

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

In the Matter of	)	
	)	
Amendment of Sections 90.20(d)(34) and 90.265	)	PS Docket No. 13-229
of the Commission's Rules to Facilitate the Use	)	
of Vehicular Repeater Units	)	RM- 11635

**COMMENTS OF THE UTILITIES TELECOM COUNCIL**

Pursuant to Section 1.405 of the Commission’s Rules, the Utilities Telecom Council (“UTC”) hereby files its comments in response to the Commission’s Public Notice in the above-referenced matter.<sup>1</sup> UTC opposes the proposal to permit the use of the six telemetry channels at 173.2375, 173.2625, 173.2875, 173.3125, 173.3375, and 173.3625 MHz for voice operations by vehicular repeater systems (VRS).

As UTC explained in its previously filed comments, these channels are heavily used by utilities and other critical infrastructure industries (CII) for a variety of applications to support mission critical operations.<sup>2</sup> Utilities and CII cannot tolerate interference to these telemetry channels. Moreover, voice operations on these telemetry channels would likely result in interference both to and from public safety users. This interference cannot be coordinated, nor would exclusion zones necessarily prevent interference. While UTC respects the need for public safety VRS operations, the Commission should not accommodate such use at the risk of causing interference to mission critical operations by utilities and other CII. There are alternatives to accommodate VRS operations on public safety frequencies, including improved filtering and

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<sup>1</sup> Amendment of Sections 90.20(d)(34) and 90.265 of the Commission's Rules to Facilitate the Use of Vehicular Repeater Units, *Order and Notice of Proposed Rulemaking*, PS Docket No. 13-229, RM-11635, 28 FCC Rcd. 13544 (2013)(NPRM).

<sup>2</sup> See Comments of UTC in RM-11635 (filed Nov. 4, 2011) and Reply Comments of UTC in RM-11635 (filed Nov. 18, 2011).

cross-band VRS operations. For all of these reasons, UTC respectfully requests that the Commission deny Pyramid Communications' proposal to use the six telemetry channels at 173 MHz and suggest alternative solutions instead in order to accommodate public safety VRS operations.

## **I. Introduction**

UTC is the global trade association for the telecommunications and information technology interests of electric, gas and water utilities and other CII, such as pipeline companies.<sup>3</sup> Its members include large investor-owned utilities that serve millions of customers, often across multi-state service territories; and its members include smaller cooperative or municipal utilities that may serve only a few thousand customers in rural areas or isolated communities. All of these members own, manage or control extensive private internal communications networks that they use to support the safe, reliable and efficient delivery of essential services to the public at large. These communications networks are used both for voice and data communications for routine dispatch as well as emergency response during service restoration in the aftermath of hurricanes, storms and other natural disasters, which can affect large areas for extended periods.

Utility and CII communications networks are designed, built, operated and maintained to high standards of reliability, due to the critical nature of the underlying energy and water services that they support. They can ill-afford to experience interference, which can jeopardize public safety as well as operational reliability. Some of these communications systems operate at extremely high duty cycles with low levels of latency. This is also the case with regard to

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<sup>3</sup> See [www.utc.org](http://www.utc.org).

SCADA<sup>4</sup> and telemetry monitoring and control operations on the 173 MHz splinter frequencies at issue in this proceeding.<sup>5</sup> As such, interference from VRS operations to these communications systems would assuredly have an impact on public safety and operational reliability. Therefore, UTC opposes the proposal to use the six telemetry channels for VRS operations and it appreciates the opportunity to comment in response to the Commission's NPRM.

## **II. The Commission Should Not Permit the Use of the Six Telemetry Channels for VRS Operations.**

### **A. Telemetry Channels**

In the NPRM, the Commission invites comment on whether there is a need to make additional VHF channels available for VRS use beyond those that are already available, and if so whether it is appropriate to make the six 173 MHz remote control and telemetry channels available for this purpose.<sup>6</sup> In that regard, the Commission also asks whether frequency coordination, exclusion zones or alternative frequency coordination procedures could minimize the potential for harmful interference from mobile operations, if the channels were made available for VRS public safety use.<sup>7</sup>

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<sup>4</sup> SCADA is Supervisory Control and Data Acquisition systems, which are used to monitor and control operations on critical infrastructure delivery systems, such as the electric grid, gas pipelines, and water works. Due to their importance to safety and reliability, these communications systems are designed to extremely high standards for performance.

<sup>5</sup> The splinter frequencies at issue in this proceeding were created in 1977 by the Commission in response to requests by UTC and others for additional spectrum for non-voice operations. *See Amendment of Parts 89 and 91 of the Commission's Rules and Regulations to make available four 173 MHz splinter frequencies to the Local Government and Manufacturers Radio Services for telemetry and remote control operations*, Second Report and Order, Docket No. 20149, 65 F.C.C.2d 898 (1977). There are very few other frequencies that are designated for telemetry purposes. *See* 47 C.F.R. Section 90.238 (authorizing the use of telemetry on discrete frequencies in the PLMR bands, many of which are secondary and subject to restrictions on power).

<sup>6</sup> NPRM at ¶¶ 22-23.

<sup>7</sup> NPRM at ¶ 23.

UTC understands the need for public safety to support VRS operations, and there is support on the record that congestion is an issue in the existing public safety pool for finding available frequencies that are 2-5 MHz removed in and from the 150-159 MHz band.<sup>8</sup> However, the Commission correctly observes that narrowbanding may have opened up channels in the public safety pool for use by VRS. The record is devoid of any discussion of the impact of narrowbanding on channel availability for VRS, and it is likely that the deadline for mandatory narrowbanding after January 1, 2013 will serve to open up capacity. In addition, the Commission is right to question whether VRS spectral needs [should] be given priority over other potential uses, such as critical infrastructure use.”<sup>9</sup> To that point, utilities themselves use VRS systems, but even they do not use VRS on the same channels as 173 MHz telemetry operations, due to their concerns about the impact that interference could have mission critical operations.<sup>10</sup> Instead, they use cross-band VRS to avoid causing interference to their telemetry operations. Similarly, the Commission should not permit access to the telemetry channels for public safety VRS, and should find alternatives for public safety VRS use, such as cross-band VRS in the UHF or the 700 MHz and 800 MHz public safety bands.

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<sup>8</sup> See e.g. Comments of the Commonwealth of Virginia in RM-11635 at 2 (filed Nov. 4, 2011)(stating that “The Commonwealth agrees with Pyramid that there is a lack of VHF spectrum available for VRS.”).

<sup>9</sup>NPRM at ¶23.

<sup>10</sup> The fact is that, users of 173-174 MHz control systems also deploy vehicular repeater systems and deliberately use VRS frequencies that will not interfere with their other systems. For example, Public Service Electric and Gas Company (PSE&G), New Jersey’s largest energy utility, has an extensive network of 173-174 MHz SCADA and siren control systems. Its gas operations department workers often perform work in basements of buildings where coverage into their 900 MHz trunked radio system cannot reach. To address this operational issue, PSE&G uses cross-band VRS technology manufactured by Pyramid Communications. The vehicle’s 900 MHz trunked radio is connected to a Pyramid cross-band VRS that allows the worker to leave the vehicle and carry a low power 450-470 MHz UHF portable radio. In essence, the worker takes his trunking ‘talk group’ with him. The range has been tested to up to 700 feet. PSE&G would not consider using 173-174 MHz VRS systems within its own territory because the risk of having a critical function interfered with by a mobile VRS is too great.

This is not only a question of priority of use; it's a matter of preventing interference both to and from public safety operations. As NTIA explained and as the Commission acknowledged in declining to permit VRS use of Federal frequencies that are used by the U.S. Forestry Service -- it makes no sense to create the potential of interference with public safety users.<sup>11</sup> The same concerns that compelled NTIA to oppose VRS use of Forestry Service frequencies – even for firefighting and even on a secondary basis to the Forestry Service – would apply in the context of the use of the 173 MHz telemetry channels. As explained more fully below, utilities can't risk interference to their telemetry operations and they don't want to cause interference to public safety VRS operations either.

UTC disagrees with the false assumption that “neighboring VRS users should be able to share use of the same frequency given the localized and limited time nature of such operations, and that such sharing should minimize the potential for harmful interference to incumbent telemetry users.”<sup>12</sup> The Commission rightly observes that “some telemetry data operations are used for safety-related purposes, such as monitoring and controlling water quality and volume for public health and flood control.”<sup>13</sup> In addition to monitoring and control of water systems, these channels are also used by power utilities for SCADA from substations and switching

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<sup>11</sup> See Letter from Karl Nebbia, Associate Administrator, Office of Spectrum Management, NTIA to Julius Knapp, Chief of the Office of Engineering and Technology, FCC at 2 (filed Apr. 9, 2013)(explaining that “The proposal by Pyramid creates the potential for conflicts in spectrum use where public safety is at stake. We recognize that the use of these frequencies by state and local agencies would be on a secondary basis to federal usage. However, we do not believe that public safety services should be placed at risk by creating potential conflicts with other safety operations, even where those operations occur on a secondary basis. Neither federal nor non-federal firefighters will want to face interference or other spectrum management coordination conflicts during an operation.”). See also NPRM at ¶ 19 (stating that “NTIA opposes even secondary status for VRS users because VRS public safety services should not be placed at risk by creating conflicts with primary Federal safety operations, and neither group will want to face interference or other coordination conflicts during an operation. Based on NTIA’s recommendation, we decline to include the nine Federal channels in our rulemaking proceeding.”)

<sup>12</sup>NPRM at ¶ 23.

<sup>13</sup> *Id.*

stations, to control pole-top devices such as sectionalizers, for residential load management, and for public warning sirens within the ten-mile emergency preparedness zone of a nuclear generating station.

Given the obvious magnitude of the risk involved with these applications -- UTC does not believe that “frequency coordination [would] be sufficient to mitigate the risk of interference between VRS and telemetry uses.”<sup>14</sup> UTC also does not believe that modifying the current VHF band coordination methodology, including the use of exclusion zones would be effective to reduce instances of interference, particularly given the mobile nature of VRS operations and the heavy use of the channels for telemetry systems.<sup>15</sup> Finally, UTC is at a loss for alternative frequency coordination procedures that could accommodate such usage.<sup>16</sup> As more fully described below, the most appropriate and safe approach is to continue to limit the use of these channels for telemetry purposes.

## **B. Protection of Telemetry Users**

In the NPRM, the Commission seeks comment about the typical configuration and usage of telemetry stations.<sup>17</sup> Specifically, the Commission asks whether telemetry systems are generally point-to-point, point-to-multipoint, or a mix; what their typical duty cycles and data rates are; and what types of error correction and retransmit protocols that telemetry operators use.<sup>18</sup> In that context, the Commission asks how to protect telemetry systems from mobile

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<sup>14</sup> *Id.* Further discussion of the impact of interference to these applications is provided *infra* regarding the technical parameters of telemetry systems, particularly with respect to duty cycle and data rates, as well as error correction and retransmit protocols.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at ¶24.

<sup>18</sup> *Id.*

repeater stations through coordination, including for example by prohibiting mobile repeater use inside the service area of a co-channel incumbent station (i.e., an exclusion zone).<sup>19</sup> Finally, the Commission asks whether an exclusion zone coordination methodology would address UTC's concern about the lack of a frequency coordination standard for voice and data operations; and whether a typical public safety mobile repeater station licensee would be able to instruct its first responders to avoid using a co-channel frequency for mobile repeater stations in these exclusion zones with reasonable accuracy.<sup>20</sup>

It does not appear that there is any standard configuration for utility and CII telemetry systems. Some are point-to-point and some are point-to-multipoint, depending mainly on the underlying application that is being supported.<sup>21</sup> Similarly, the duty cycle of a 173 MHz telemetry system is typically very short (on the order of less than one second, even at 1200 baud) and, thus are exempted from station identification requirements.<sup>22</sup> Moreover, if there are multiple remote units operating off a single tower, which is typical for a wide-area configuration, the duty cycle for transmissions will be even greater. Moreover, these systems are not only used for telemetry but are also used for control. As such, delays or false reads on utility telemetry channels due to interference from VRS operations -- which may have an average on-air time of from just a few seconds to one minute or more depending upon the nature of the voice traffic -- could be dangerous.

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<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> Even point-to-multipoint configurations can be used in a point-to-point mode by using specific addressing.

<sup>22</sup> See 47 C.F.R. Section 90.425(d)(3)(stating that a station need not transmit identification if it is transmitting for telemetering purposes or for the activation of devices which are employed solely as a means of attracting attention, or for remote control purposes, or which is retransmitting by self-actuating means, a radio signal received from another radio station or stations.)

UTC does not believe that there is a workable frequency coordination procedure for mobile repeaters and telemetry systems, including using an exclusion zone. As UTC explained in its previously-filed comments, VRS voice operations are incompatible with data operations on the six telemetry channels and the likely interference that would result would be nearly impossible to mitigate through coordination due to the mobile and nomadic nature of VRS.<sup>23</sup> These interference concerns were also expressed by other comments on the record.<sup>24</sup> Moreover, as UTC further explained in its comments, these telemetry channels are heavily used by utilities and other CII, increasing the likelihood of interference.<sup>25</sup>

Nor would an exclusion zone approach address UTC's concerns about the lack of an interference coordination protocol for voice and data.<sup>26</sup> Many of the licenses for telemetry channels do not have coordinates and are licensed instead on a wide area basis, making it

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<sup>23</sup> See Reply Comments of UTC in RM-11635 at 1-2 (warning that “[m]aking these frequencies available for VRS will likely lead to interference with mission critical data communications, and this interference will be difficult if not impossible to mitigate against due to the temporary fixed and itinerant nature of VRS operations.”)

<sup>24</sup> Comments of the Forestry Conservation Communications Association, Inc.(FCCA) in RM-11635 at 3 (filed Nov. 4, 2011)(explaining that “filter technology is not sufficient justification” for Pyramid’s proposed relief, and that “if the equipment operated with a lesser frequency spread, many more channels would automatically become available, as potentially every channel specified in Section 90.20 could be considered.” See also Comments of the International Municipal Signal Association and the International Association of Fire Chiefs in RM-11635 at 5 (filed Nov. 4, 2011) (explaining that expanding the use of the 170 MHz band frequencies as Pyramid suggests would increase the possibility of interference, and rejecting Pyramids claims that coordination and interference would not be problematic.)

<sup>25</sup> See Comments of UTC in RM-11635 at 2 (stating that “[a] cursory review of the FCC Universal Licensing System (ULS) database reveals that there are over five thousand licenses in the 173.2375-173.3625 MHz frequency range, and many of these licenses are held by utilities and other critical infrastructure industries.”). UTC has searched ULS again and there continue to be over five thousand licenses on these frequencies and many of them continue to be licensed by utilities and CII.

<sup>26</sup> As the Commission is well aware, data communications do not listen before transmitting and would cause interference to voice communications that are co-channel. Conversely, the telemetry communications would be subject to extended periods of interference from voice communications, which would be higher power if the Commission were to grant the Commonwealth of Virginia’s request to increase the maximum power for mobiles and portables to 5 watts. See NPRM at ¶29 (stating that “the current ERP limit for mobile stations is 2 watts; the Commonwealth seeks 5 watts for both VRS and portable radios,” explaining that “the Commonwealth contends public safety needs ‘dedicated frequencies of equal transmitter power to that of a VHF portable, to create a balanced network.’”)

practically difficult to implement an exclusion zone.<sup>27</sup> Moreover, an exclusion zone approach would effectively “freeze” incumbent telemetry systems in place, thereby preventing them from expanding to support utilities and CII needs for smart grid and other applications. In addition, utilities and CII would lose their exclusion zone protected status if their license ever lapsed.<sup>28</sup> Therefore, UTC opposes the use of an exclusion zone approach, because it would prevent utilities and CII from expanding existing systems to meet their increasing communications needs and it wouldn’t protect systems whose licenses lapsed, as well as because it would be impractical to implement.<sup>29</sup>

The lack of an agreed upon interference coordination protocol for voice and data underscores UTC’s concern about the potential for interference between VRS and telemetry systems.<sup>30</sup> As the Land Mobile Communications Council (LMCC) has yet to agree on a coordination procedure for adjacent channel interference involving trunked systems (let alone one that would account for differences between voice and data), the Commission should defer from adopting Pyramid’s proposal to share the telemetry channels with VRS, which was based in

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<sup>27</sup> Some are licensed on a nationwide basis, making an exclusion zone unworkable.

<sup>28</sup> See NPRM at Appendix A (proposing amendment to Section 90.20(34) of the Commission’s rules to provide for exclusion zones but providing that “If any listed incumbent license on the special condition becomes expired, canceled, or terminated, then this requirement shall not apply to the associated service area beginning 30 days after the change in license status in the Commission’s Universal Licensing System, absent the filing of a petition for reconsideration of the change in license status.”).

<sup>29</sup> *But see* NPRM at ¶25 (asking “what should be the protocol if a mobile repeater station user becomes licensed on a vacant frequency, but a telemetry user is later licensed on that frequency in the mobile repeater station user’s operating area?” and asking whether a mobile repeater should be allowed to cease protecting the exclusion zone if the incumbent telemetry license were to expire, cancel, or terminate and absent the filing of a petition for reconsideration of the change in license status.)

<sup>30</sup> See NPRM at ¶24 (inviting comment on whether “an exclusion zone coordination methodology address UTC’s concern about the lack of a frequency coordination standard for voice and data operations.”)

part on the incorrect assertion that the LMCC had developed a coordination procedure for overlapping frequencies.<sup>31</sup>

Finally, UTC believes that it is not practically feasible for a typical public safety mobile repeater station licensee to be able to instruct its first responders to avoid using a co-channel frequency for mobile repeater stations in these exclusion zones with reasonable accuracy.<sup>32</sup> First responders are likely to be concentrating on communicating during an emergency, rather than worrying about avoiding causing interference to telemetry operations in an exclusion zone. Even if the instructions were followed and they avoided an exclusion zone, first responders may not be aware of factors, such as increased elevation and propagation characteristics of VHF, which could still lead to interference to telemetry operations. For the same reasons, UTC also does not believe that adding special conditions to the mobile repeater applications would be effective at protecting telemetry systems against interference.<sup>33</sup> Instead, the Commission should continue to address requests for access to the six telemetry channels on a waiver basis, and require incumbent telemetry systems to consent to the use of the frequencies for VRS.<sup>34</sup>

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<sup>31</sup> See Petition for Rule Making by Pyramid Communications, RM-11635, at 6-7 (filed Aug. 16, 2011)(stating that the “LMCC...has developed frequency coordination standards by which radio systems can be coordinated on adjacent frequencies where bandwidths overlap” and that “[o]n this basis, Pyramid believes that the time is appropriate for removing the thirty year old restriction on voice operation, allowing for low power VRS operation on 173.2375, 173.2625,173.2875,173.3125,173.3375 and 173.3625 MHz.”).

<sup>32</sup> See NPRM at ¶24 (asking “[w]ould a typical public safety mobile repeater station licensee be able to instruct its first responders to avoid using a co-channel frequency for mobile repeater stations in these exclusion zones with reasonable accuracy.”)

<sup>33</sup> See NPRM at ¶24 (seeking comment on “whether frequency coordinators could add special conditions to the mobile repeater applications, *e.g.*, by listing active, co-channel incumbent call signs and associated exclusion zones that demarcate where mobile repeater operations would be specifically prohibited from the authorization requested by the application.”)

<sup>34</sup> See NPRM at ¶24 (seeking comment on “possible exceptions to such an approach, such as when the mobile repeater station user has obtained written concurrence from the incumbent licensee, or the VRS user and incumbent user are the same licensee.”) See also County of Sandoval, New Mexico, File No. 0004902839, DA 13-1926A1 (rel. Sept. 18, 2013)(granting a waiver for Sandoval to use Industrial/Business (I/B) Pool frequency 173.325 MHz for vehicular repeaters.)

### **C. Wide Area Mobile Repeater Operations.**

The Commission asks “if a wide area or statewide applicant cannot achieve complete mobile repeater coverage on one telemetry frequency due to a conflict with exclusion zones, could the applicant achieve greater coverage by applying for multiple telemetry frequencies, thereby avoiding interference in the prohibited exclusion zones.”<sup>35</sup> UTC is concerned that this could give rise to speculative practices that could exacerbate the current scarcity of available frequencies for telemetry systems, if VRS licensees were able to license multiple telemetry frequencies across an entire state or region. As UTC explained in its previously-filed comments, there is a shortage of available frequencies available for utility telemetry purposes. The Commission’s policies should not exacerbate this shortage by encouraging VRS usage of multiple frequencies in areas where there are exclusion zones.

### **D. Frequency Bandwidth.**

The Commission also proposes “to allow mobile repeater operations to use up to 11.25 kilohertz bandwidth on the six telemetry channels.”<sup>36</sup> In that context, the Commission also asks for comment on “what proportion of I/B users of the interstitial channels could be affected by bandwidth overlap because they operate at greater than 11.25 kilohertz bandwidth and choose to satisfy the narrowbanding requirement by meeting the efficiency standard.”<sup>37</sup> Finally, the

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<sup>35</sup> See NPRM at ¶26 (also asking whether “these measures [would] address the Commonwealth’s argument that frequency coordination is unnecessary in general and unworkable for statewide VRS use.”)

<sup>36</sup> NPRM at ¶27 (acknowledging that PLMR stations that meet the efficiency standard of one voice channel per 12.5 kilohertz bandwidth may still use up to 20 kilohertz authorized bandwidth, but that most radios operate at 11.25 kilohertz bandwidth or less.).

<sup>37</sup> *Id.* at ¶28 (asking in addition “whether mobile repeater stations [can] operate within the other technical limits of Section 90.20(d)(33) of the Commission’s rules, or should the Commission not apply these limits to mobile repeater stations on the six telemetry channels.” Also clarifying “that the provisions of Section 90.247 would apply to VRS or mobile repeater operations on these telemetry channels or any other spectrum that supports such use.”)

Commission asks “whether all operations on the six telemetry channels should remain secondary to adjacent channel land mobile operations now that the narrowband deadline has passed.”<sup>38</sup>

UTC is concerned that allowing 11.25 kilohertz VRS operation on the 173 MHz telemetry channels, which are currently used for 6 kilohertz operations will increase the potential for adjacent channel interference to 20 kilohertz operations on interstitial channels. Clearly, the Commission is seeking to accommodate VRS by permitting 11.25 kHz operations in order to support voice communications that cannot be carried over 6 kilohertz channels. However, the Commission should not seek to accommodate VRS, when it will again risk the potential of interference -- this time to adjacent channel licensees.

Instead, the Commission should make the six telemetry channels co-primary with adjacent channel land mobile operations – and should not remain secondary – now that the narrowband deadline has passed. As many utilities and CII rely on these telemetry channels to support mission critical operations, it is important that they become primary and protected against adjacent channel interference. UTC supports this rule change, as suggested by the Commission in the NPRM.

#### **E. Power**

The Commission also seeks comment on the Commonwealth of Virginia’s proposal to increase power to 5 watts for mobile and portables used for VRS on the six telemetry channels, but does not propose to increase the 2-watt power limit for the existing telemetry and remote control use.<sup>39</sup> UTC is concerned that if VRS operations are permitted on the six telemetry

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<sup>38</sup> *Id.*

<sup>39</sup> NPRM at ¶29 (explaining that “[t]he current ERP limit for mobile stations is 2 watts; the Commonwealth seeks 5 watts for both VRS and portable radios...[because the Commonwealth claims that] public safety “needs dedicated frequencies of equal transmitter power to that of a VHF portable, to create a balanced network.”).

channels that the potential for interference to telemetry operations will be increased if the Commission authorizes the increase of power for VRS mobiles and portables to 5 watts, while keeping existing telemetry and remote control operations at 2 watts. UTC understands the request by the Commonwealth of Virginia to increase the power limit for VRS in order to promote reliable communications when public safety is using VRS outside of their cars or trucks or inside buildings. However, increasing VRS power without increasing telemetry operations as well would place telemetry operations at a disadvantage and increased risk of interference. Therefore, UTC respectfully requests that the Commission increase the power of telemetry and remote control systems, as well as VRS, if VRS operations are permitted on the six telemetry channels.

#### **F. Costs and Burdens**

In its NPRM, the Commission invites comments on costs and burdens associated with allowing mobile repeater stations on the six telemetry channels.<sup>40</sup> Specifically, the Commission asks whether incumbent licensees would experience any increased costs if it allows mobile repeater stations on the six telemetry channels.<sup>41</sup> UTC believes that utilities would be faced with the cost of having to buy spectrum from brokers who profit from selling spectrum they have bought at auction. The cost of this spectrum must be passed on to the public, which is not in the public interest. UTC is unable to estimate the increased costs associated with coordination and whether the benefits associated with VRS would justify an increased coordination cost.<sup>42</sup>

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<sup>40</sup>*Id.* at ¶30.

<sup>41</sup> *Id.* (also asking “[a]pproximately how many more staff-hours would frequency coordinators spend on a mobile repeater station coordination, relative to a non- mobile repeater station coordination in the VHF band, if we impose the coordination requirement that we discussed above.”).

<sup>42</sup> *See e.g. Id.* (asking “if there is a significant difference, can frequency coordinators estimate the effect on coordination fees,” and “[d]oes the supposed benefit that mobile repeater stations provide justify an increased coordination cost?”)

## G. Filters and Other Technical Solutions

As UTC and several other commenting parties suggested previously, VRS could be accommodated in the 150-159 MHz band, if companies like Pyramid adopted better filtering technology or if public safety simply used VRS with cross banding capabilities.<sup>43</sup> Specifically, VRS manufacturers could implement surface acoustic wave (SAW) filters, or other filter technology, for mobile repeater use.<sup>44</sup> While Pyramid claims in its Petition that improved filters would be impractical due to their size and shape, it has not explained in its comments whether it could implement SAW filters.<sup>45</sup> Moreover, other manufacturers offer VRS with cross-banding capabilities,<sup>46</sup> and Pyramid has not explained why it couldn't do the same. UTC believes that VRS manufacturers should be required to explain whether SAW or cross-banding are infeasible. The evidentiary burden should be on manufacturers to show a lack of technical alternatives, before the Commission should begin to consider accommodating VRS on telemetry channels and imposing costs and burdens on incumbent licensees in the process.

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<sup>43</sup> See *Id.* at ¶31 (inviting comment on “whether improvements to mobile repeater equipment and filter design could reduce the frequency separation requirements for mobile repeaters,” and inviting commenting parties to “discuss the advantages and disadvantages of cross-band repeaters as an alternative to in-band repeaters.”)

<sup>44</sup> See Comments of the FCCA at 3 (stating that “Pyramid suggests that the size of the cavities in cavity filters would prohibit their use in a mobile environment. That may be true, but perhaps other filter technologies, such as very small surface acoustic wave (“SAW”) filters, could be adapted for vehicular repeater use.)

<sup>45</sup> See generally Reply Comments of Pyramid Communications in RM-11635 (which were only two pages and didn't even mention the word “filter”, despite multiple comments on the record raising the issue.)

<sup>46</sup> For example, Futurecom Systems develops digital vehicular repeater (DVR) systems with Motorola, and provides both cross-band and in-band solutions across a variety of public safety bands in the VHF, UHF, 700 and 800 MHz bands. See “Extending the ARMER Network Through Digital Vehicular Repeaters” available at <http://www.togpartners.com/interop/handouts/2B%20ARMER%20Network.pdf> (describing how DVRs are available for operation in spectrum bands at 136-174MHz, 380-430MHz, 450-470MHz, 470-512MHz, 764-806MHz, 806-869MHz and describing the tradeoffs for cross-band and in-band operations).

## **H. Other Public Safety Bands**

The Commission is also right to question “whether there are other spectrum bands or frequencies that could be used for public safety mobile repeater operations” besides the VHF band, particularly with regard to the “status of mobile repeaters in the 450-470 MHz, 700 MHz, and 800 MHz public safety bands.”<sup>47</sup> As is evident from product information that is readily available from other VRS manufacturers,<sup>48</sup> clearly there are “adequate frequencies in these bands where land mobile voice operations, and by extension mobile repeater stations, are already permitted.”<sup>49</sup> The Commission should be encouraging public safety to migrate to these bands, rather than to provide additional frequencies in the VHF band for VRS use.<sup>50</sup> Therefore, the Commission should not consider changing rules to allow land mobile voice operations and mobile repeater stations on certain frequencies that the rules currently render incompatible with such use.<sup>51</sup>

## **I. Industrial Business Licenses**

The Commission is also right to ask whether the I/B community is interested in using mobile repeater stations in the VHF band, and whether I/B licensees need more VHF spectrum

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<sup>47</sup> NPRM at ¶32.

<sup>48</sup> See “Extending the ARMER Network Through Digital Vehicular Repeaters” available at <http://www.togpartners.com/interop/handouts/2B%20ARMER%20Network.pdf> (describing how DVRs are available for operation in spectrum bands at 136-174MHz, 380-430MHz, 450-470MHz, 470-512MHz, 764-806MHz, 806-869MHz and describing the tradeoffs for cross-band and in-band operations)

<sup>49</sup> See NPRM at ¶32 (asking “[a]re there adequate frequencies in these bands where land mobile voice operations, and by extension mobile repeater stations, are already permitted...?”)

<sup>50</sup> For example, public safety has access to 700 MHz frequencies for both narrowband and broadband applications, which could also be leveraged to support VRS.

<sup>51</sup> *Id.* at ¶33 (also asking if the Commission should “consider changing rules to allow land mobile voice operations and mobile repeater stations on certain frequencies that the rules currently render incompatible with such use?”).

for mobile repeater stations.<sup>52</sup> While there is support on the record for increased access to channels for I/B use of VRS, UTC opposes the use of the six telemetry channels for VRS. As explained above and in UTC's previously-filed comments, the risk of interference to telemetry operations from VRS outweighs the benefits of using the VHF band for in-band VRS.<sup>53</sup> If the Commission does expand this proceeding to include I/B licensees, it should only consider using other frequencies besides the six telemetry channels, which are in short supply.

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<sup>52</sup> *Id.* (also asking whether the Commission should “include I/B eligibles in this rulemaking and consider amendments to Section 90.35 that are analogous to the rule changes we propose *supra* to Section 90.20, so that I/B users in addition to public safety users would be allowed to use the six telemetry channels for VRS.”)

<sup>53</sup> *See generally* Comments and Reply Comments of UTC in RM-11635. *See also supra* n. 6 (stating that “PSE&G would not consider using 173-174 MHz VRS systems within its own territory because the risk of having a critical function interfered with by a mobile VRS is too great.”)

## **CONCLUSION**

In conclusion, UTC appreciates the opportunity to provide these comments in response to the Commission's NPRM and opposes the Petition for Rule Making by Pyramid. UTC urges the Commission to deny the Petition and not allow voice operations on 173.2375, 173.2625, 173.2875, 173.3125, 173.3375 and 173.3625 MHz frequencies.

Respectfully submitted,

**Utilities Telecom Council**

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