hz. This harmful interference resulted in loss of 70% of message traffic at affected FlexNet™ base stations in one instance, and prevented the placement in service of a FlexNet™ system in another instance.[24]

---

[23] FlexNet™ systems are designed to meet specific performance requirements or SLAs. The specific design (i.e., the number and location of base stations) depends on the area to be covered, endpoint density, terrain and the granularity and resolution of the data (e.g., one utility might require electric meter data measured each hour at a resolution of 1 kw hour, while another utility might need electric meter data measured each 15 minutes at a resolution of 1 watt-hour.) Typical SLAs require the delivery of data from a percentage of endpoints (generally between 98.5% and 99.9%) within a defined time window. The size of the time window depends on granularity and resolution of the data and can range from 15 minutes to 3-4 days. FlexNet™ systems use the Aloha method and have a fixed channel bandwidth assigned to each function. Interference reduces the number of messages that can be received at a base station, particularly from more distant endpoints. In one example, later resolved by addition of filters, 12 dB of interference from adjacent channel Sprint/Nextel base stations reduced messages received by 70%.

[24] To Sensus' knowledge, the FlexNet™ systems have not experienced harmful interference coming from the immediately adjacent 900 MHz Band channels. As described below, millions of iDEN subscribers successfully coexisted with FlexNet™ on the adjacent channel. The instances of harmful interference that are described herein were to a FlexNet™ system operating over multiple address system channels (Portland, Oregon), or the interference came from the Part 15 unlicensed band (Purcell, Oklahoma). These instances are instructive for the amount of OOBE noise hitting FlexNet™ receivers that caused the harmful interference.

In the first instance, in Portland, Oregon, Sprint Nextel transmitters caused harmful interference to the uplink side of the FlexNet™ system that was operating on licensed multiple address system (MAS) channels. Sensus investigated and contacted Sprint Nextel, which agreed to a brief shut-down test to determine whether its transmitter was the source of the interference. The result of this shut-down test, attached hereto as Exhibit 3, shows a threefold increase in throughput (from a very low level) during the period that the Sprint Nextel transmitter was turned off. This story had a happy ending, as Sprint Nextel agreed to install a filter and the problem was resolved. The amount of OOBE, as documented in the shut-down test, was about -162 dBm/Hz.

In another instance, in early 2014, a Wireless Internet Service Provider (WISP), located in Purcell, Oklahoma, prevented the local FlexNet™ system from being placed into operation, by putting approximately the same amount of OOBE into the FlexNet™ receivers. The FCC's Dallas Field Office investigated and determined that the WISP was operating an illegally programmed transmitter. After the WISP transmitter was re-programmed, the noise floor returned to normal. Attached hereto as Exhibit 4 is a spectrum analyzer screen shot of the OOBE in Purcell, Oklahoma.

From the experience in Portland, Oregon, Sensus knows that OOBE of approximately -162 dBm/Hz likely would result in loss of about 70% of message traffic at affected FlexNet™ base stations. However, the -162 dBm/Hz OOBE that caused extensive harmful interference is **far less** than what Petitioners propose to do. As noted above, under Petitioners' Suggested Rules, in the uplink, OOBE would be permitted in the amounts of -141 dBm/Hz under a moderate interference case, and -116 dBm/Hz under a challenging interference case. These amounts of noise are far greater than what

caused a loss of 70% of message traffic in Portland, Oregon. On the downlink, OOBE would be permitted under Petitioners' Suggested Rules in the amounts of -147 dBm/Hz for the moderate interference case and -138 dBm/Hz for the challenging interference case. In summary, Petitioners' Suggested Rules would allow extensive harmful interference to FlexNet™ operations.

III. FLEXNET™ USERS HAVE A RELIANCE INTEREST

A. Expectation of Continued Use of Frequencies

FlexNet™ users have a reasonable expectation of continued use of licensed, exclusive-use frequencies at the noise floor they were designed for, and have enjoyed, for the past ten years. The Commission should therefore give "adequate consideration" to the reliance interests of incumbent FlexNet™ licensees.[25]

Attached hereto as Exhibit 2 are current noise floor readings from FlexNet™ systems operating on NPCS frequencies. Exhibit 2 shows noise floors at or below -168.5 dBm/Hz to be typical for the overwhelming majority of FlexNet™ systems. Many of the FlexNet™ systems depicted on Exhibit 2 have noise floors below -170 dBm/Hz.

FlexNet™ users manage their noise floors. Each FlexNet™ system monitors the noise floor it operates in and sends an alarm when the noise floor rises to a pre-determined level. Sensus investigates the cause of interference upon receipt of a noise floor alarm. Sensus field engineers currently investigate 15 to 20 instances of harmful interference per year. Sensus identifies the source and seeks to resolve any instances of harmful interference. Usually, the incidents are resolved amicably, with the interferer re-

[25] *See, e.g., Mobile Commc'ns Corp. v. FCC*, 77 F.3d 1399, 1407 (D.C. Cir. 1996).

programming or installing a filter. On a few occasions, Sensus had to call on the Commission's Enforcement Bureau to resolve harmful interference.

The noise floor for the NPCS frequencies (channel blocks N1 – N5), that were acquired by Sensus and other FlexNet™ users, was -168.5 dBm/Hz to below -170 dBm/Hz at the time of acquisition of the respective FCC licenses. Except for isolated incidents, which were resolved relatively promptly, the noise floor for FlexNet™ systems has remained more or less constant in the ten years that FlexNet™ systems have been operating over NPCS channels.

In reliance on exclusive-use licenses for NPCS channel blocks N1 – N5, which were auctioned frequencies, and on Commission enforcement against harmful interference, FlexNet™ users have invested over one billion dollars in FlexNet™ infrastructure, premised on existing noise floors. In further reliance, utilities have turned to FlexNet™ systems for critical utility functions, including outage and dangerous condition alarms, and network management and distribution automation functions. Utilities, customers and regulators rely on FlexNet™ to continue providing these functions. To date, these systems have operated largely as designed with, as noted, just a few instances of harmful interference that were resolved. The utilities that use FlexNet™ systems, as well as the residential and business customers of these utilities, expect that the systems will continue to operate as designed and to continue to provide valuable public service. FlexNet users thus have a reliance interest in their systems continuing to operate as designed.

Although licensees do not "own" the spectrum, and the FCC has authority under Section 316[26] to modify licenses through rulemaking, the FCC should not authorize new allocations or services that will jeopardize licensees in adjacent bands. In this case, not only would such an action jeopardize critical communications networks used by CII entities, it would also have a chilling effect on applicants wanting to secure exclusive-use spectrum at auction if they are aware the FCC could jeopardize their investment in spectrum and network technology by authorizing conflicting uses in adjacent bands without adequate interference protections.

B. FlexNet™ Users' Reliance Interest is Reasonable

Whether FlexNet™ users' decade-long reliance interest, in enjoying little or no adjacent-channel noise, was reasonable depends on what actually occurred in the adjacent channels and what reasonably might have occurred.

As Petitioners correctly noted, most of the 896-901/935-940 MHz band "was heavily used for many years in Sprint's iDEN network, [and] is not available for narrowband licensing by other entities."[27] Nextel had a subscriber base of approximately 23 million customers in the United States when it merged with Sprint in 2005 at a stand-alone value of $36 billion.[28] These customers operated over licensed spectrum at 800 MHz and 900 MHz. Thus, the 896-901/935-940 MHz band, indeed, was heavily used by the iDEN network. Further, over time Nextel acquired many licenses and came to

---

[26] 47 U.S.C. § 316 (2015).

[27] *Supra*, n3, Reply Comments of the Enterprise Wireless Alliance and Pacific DataVision, Inc., iv, filed Jan 27, 2015.

[28] Pacific Datavision, Inc., Registration Statement (Form S-1) 5 (Apr. 27, 2015), http://www.sec.gov/Archives/edgar/data/1304492/000119312515149880/d911831ds1.htm visited May 13, 2015.

dominate the band. This dominance was continued by Nextel's successor, Sprint. Therefore, the band, indeed, has been largely unavailable for narrowband licensing by other entities. In other words, the spectrum that Petitioners propose to be allocated to PEBB was dominated by Sprint/Nextel for many years; and Sprint/Nextel operated a commercially successful iDEN service and largely precluded other types of narrowband systems from taking hold.

iDEN handheld units had (and still have) very low out of band emissions (OOBE). Sensus is not aware of a single instance of iDEN handheld devices causing harmful interference to a FlexNet™ operation over NPCS spectrum. There may have been some instances of interference that were too fleeting to register as a problem. The reason that there was no or negligible harmful interference from iDEN devices at 901 MHz (and that the noise floor did not increase due to adjacent channel interference) is that the OOBE characteristics of narrowband iDEN devices are quite benign. Some of the iDEN devices generate OOBE of -45 dBm/30 kHz to -41 dBm/30 kHz,[29] while other iDEN and other narrowband devices intended for use under Part 90 generate OOBE of -40 dBm/30 kHz to -33 dBm/30 kHz.[30] By contrast, Petitioners' Suggested Rules would allow a much noisier -25 dBm/30 kHz.

---

[29] iDEN i475 and iDEN r750 with OOBE of -45 dBm/30 kHz; and Motorola i325 with OOB emission of -41 dBm/30 kHz.

[30] *See* Exhibit 5 hereto; *See also* iDEN devices with OOBE of: i680 Brute -40.15 dBm/30 kHz; i290 -40.13 dBm/30 kHz; i576 and i776 -39.45 dBm/30 kHz; i465 Clutch -39.15 dBm/30 kHz; i9 -38.43 dBm/30 kHz; i335 -38.13 dBm/30 kHz; i580 -37.46 dBm/30 kHz; i880 -37.45 dBm/30 kHz; i410 -37.15 dBm/30 kHz; i296 and iDEN800 -37.15 dBm/30 kHz; i856w Debut -37.15 dBm/30 kHz; i890 -37.15 dBm/30 kHz; i930 -36.44 dBm/30 kHz; i605 -35.64 dBm/30 kHz; BlackBerry 835i Curve -35.49 dBm/30 kHz; i365 and i365IS -35.15 dBm/30 kHz.

Theoretically, other types of systems could have been operated in the adjacent channels, under Part 90 rules, that would generate much more adjacent channel noise. However, as a practical matter, that was not going to happen. The Part 90 spectrum is allocated for narrowband land mobile operations, which virtually compels the licensee to take extra measures to limit OOBE in order to minimize intra-system interference and optimize commercial use of this limited spectrum.

In summary, FlexNet™ users' reliance interest was reasonable because: (i) iDEN dominated the neighboring band thereby largely precluding other types of systems from coming into operation, (ii) iDEN was a good neighbor and generated almost no OOBE, (iii) iDEN was commercially successful and reasonably appeared set to continue to dominate the band, and (iv) even if iDEN had not been there, Part 90 narrowband spectrum allocation compels the licensee to minimize intra-system interference.

IV. PETITIONERS PROPOSE A RADICAL CHANGE

A. The Change is More Radical Than That Suggested By Emission Masks

Exhibit 6 hereto shows the relative levels of OOBE permitted or generated by: the iPhone 5, an LTE standard, the Emission Mask J under Part 90 of the Commission's rules, Petitioners' Suggested Rules, and finally, by certain iDEN devices.

Typical vendor behavior, illustrated by the iPhone 5, is to design the device to the outer edge of the applicable rule or standard.[31] No profit seeking carrier or service provider wants to pay extra for unnecessary engineering and manufacturing. However, as

[31] Apple iPhone 5 has OOBE of -18.2 dBm/30 kHz, while the LTE standard specifies OOBE of -18 dBm/30 kHz.

illustrated by Exhibit 6, something else is going on with iDEN because these devices far and away exceed the OOBE limitations imposed by FCC emission masks.[32]

The economics of commercial narrowband systems are straightforward: one must load a large number of subscribers on a small amount of spectrum. The iDEN devices are super-protective of adjacent channel users because the adjacent channel users they are protecting are other subscribers of the same iDEN system. iDEN took relatively modest amounts of spectrum, broke it down into discreet channels, and assigned subscribers to individual channels when making calls. In order to do this with millions of subscribers, the iDEN devices needed to far exceed FCC-mandated emission masks. This way, the iDEN devices would not interfere with other, internally-assigned, adjacent-channel iDEN users.

Thus, unlike in most radio services, the FCC-mandated emission mask was NOT the limiting factor for iDEN handheld OOBE. Rather, the economics of a large, commercial narrowband system was the limiting factor. The device manufacturer would need to far exceed the Emission Mask J, in order to satisfy commercial requirements and good spectrum management.

As illustrated by Exhibit 6, Petitioners are proposing a radical change to the OOBE profile of the 896-901/935-940 MHz Band. Petitioners propose to move from -37 dBm/30 kHz (where the band is now) to -25 dBm/30 kHz (Petitioners' proposed emission mask). The big change would occur, not because of a change in the FCC-permitted emission mask (which is superfluous here), but because Petitioners would scrap the economics of narrowband systems in favor of broadband systems.

---

[32] *See, e.g.*, iDEN i475 and iDEN r750, each having OOBE of -45 dBm/30 kHz, while Part 90 Emission Mask J requires only -20 dBm/30 kHz.

The Commission's narrowband spectrum allocation and licensing policies kept this band quiet, even while heavily used by iDEN. If the spectrum were reallocated to broadband, it would change not only the technical characteristics of the Part 90 band, but also the economics of the band, thereby greatly increasing the OOBE emission from this band. Thus, it is irrelevant whether or how the Petitioners' suggested emission mask for broadband compares with Emission Mask J for the Part 90 band. The FCC should consider the actual impact on the band of Petitioners' proposal, not the theoretical impact implied by comparison of emission masks.

B. Petitioners Should Follow the Precedent of Sprint Nextel in the *800 MHz ESMR Proceeding*

Ironically, while citing to the *800 MHz ESMR* proceeding, [33] Petitioners fail to follow the precedent established therein. Sensus is concerned about a different interference scenario than that presented in the Commission's previous broadband/narrowband proceedings; that is, the Nextel base stations caused the interference at 800 MHz, where, here, Sensus is most concerned about LTE UE causing interference to FlexNet™. Nevertheless, there are important similarities: a wireless carrier is proposing a reallocation to broadband and is proposing new standards and rules.

---

[33] Petitioners' Reply Comments in this proceeding opined that:

> The Commission recently determined that deployment of broadband technology on 800 MHz ESMR spectrum should be permitted, and interference to adjacent 800 MHz narrowband systems was not expected, provided that ESMR systems satisfy the existing OOBE and co-channel separation rules. While EWA and PDV agree entirely that the continued interference-free operation of narrowband 900 MHz systems is essential, they are confident that the FCC will reach the same conclusion regarding the compatibility of broadband and narrowband operations at 900 MHz, even if compliance with the OOBE standard requires the broadband operator to add filters to its infrastructure and subscriber equipment.

Supra, n3, Reply Comments of The Enterprise Wireless Alliance and Pacific DataVision, Inc. iii, filed Jan 27, 2015. However, as described herein, Petitioners failed to follow this precedent.

In the *800 MHz ESMR* proceeding cited by Petitioners, Sprint Nextel made a genuine effort to alleviate concerns about OOBE. Sprint Nextel committed to a base station emission mask of -69 dBm/30 kHz that provides significantly greater protection (44 dB greater) to adjacent band operations than the emissions mask for base stations proposed by Petitioners in this proceeding.[34] This went above and beyond the requirements of FCC rules. Sprint Nextel also submitted test results demonstrating that its proposed new technology was better for adjacent channel licensees and committed to a notification/coordination procedure with adjacent channel licensees.[35] With its commitments, Sprint Nextel looked beyond the then existing Part 90 rules and truly attempted to address the concerns of adjacent channel licensees.

In marked contrast to Sprint Nextel in the *800 MHz ESMR* proceeding, Petitioners offered up a scheme that is guaranteed to cause harmful interference and makes a mockery of adjacent channel concerns. The near certainty that the Suggested Rules would permit massive harmful interference to CII operations is reviewed above in these Comments.

In addition, Petitioners seem intent on preventing FlexNet™ users from ever being able to file a claim of harmful interference. Suggested Rule § 90.1421 is drafted to *insulate* the PEBB licensee instead of providing a mechanism to address harmful interference. Petitioners cherry picked from 47 C.F.R. §§ 90.672 *et seq.*, utilizing land mobile standards for the adjacent channels occupied by FlexNet™ users. However, the

---

[34] Reply Comments of Sprint Nextel Corporation, *Petition for Declaratory Ruling From Sprint Nextel to Allow Wideband Operations in the 800 MHz Enhanced Specialized Mobile Radio Service Bands*, WT Dkt. No 11-110, 8-10 and Exhibit A, filed Aug 16, 2011.

[35] *Id.*

land mobile standards bear no relation to the fixed, CII FlexNet™ systems operating under Part 24 of the Commission's rules.

For example, even though Petitioners acknowledged that FlexNet™ should be protected to the level of -160 dBm/Hz,[36] Suggested Rule § 90.1421 would not protect to that level. A harmful interference claim lodged to protect to that level would be deemed to not qualify for relief. This Suggested Rule is designed to fail at its stated purpose. Petitioners have not followed the precedent of Sprint Nextel in *800 MHz ESMR* in truly addressing the adjacent-channel situation as it actually exists.

Petitioners should follow the Sprint Nextel precedent, namely, that when a spectrum reallocation is proposed the new rules need to actually address the co-channel and adjacent channel situation. New standards apply in a spectrum reallocation.

C. Suggested Rules Mandate a Spectrum Grab

The Suggested Rules would enable Pacific DataVision, Inc., one of the Petitioners, to confiscate valuable Auctioned SMR licenses in six MTAs. The holders of these licenses would have no recourse to object or to hold out for compensation. This gives the appearance of a spectrum grab by Petitioners.

Under Suggested Rule 90.1405(b)(2)(i), for MTAs in which a single entity is the licensee for fifteen (15) or more geographic licenses in such MTA, that entity would be awarded the PEBB license in the MTA, while for MTAs in which no single entity is the licensee for fifteen (15) or more geographic licenses, the licensees could negotiate. This Suggested Rule is referring to Auctioned SMR licenses, which were auctioned in Auction

[36] As described above, FlexNet™ needs protection to -168 dBm/Hz for the moderate interference case and -170 dBm/Hz for the challenging interference case. This example at -160 dBm/Hz is provided to demonstrate that the Proposed Rules do not even satisfy what Petitioners have acknowledged is a necessary protection level.

7. The Commission issued 20 of these licenses per MTA, Channel Blocks A through T. Most of the originally issued Auctioned SMR licenses are still outstanding. Pacific DataVision holds the overwhelming majority of these licenses and is the only licensee to hold 15 or more of these licenses in any MTA.

A review of the FCC database indicates that there are six MTAs (see chart below) where licensees other than Pacific DataVision hold five or fewer Auctioned SMR licenses.[37] Presumably, under the Suggested Rules, the FCC would award Pacific DataVision the PEBB license in these markets. By this action, the Auctioned SMR licenses held by the licensees listed in the chart below would be extinguished, and Pacific DataVision effectively would have confiscated these licenses. The Suggested Rules do not give these licensees the right to negotiate in, object to, or hold out from, the confiscation of their licenses. As the PEBB licensee and pursuant to Suggested Rule § 90.1405(b), Pacific DataVision would have certain obligations with respect to these MTA licensees. However, those obligations relate entirely to the retuning of the licensees' radio systems and the provision of "comparable [radio system] facilities." There is no obligation to reimburse the MTA licensees for the valuable spectrum rights that would have been forcibly taken from them. Suggested Rule § 90.1413(c)(ii) provides that "the geographic coverage of [replacement frequency] channels shall be at least coextensive with that of the original system," NOT coextensive with the geographic boundaries of the original license. Petitioners are proposing to convert these valuable MTA licenses into site-based licenses. This would result in economic loss to the MTA licensees and could

[37] Five or more licensees other than Pacific DataVision hold Auctioned SMR licenses in nine other MTAs (MTA 002, 008, 015, 027, 032, 036, 039, 040, 045). Presumably, these MTAs would be subject to negotiation under Suggested Rule 90.1405(b)(2)(i)(B), and these MTA licensees presumably could avoid the plight described herein by refusing to go along with the PEBB license concept and retaining their MTA licenses.

limit the future growth of their systems to the extent they do not currently cover the entire MTA.

CALL SIGN	MTA LICENSES SUBJECT TO CONFISCATION LICENSEE	FRN	MTA
WPOL827	INDUSTRIAL WIRELESS TECHNOLOGIES INC	4036042	001
KNNY201	INDUSTRIAL WIRELESS TECHNOLOGIES INC	4036042	022
KNNY202	INDUSTRIAL WIRELESS TECHNOLOGIES INC	4036042	022
KNNY214	North Sight Communications, Inc.	1729565	025
KNNY215	North Sight Communications, Inc.	1729565	025
KNNY255	P R Communications	8246399	025
KNNY269	RADIO DISPATCH NETWORK LLC	3011012	026
KNNY299	RADIO DISPATCH NETWORK LLC	3011012	026
WPST324	Radio Dispatch Network LLC	3011012	026
KNNY256	Houston 936 SMR Inc.	6352611	033
KNNY224	SAIA COMMUNICATIONS INC	5007141	035
KNNY225	SAIA COMMUNICATIONS INC	5007141	035

Conclusion

The Commission should be concerned with the *actual* noise floor, *actual* interference levels, and *actual* narrowband economics and practices, instead of what might be theoretically possible. A harmful interference determination is an exercise in identifying the *actual* effect on users.

What the Petitioners propose is radically different from, and out of character with, current and past practice in this band. In and of itself, there is nothing wrong with proposing something new. However, in making a new spectrum allocation, the Commission should protect adjacent channel licensees by requiring the new service to maintain out of band emissions that are at least equivalent to, if not better than, the *status*

quo ante. The Suggested Rules do not meet this standard. Consequently, Sensus urges that the Commission decline to take further action on the Petition unless and until the Petitioners can adequately demonstrate that broadband service can be provided on this narrowband Part 90 land mobile spectrum without causing harmful interference to adjacent band users.

Please direct any questions or follow up to the undersigned.

Respectfully submitted,

/s/ Julian P. Gehman
Julian P. Gehman
Gehman Law PLLC
910 17th Street NW, Ste 800
Washington, DC 20006
(202) 223-1177
julian@gehmanlaw.com

Counsel to Sensus

DATED: June 29, 2015