

Before the  
Federal Communications Commission  
WASHINGTON, D.C. 20554

In the Matter of )  
 )  
Uses and Capabilities of Amateur Radio Service ) GN Docket No. 12-91  
Communications in Emergencies and Disaster )  
Relief: Report to Congress Pursuant to Section )  
6414 of the Middle Class Tax Relief and Job )  
Creation Act of 2012 )

REPORT

Adopted: August 16, 2012

Released: August 20, 2012

By the Chief, Wireless Telecommunications Bureau and Chief, Public Safety and Homeland Security Bureau:

I. INTRODUCTION

1. The Federal Communications Commission (Commission) licenses stations to operate in the amateur radio service pursuant to its authority under the Communications Act of 1934, as amended.<sup>1</sup> The amateur service is available to persons who are interested in radio technique solely with a personal aim and without pecuniary interest.<sup>2</sup> It presents an opportunity for individuals to self-train in radio and communications technology and to carry out technical investigations.<sup>3</sup> Amateur radio operators also engage in voluntary, noncommercial communications with other amateur radio operators located in the United States and in foreign countries,<sup>4</sup> and form a group of trained operators who have the ability, on a voluntary basis, to assist the public by providing essential communications links and facilitating relief actions, particularly when a disaster or other emergency situation occurs or is likely to occur.<sup>5</sup> Amateur radio operators have been useful in recent years in augmenting essential communication services and

<sup>1</sup> See, e.g., 47 U.S.C. § 301. Under the Commission’s rules, the amateur radio services include three services – “the amateur service, the amateur-satellite service and the radio amateur civil emergency service [RACES].” See 47 C.F.R. § 97.3(a)(2). The amateur service and the amateur satellite service are separate radio services in the international Radio Regulations; RACES is a domestic radio service using amateur radio stations for civil defense communications during periods of local, regional or national civil emergencies. See World Radiocommunication Conference Final Acts (Geneva, 2003), Article 25; 47 C.F.R. § 97.3(a)(37). Because the bulk of the comments submitted pertained to the amateur service, the focus of the report is on that service.

<sup>2</sup> See 47 C.F.R. § 97.3(a)(4). Under the Commission’s rules, the amateur radio services include three services – “the amateur service, the amateur-satellite service and the radio amateur civil emergency service [RACES].” See 47 C.F.R. § 97.3(a)(2). The amateur service and the amateur satellite service are separate radio services in the international Radio Regulations; RACES is a domestic radio service using amateur radio stations for civil defense communications during periods of local, regional or national civil emergencies. See World Radiocommunication Conference Final Acts (Geneva, 2003), Article 25; 47 C.F.R. § 97.3(a)(37). The record in this proceeding focuses primarily on the amateur service.

<sup>3</sup> See *id.*

<sup>4</sup> See 47 C.F.R. § 97.111(a)(1).

<sup>5</sup> See 47 C.F.R. § 97.1(a).

providing communication links when normal communication systems are overloaded or unavailable.

2. Section 6414 of the Middle Class Tax Relief and Job Creation Act of 2012 (Statute) states that the Commission, in consultation with the Office of Emergency Communications (OEC) in the Department of Homeland Security (DHS), shall complete a study on the uses and capabilities of amateur radio service communications in emergencies and disaster relief not later than 180 days after the date of the enactment of the Statute.<sup>6</sup> It also states that the Commission shall submit a report to the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the findings of such study within the same 180-day period.<sup>7</sup> The Statute requires that the study include a review of the importance of emergency amateur radio service<sup>8</sup> communications relating to disasters, severe weather, and other threats to lives and property in the United States; and recommendations for enhancements in the voluntary deployment of amateur radio operators in disaster and emergency communications and disaster relief efforts; and recommendations for improved integration of amateur radio operators in the planning and furtherance of initiatives of the federal government.<sup>9</sup> The Statute also requires that the study identify impediments to enhanced amateur radio service communications and provide recommendations regarding the removal of such impediments.<sup>10</sup> The Statute specifically identifies “the effects of unreasonable or unnecessary private land use restrictions on residential antenna installations” as an example of such an impediment.<sup>11</sup> In conducting the study, the Statute directs the Commission to use the expertise of stakeholder entities and organizations, including amateur radio, emergency response, and disaster communications communities.<sup>12</sup>

3. On April 2, 2012, the Commission’s Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau (Bureaus) released a *Public Notice* seeking comment on the uses and capabilities of Amateur Radio Service communications in emergencies and disaster relief.<sup>13</sup> Comment was sought on issues relating to the importance of emergency amateur radio service communications and on impediments to enhanced amateur radio service communications. In response to the *Public Notice*, the Bureaus received more than 180 comments from individual amateur radio operators, amateur radio organizations, public safety entities, and other interested parties. Moreover, as required by Section 6414, the Commission has consulted with DHS’s OEC in conducting this study and preparing this report.<sup>14</sup>

## II. BACKGROUND

4. Amateur radio provides members of the public with an opportunity to explore and develop

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<sup>6</sup> See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6414 (2012). The Statute was signed into law on February 22, 2012. Therefore, the 180-day period expires at the end of August 20, 2012.

<sup>7</sup> See *id.* at § 6414(a).

<sup>8</sup> The Statute does not define “amateur radio service.” We interpret Section 6414’s use of the phrase as having the same definition as “amateur radio services” in Part 97 of the FCC’s rules.

<sup>9</sup> See *id.* at § 6414(b)(1).

<sup>10</sup> *Id.* at § 6414(b)(2).

<sup>11</sup> *Id.* at § 6414(b)(2)(A).

<sup>12</sup> *Id.* at § 6414(c).

<sup>13</sup> See Commission Seeks Comment on Emergency Communications by Amateur Radio and Impediments to Amateur Radio Communications, *Public Notice*, GN Docket No. 12-91, 27 FCC Rcd 3200 (WTB/PSHSB 2012) (*Public Notice*).

<sup>14</sup> Specifically, drafts of both the *Public Notice* and this report were shared with OEC prior to release, and OEC provided substantive comments and suggestions throughout the process.

their interests in radio communications techniques on an exclusively non-pecuniary, personal basis. Such individuals can self-train, communicate with other amateur radio licensees, and carry out technical investigations.<sup>15</sup> The basis and purpose of the amateur radio services is expressed in five principles, which includes the value of amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.<sup>16</sup> The amateur radio service rules thus allow, among other things, stations in this service to make transmissions necessary to meet essential communication needs, facilitate relief actions, and to make transmissions necessary to providing emergency communications.<sup>17</sup> The rules also make clear that amateur radio stations may provide essential communications in connection with the immediate safety of human life and immediate protection of property when normal communication systems are not available.<sup>18</sup>

5. Recent news stories have reported events where amateur radio operators have been useful in augmenting essential communication services and providing communication links when normal communication systems are overloaded or unavailable. For example, amateur radio operators provided storm observations and damage reports to the National Weather Service (NWS) when winds and tornadoes moved through Arkansas and Alabama in January 2012, and provided communications to villages along the Bering Sea when a November 2011 severe winter storm knocked out power lines and communications.<sup>19</sup>

### III. DISCUSSION

#### A. Importance of Emergency Amateur Radio Service Communications

6. The responses to the *Public Notice* indicate agreement between the amateur radio community and public safety community as to the utility of amateur radio in emergency response situations. Amateur radio communications are suited to disaster response in a way that many more advanced forms of communication today are not, thereby allowing it to supplement other emergency communications activities during disasters.

7. Amateur radio operators already have extensive experience in monitoring and relaying weather-related information via the NWS's Skywarn program. Developed in 1971, the Skywarn program allows amateur radio operators to observe weather conditions and make reports to their local NWS offices, thus assisting forecasters in tracking severe weather and warning citizens of oncoming weather

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<sup>15</sup> The "amateur service" is defined as "A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest." 47 C.F.R. § 97.3(a)(4).

<sup>16</sup> See 47 C.F.R. § 97.1(a). The other four principles are contribution to the advancement of the radio art, advancement of skills in the communication and technical phases of the art, expansion of the pool of trained operators and experts, and enhancement of international goodwill. 47 C.F.R. § 97.1(b)-(e).

<sup>17</sup> See 47 C.F.R. § 97.111(a)(2), (b)(4).

<sup>18</sup> See 47 C.F.R. § 97.403.

<sup>19</sup> See, e.g., American Radio Relay League, "Hams in Arkansas and Alabama Help Provide Assistance to NWS During Severe Sunday Storms," available at <http://www.arrl.org/news/hams-in-arkansas-and-alabama-help-provide-assistance-to-nws-during-severe-sunday-storms> (last accessed on March 26, 2012); American Radio Relay League, "When Brutal Storm Slams Alaska, Hams Provide Critical Communications," available at <http://www.arrl.org/news/when-brutal-storm-slams-alaska-hams-provide-critical-communications> (last accessed on March 26, 2012). The American Radio Relay League, Inc. (ARRL) provides numerous other examples in its comments in response to the *Public Notice*. See ARRL Comments at 48-63.

threats.<sup>20</sup> Commenter Slawomir J. Bucki explains the Cincinnati Skywarn system as follows:

When severe weather conditions are imminent, Cincinnati Skywarn activates a Severe Weather Net.<sup>[21]</sup> The net activities are coordinated by a net control operator. The net control operator relays weather reports from individual amateur radio operators to the NWS office in Wilmington, Ohio, and relays important information from the NWS to weather spotters. Cincinnati Skywarn uses two local VHF<sup>[22]</sup> repeaters to provide reliable coverage of the Southwestern Ohio, Southeastern Indiana and Northern Kentucky areas.<sup>23</sup>

8. This system demonstrates a key feature of the amateur response network, which is that the very nature of amateur radio, operating separate networks of independently operated stations functioning primarily on a decentralized basis, provides it with resiliency, making it well-suited to disaster response. More specifically, amateur radio operates independently from public infrastructure and can be operated via portable transceivers and local back-up power sources.<sup>24</sup> Amateur radio is especially resilient during disasters that normally affect infrastructure (*e.g.*, earthquakes and hurricanes).<sup>25</sup> Another commenter suggests that amateur radio operators could continue providing emergency communications in the absence or degradation of the Internet or other communications infrastructure.<sup>26</sup>

9. Other commenters noted that amateur radio complements communications systems in areas without wireless telephone coverage. Martin D. Wade notes that this complement comes from “the use of the known and ubiquitous autopatch,” which is a feature that allows a transmission from an amateur station that does not have ready access to the public switched telephone network (PSTN), such as a station in an automobile or a portable station, to be connected or “patched” into the PSTN.<sup>27</sup> Martin D. Wade explains that this allows persons in “areas without cell service to reach out and have contact since distant

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<sup>20</sup> Participation in Skywarn does not require an amateur radio license; however, amateur radio nets allow for quick and efficient transmission of weather information.

<sup>21</sup> A “net” or “network” is a group of amateur radio stations that share some common interest and exchange messages among themselves. The amateur service rules do not regulate networks or “net” operations.

<sup>22</sup> VHF refers to the Very High Frequency portion of the radio spectrum, or 30-300 MHz.

<sup>23</sup> Slawomir J. Bucki Comments at 2.

<sup>24</sup> *See id.*; *see also* James Whedbee Comments at 3 (amateur radio services have provided weather spotter coverage in several severe weather situations, including blizzards, ice storms, high winds, severe thunderstorms, tornadoes, floods, hurricanes, earthquakes, etc.).

<sup>25</sup> *See* James Whedbee Comments at 3; *see also, e.g.*, ARRL Comments at 66 (“Another good example of the value of Amateur Radio in a weather-related event is the 2009 statewide ice storm that left more than 90 percent of Kentucky’s counties without communications service of any type... Brigadier General John Heltzel, Kentucky’s National Guard Deputy Commander and Director of the Kentucky Division of Emergency Management, said, ‘We wouldn’t have had any communications for the first three or four days if it hadn’t been for Kentucky’s ham radio operators. They saved the day and don’t get nearly enough credit.’ Amateur Radio operators communicated from their homes utilizing battery or generator-supplied power and were able to repair or replace their damaged antennas to support their communities and their state in a time of dire emergency.”).

<sup>26</sup> Nickolaus E. Leggett May 14 Comments at 1-2; *see also* Nickolaus E. Leggett April 3 Comments *id.* at 2 (arguing that amateur radio networks are likely to function during electromagnetic pulse (EMP) attacks).

<sup>27</sup> Martin D. Wade Comments at 4.

repeaters can be made available.”<sup>28</sup>

10. Additionally, because amateur radio networks are typically spread across wide geographical areas, they have the ability to spread critical disaster-related information to areas far from the disaster area. Because they can utilize different frequency bands and emission types, amateur radio networks can operate under a wide variety of conditions. The flexibility and geographical dispersion of amateur radio networks provide advantages for relaying information out of localized disaster zones and into outside jurisdictions coordinating recovery efforts. The American Radio Relay League (ARRL) states, “The role and goal of Amateur Radio is not to supplant existing commercial or public safety communications facilities. Rather, the appropriate role is to supplement those other systems, especially during the early parts of disaster relief and recovery. The flexibility of the Amateur Service, in terms of frequencies and modes of communications available, gives it a high degree of resiliency.”<sup>29</sup> The Public Safety Communication Manager’s Association of Santa Clara County concurs, noting that, “Amateur Radio operators quickly acquire post-incident information because they are already dispersed and have their own equipment. For instance, following an earthquake Amateur Radio operators are able to provide emergency services staff with a countywide snapshot within minutes.”<sup>30</sup>

11. Public safety organizations stress the importance of amateur radio as a complement to other forms of emergency communications. The Public Safety Communication Manager’s Association of Santa Clara County further notes that, “[w]hen local government staffing is stressed by incident response, Amateur Radio operators provide a significant additional resource. They can provide communications to mass care shelters, handle logistics requests and status reports, and process health and welfare traffic, allowing EOC [emergency operations center] staff and dispatchers to focus on life safety and property and environmental protection.”<sup>31</sup> Commenters note that amateur radio operators may be quickly deployed to areas where additional communications are needed to “supplement existing local government and commercial land mobile networks, depending on the specific circumstances of the incident. For example, Amateur Radio operators can be deployed to relay resource needs and assistance requests to public safety answering points when public safety radio frequencies and/or public switched telephone networks and Internet are either overwhelmed, have failed or are otherwise unavailable.”<sup>32</sup>

### 1. Case studies

12. Commenters provided numerous case studies on the use of amateur radio networks during disaster response. Arlington County, Virginia, Office of Emergency Management notes,

There are countless examples throughout the history of our nation that demonstrate the intrinsic value of trained Amateur Radio operators providing auxiliary emergency

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<sup>28</sup> *Id.* (also noting that “[a] good example of this was when the Baton Rouge Repeater on 147.225 [MHz with an antenna height of] 1300 Feet was used during Katrina to coordinate and relay messages across Louisiana and Southern Mississippi”). The coverage area of a repeater, *i.e.*, the area over which stations can communicate through a repeater, is primarily determined by the height above ground of the repeater’s antennas and the topography of the surrounding area.

<sup>29</sup> *Id.*; *see also* Michael D. Adams Comments at 1; Timothy S. Cotton Comments at 1-2; James Whedbee Comments at 5-6; James Russell Comments at 2.

<sup>30</sup> Public Safety Communication’s Manager’s Association of Santa Clara County Comments at 1.

<sup>31</sup> Public Safety Communications Manager’s Association of Santa Clara County Comments at 1-2; *see also* Santa Clara County Fire Chief’s Association Comments at 2.

<sup>32</sup> Arlington County, Virginia, Office of Emergency Management Comments at 2; *see also* Public Safety Communication Manager’s Association of Santa Clara County Comments at 1-2.

communications to local, county and state governments, (directly impacting their constituents), as well as to the Red Cross and other related volunteer disaster response groups, after significant weather events or incidents. There are regions of our nation that experience, almost annually, significant weather events such as hurricanes, tornadoes, extreme ice storms, flooding from severe rainstorms, and wildfires. In those regions Amateur Radio volunteers have established well-trained, deployable auxiliary emergency communications teams that directly support served agencies of state and local governments, including forest wild fire fighting in California; flooding in the Midwest, hurricanes in the Gulf states and Mid-Atlantic, as well as ice storms in the Southwest and Mid-Atlantic regions, including flash floods and other severe weather events that affect the Eastern states.<sup>33</sup>

Commenters provided several specific situations in which amateur radio played a critical role in responding to major disasters.

13. Hurricane Katrina. The resilience and geographical dispersion of amateur radio networks played a critical role in direct disaster response during Hurricane Katrina, August 2005. The ARRL states:

During Hurricane Katrina and its aftermath, Amateur Radio was used to coordinate the information flow between relief centers, emergency operations centers, and shelters until normal communications systems were restored. It was also used to pass information to search and rescue units. The rescue of approximately 15 persons off of a roof of a house surrounded by floodwaters was directly attributed to information relayed via Amateur Radio using both HF [high frequency] and VHF/UHF frequencies. The Salvation Army Team Emergency Radio Network handled over 20,000 health and welfare inquiries during Katrina's aftermath. Similar stories are found in almost any tropical weather event.<sup>34</sup>

14. The Hurricane Katrina response demonstrates amateur radio operators' ability to transfer information across wide areas even in the event of major disasters that destroy much of the surrounding infrastructure. It also demonstrates the importance of communications in saving lives and coordinating resources during major events.

15. Columbia Shuttle Disaster. On February 1, 2003, the Space Shuttle Columbia disintegrated in midair while re-entering the Earth's atmosphere, scattering nearly 84,000 pieces of debris over hundreds of miles of land in East Texas and Louisiana. Regarding the disaster, James Russell states:

The area in east Texas where the bulk of the shuttle debris went down is heavily covered with pine forest. Cell phone coverage and coverage from normal radio systems was spotty to non-existent in the region. Amateur Radio provided spot communications as the recovery teams walked the terrain finding and marking bits of debris. Operators from all over Texas and the surrounding states were involved.<sup>35</sup>

16. The space shuttle disaster demonstrates how amateur radio can be utilized in areas where

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<sup>33</sup> Arlington County, Virginia, Office of Emergency Management Comments at 1-2.

<sup>34</sup> ARRL Comments at 65.

<sup>35</sup> James Russell Comments at 1.

other communications systems are intermittent or non-existent. Amateur radio was used to provide logistical support to search teams through a vast area in places where other communication systems were unavailable.

17. RACES, MARS, and ARES. There are several private and public partnerships that provide amateur radio operators with a structured organizational capacity to deliver lifesaving communications during disasters. One such example is the Amateur Radio Emergency Service (ARES), coordinated by the ARRL. The ARES program consists of licensed amateurs who have voluntarily registered their qualifications and communication capabilities with their local ARES leadership for communications duty in the public service when disaster strikes.

18. Another program which utilizes amateur radio operators is the Department of Defense's Military Auxiliary Radio System (MARS), which “depends entirely on licensed radio Amateurs to operate Army, Navy, Air Force, Marine Corps, Transportation Security Administration and other federal backup HF communication systems. Most of this work and training is done from the MARS member’s home stations.”<sup>36</sup>

19. The radio amateur civil emergency service (RACES) is a partnership between amateur radio operators and state and local government emergency management organizations that allows government communication capabilities to be augmented during periods of local, regional or national civil emergencies.<sup>37</sup> It was established in 1952.<sup>38</sup>

20. Other volunteer organizations also exist that provide trained amateur radio emergency communicators. Some of these organizations include the Maritime Mobile Service Net (MMSN), the Salvation Army Team Emergency Radio Network (SATERN) and the Radio Emergency Associated Communications Team (REACT), just to name a few.

## 2. Recommendations

21. It is important that amateur radio operators who volunteer to assist in emergency communications during disasters be knowledgeable about the procedural framework that guides emergency response. Some commenters suggest that the federal government – such as the Commission and/or DHS – promulgate a standardized training curriculum.<sup>39</sup> The ARRL argues that training should be brought under a national responder credentialing regime similar to other courses: “It would also be very helpful if FEMA [the Federal Emergency Management Agency] would recognize ARRL Emergency Communications courses for national responder credentialing in the same way they have done with certain non-government courses for veterinary responders. This would give emergency managers a greater degree of confidence in the Amateur Radio volunteers in a disaster area.”<sup>40</sup>

22. DHS has developed a number of guidance documents in this area, including the National Response Framework,<sup>41</sup> which describes authorities and best practices for managing emergency incidents

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<sup>36</sup> ARRL Comments at 67-68.

<sup>37</sup> See 47 C.F.R. §§ 97.3(a)(38), 97.407(a).

<sup>38</sup> See Providing a Radio Amateur Civil Emergency Service, *Memorandum Opinion and Order*, Docket No. 10102, 42 F.C.C. 224 (1952).

<sup>39</sup> *Id.*; Arlington County, Virginia Office of Emergency Management Comments at 3.

<sup>40</sup> ARRL Comments at 68; see also William F. Osler Comments at 6; John J. McDonough Comments at 8.

<sup>41</sup> <http://www.fema.gov/emergency/nrf/>.

and procedures, and the National Emergency Communications Plan (NECP),<sup>42</sup> which promotes the ability of emergency responders to communicate during disasters. Within DHS, the OEC is charged with leading the nationwide effort to improve emergency communications capabilities across all levels of government. OEC is uniquely qualified to work with the amateur radio community in this area. We therefore recommend that DHS consult with the public safety, emergency management, and amateur radio emergency communications associations and groups to identify training opportunities that will support better utilization of amateur radio operators for emergency communications, and to solicit views on how amateur radio capabilities could be further incorporated into response plans or initiatives. We also recommend that OEC include these recommendations in the NECP.

23. Additionally, several commenters suggested that a national credentialing system should be established for amateur radio operators to allow access to disaster areas during major emergencies. As the ARRL explains,

A national certification program for individual Amateur Radio emergency communications volunteers would make it easier for radio Amateurs to assist outside their local area or region and across political boundaries, and give agencies a benchmark for reasonable expectations for their deployment. As with standards for modes and methods, standards must offer a base line of skills and capabilities but still allow innovation and local variations to accommodate specific needs. Any certification that might be developed should be designed for those Amateurs who wish to participate in providing emergency communications. It should not become a general requirement for anyone desiring to become an Amateur Radio licensee.<sup>43</sup>

24. Commenter Martin D. Wade explains how the lack of credentialing impeded amateur radio efforts during Hurricane Katrina. He states, “Resistance to credentialing was very evident during Katrina and passes were required to travel from point to point with workers and relief agency personnel having to prove themselves to each and every checkpoint...Some Officers were satisfied by the patchwork of Identification Cards (IDs), but others wanted to question each person wanting a pass which blocked up traffic and slowed down entry. Not knowing what to accept, some accepted anything, others, nothing.”<sup>44</sup>

25. Others disagree. Miami-Dade County argues that, “Members volunteer their time, and certification may become a rift between members that have it and others [who] don’t. In an emergency you want as many Licensed Amateur Operators as possible to be available.”<sup>45</sup>

26. We agree that amateur radio operator access to a disaster area can be useful. We do not believe, however, that a federal credentialing system<sup>46</sup> would be effective for this purpose because access

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<sup>42</sup> [http://www.dhs.gov/files/publications/gc\\_1217521334397.shtm](http://www.dhs.gov/files/publications/gc_1217521334397.shtm).

<sup>43</sup> ARRL Comments at 74; *see also* Michael D. Adams Comments at 1-2 (“[E]fforts to make use of the Amateur Radio Service seem to be erratic, inconsistent, and almost haphazard among different government and non-government emergency response organizations. To make the greatest use of the Amateur Radio Service’s strengths, the government would be well-served to strongly encourage government and non-government emergency response agencies to form credentialed auxiliary communications teams from interested volunteers to make use of all communications resources at their disposal, including public safety land mobile resources that the agencies might be licensed for, and amateur radio service resources when more conventional services are overwhelmed or fail.”).

<sup>44</sup> Martin D. Wade Comments at 15-16.

<sup>45</sup> Miami-Dade County Comments at 2.

<sup>46</sup> For this discussion, we define “credential” as a document which attests to the identification, qualification, and authority of the bearer.



to disaster areas is generally controlled by state, local, and tribal authorities. Any such credential or qualification document should therefore be a matter to be determined by appropriate state, local and tribal officials such as emergency management agency heads.

27. We suggest that DHS work with state, local, and tribal authorities so they may develop disaster area access or credentialing policies for trained amateur operators, including a means for documenting their qualifications, which states may, if they choose, consider when determining whether or not to grant access. Having access criteria determined by each state is a process that has been utilized to provide much needed access to disaster areas by non-government critical infrastructure restoration crews, such as power company and telecommunications company personnel, and may be effective for amateur radio operators, too. This approach could help facilitate access to disaster sites for amateur radio operator volunteers while respecting the right of state, local, and tribal jurisdictions to control incident sites.

## **B. Impediments to Enhanced Amateur Radio Service Communications**

28. The Statute requires that the study identify impediments to enhanced amateur radio service communications and provide recommendations regarding the removal of such impediments. We do that here, with particular focus on the effects of private land use restrictions, based on the comments we received in response to the *Public Notice*. While many commenters identified a particular land use restriction as an impediment, other commenters identified other obstacles, such as certain Commission rules, state or local regulations regarding use of communications devices while driving, and interference from various sources as restricting enhanced amateur service communications. Following a discussion of these comments, we provide recommendations aimed at minimizing the impact on amateur service communications.

### **1. Private land use restrictions**

29. Background. In its 1985 *PRB-1* decision, the Commission adopted the policy of limited preemption of state and local regulations governing amateur station facilities, including antennas and support structures.<sup>47</sup> State and local regulations that operate to preclude amateur communications in their communities are in direct conflict with federal objectives and are preempted.<sup>48</sup> Because amateur station communications are only as effective as the antennas employed, regulations that involve placement, screening, or height of amateur radio antennas based on health, safety, or aesthetic considerations must be crafted to reasonably accommodate amateur radio communications, and must represent the “minimum practicable” regulation to accomplish the local authority’s legitimate purpose.<sup>49</sup> The Commission declined to specify any particular height limitation below which a local government may not regulate, or to suggest precise language or procedures that must be contained in local ordinances.<sup>50</sup> Instead, the Commission permitted local authorities to determine in the first instance what constitutes a reasonable accommodation and the minimum practicable regulation based on the authority’s legitimate purposes,

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<sup>47</sup> Federal Preemption of State and Local Regulations Pertaining to Amateur Radio Facilities, *Memorandum Opinion and Order*, PRB-1, 101 F.C.C. 2d 952 (1985) (*PRB-1*); see also 47 C.F.R. § 97.15(b). We note that “antenna support structures” include, in addition to a lattice-type radio tower or towers, tubular masts that may or may not be retractable, trees, telephone poles, and vertical tubing attached to the side of a structure, although a tower or mast of some type appear to be very commonly used support structures. We also note that some amateur radio operators have multi-tower antenna installations and other amateur radio operators use an antenna constructed from wire or aluminum tubing as an antenna installation.

<sup>48</sup> See *PRB-1*, 101 F.C.C. 2d at 960 ¶ 24.

<sup>49</sup> *Id.* at 960 ¶ 25.

<sup>50</sup> *Id.*

policies, and concerns.<sup>51</sup>

30. The *PRB-1* decision decided not to extend this policy to private land use restrictions contained in covenants, conditions, and restrictions (CC&Rs) in home ownership deeds and condominium bylaws because “[s]uch agreements are voluntarily entered into by the buyer or tenant when the agreement is executed and do not usually concern the Commission.”<sup>52</sup> Since the *PRB-1* decision, petitioners have asked the Commission to expressly extend its preemption policy to CC&Rs. In 2001, the Commission denied an Application for Review, which asked the Commission to expand its preemption policy and preempt CC&Rs that do not provide reasonable accommodation for amateur radio operators.<sup>53</sup> In doing so, the Commission affirmed that the limited preemption policy of *PRB-1* applies only to state and local regulations.<sup>54</sup> The Commission noted that its decision in *PRB-1* to exclude CC&Rs from its preemption policy was premised upon the fundamental difference between state and local regulations, with which an amateur operator must comply, and CC&Rs, which are contractual terms to which an amateur operator voluntarily subjects him- or herself.<sup>55</sup> The Commission also concluded that “there ha[d] not been a sufficient showing that CC&Rs prevent amateur radio operators from pursuing the basis and purpose of the amateur service,” and noted that “there are other methods amateur radio operators can use to transmit amateur service communications that do not require an antenna installation at their residence. These methods include, among other things, operation of the station at a location other than their residence, mobile operations, and use of a club station.”<sup>56</sup> Finally, the Commission stated that should Congress see fit to enact a statutory directive mandating the expansion of its limited preemption policy to include more than state and local regulations, it would expeditiously act to fulfill its obligation thereunder.<sup>57</sup> Subsequent similar requests for preemption of CC&Rs also have been denied.<sup>58</sup>

31. Types and prevalence of private land use restrictions. In the course of preparing its comments in this proceeding, the ARRL conducted a survey of amateur radio operators regarding the effect of private land use restrictions.<sup>59</sup> It states that CC&Rs affecting amateur radio antennas fall into five basic categories: (a) those that prohibit all outdoor antennas without exception; (b) those that permit over-the-air video delivery service antennas but prohibit all other types of antennas such as amateur radio antennas; (c) those that permit antennas of a certain configuration, size or height, usually based on visibility from the street or from adjacent parcels of land; (d) those that require that any structure be

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<sup>51</sup> See *id.* at 960 ¶¶ 25-26.

<sup>52</sup> See *id.* at 960 n.6.

<sup>53</sup> Modification and Clarification of Policies and Procedures Governing Siting and Maintenance of Amateur Radio Antenna and Support Structures, and Amendment of Section 97.15 of the Commission’s Rules Governing the Amateur Radio Service, *Memorandum Opinion and Order*, 17 FCC Rcd 333, ¶ 6 (2001) (*MO&O*), *aff’g Order on Reconsideration*, 15 FCC Rcd 22151 (WTB 2000), *aff’g Order*, 14 FCC Rcd 19413 (WTB 1999), *recon. dismissed*, 17 FCC Rcd 19408 (WTB PSPWD 2002).

<sup>54</sup> *MO&O*, 17 FCC Rcd at 337 ¶ 9.

<sup>55</sup> *MO&O*, 17 FCC Rcd at 335-37 ¶¶ 6-8.

<sup>56</sup> *Id.* at 335 ¶ 6.

<sup>57</sup> *Id.* at 336 ¶ 8. Legislation to preempt CC&Rs has been introduced in past sessions of Congress. See H.R. 1478 (2003); H.R. 3867 (2005).

<sup>58</sup> See, e.g., James Edwin Whedbee, *Letter*, DA 12-699 (WTB MD rel. May 3, 2012); Christopher Kaczmarek, *Letter*, 24 FCC Rcd 4092 (WTB MD 2009); Don Schellhardt, *Letter*, 22 FCC Rcd 4025, *aff’d*, *Letter*, 22 FCC Rcd 13511 (WTB MD 2007).

<sup>59</sup> ARRL Comments at 26.

approved by either the homeowners' association or its architectural control board; and (e) those that prohibit all amateur radio (or occasionally any radio) transmission.<sup>60</sup> It notes that CC&Rs in categories (a), (b) or (e) entirely prohibit the installation or maintenance of an amateur radio antenna in any functional configuration, while those in category (c) might or might not permit a functional antenna in a given location depending on the configuration of a residential parcel of land and the severity of the regulations.<sup>61</sup> The ARRL notes with respect to CC&Rs in category (d), which it indicates may be the most common, that the unlimited discretion afforded the decision-making body prevents a person from knowing prior to purchasing a home in that community whether an antenna will be approved.<sup>62</sup>

32. Commenters assert that real estate subject to some form of deed restriction or governance by a homeowners association is the norm in many areas, especially for more recent construction.<sup>63</sup> Commenter Nicholas B. Proy states, "it is estimated that as of 2011, [314,000] HOA communities throughout the United States enforce CC&Rs against [25,100,000] residential properties, which equates to [62,300,000] residents."<sup>64</sup>

33. Effects of private land use restrictions and ways to minimize those effects. Commenters disagree regarding the extent to which private land use regulations affect the amateur radio community's ability to provide emergency communications. The ARRL states, "The single most challenging aspect of Amateur Radio emergency communications efforts is the complete preclusion of their [amateur radio operators'] ability to install and maintain at their residences an effective, reliable antenna system for Amateur Radio communications."<sup>65</sup> Some commenters agree that private land use regulations that have the effect of prohibiting outdoor antenna structures prevent amateurs from operating on frequency bands that are important for emergency communications.<sup>66</sup>

34. Other commenters argue that such restrictions have little effect on amateur emergency communications because antenna structures in areas affected by severe weather or another disaster are unlikely to survive<sup>67</sup> or will not be usable in the event of an electrical outage because most operators do not own generators to power their stations.<sup>68</sup> In addition, commenters point out that mobile communications are more useful than home-based stations in times of disaster or emergency because they

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<sup>60</sup> *Id.* at 26-27; *see also* Nicholas B. Proy Comments at 1-2 ("Private restrictions range from absolute prohibitions of amateur radio antennas to allowing external antennas only with advance written permission of the HOA").

<sup>61</sup> ARRL Comments at 28.

<sup>62</sup> *Id.* at 32-33; *see also* Comments of Community Associations Institute at 4 ("In general, most association architectural rules will permit variations, but require the approval of an architectural review committee or of the association governing board.").

<sup>63</sup> *See, e.g.*, William Buoy Comments at 1; Lawrence J. Myers Comments at 1; Michael D. Adams Comments at 5; Slawomir J. Bucki Comments at 3.

<sup>64</sup> Nicholas B. Proy Comments at 1-2 (citing <http://www.caionline.org/info/research/Pages/default.aspx>); *see also* Community Associations Institute Comments at 1 (stating that one in five American households is in a community association).

<sup>65</sup> ARRL Comments at 3.

<sup>66</sup> *See, e.g.*, Robert J. Rounds Comments at 1; William Buoy Comments at 1; Lawrence J. Myers Comments at 1; Stephen K. Bramham Comments at 1; Brett Neilson Comments at 1.

<sup>67</sup> Richard H. Emmelman Comments at 1.

<sup>68</sup> Burt Fisher Comments at 1.

are available at the site of the public safety operations.<sup>69</sup> Commenters also argue that the effect of private land use regulations can be minimized by well-engineered indoor antenna systems<sup>70</sup> or the use of temporary antenna installations.<sup>71</sup> One commenter suggests that organizations oriented toward disaster relief be encouraged to sponsor amateur radio clubs that utilize a shared station at a useful location, which can be controlled directly or by remote control.<sup>72</sup>

## 2. Other impediments

35. Commenters identified a number of other issues that they believe impede enhanced amateur service communications, including burdensome municipal restrictions on antenna height, superfluous permitting and inspection processes,<sup>73</sup> local regulations regarding texting and cell operation while driving that do not make exemptions for amateur radio,<sup>74</sup> and public ignorance of the many benefits and contributions of amateur radio operators and their stations to local communities and beyond.<sup>75</sup> Others commented on impediments caused by interference from other amateur operators<sup>76</sup> or from consumer devices.<sup>77</sup>

36. Some commenters identified Commission rules that they believe impede advanced amateur communications. The ARRL asserts that the Commission's regulation of emission types and digital bit rates is overly conservative and can prevent amateur operators from using the emission type and frequency suitable for transmission path and the information to be transmitted.<sup>78</sup> The ARRL also suggests that restrictions on RACES preparedness drills and interaction between RACES and other emergency communications groups and entities such as the ARES be eased.<sup>79</sup>

37. The Commission's rules prohibit the transmission by amateur stations of "messages encoded for the purpose of obscuring their meaning."<sup>80</sup> Commenters argue that transmission of sensitive data, such as medical information that is subject to privacy requirements, is often a necessary aspect of emergency response, and therefore the use of encryption should be permitted under appropriate circumstances, such as by credentialed operators.<sup>81</sup>

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<sup>69</sup> Community Associations Institute Comments at 7-8; Richard H. Emmelman Comments at 1.

<sup>70</sup> Richard H. Emmelman Comments at 1.

<sup>71</sup> *Id.*; Jack Harold King, Jr. Comments at 1.

<sup>72</sup> William F. Osler Comments at 7; *see also* <http://www.arrl.org/link-remote-control> for information concerning how to remotely control an amateur station over the internet.

<sup>73</sup> Jacob R. Lauser Comments at 2.

<sup>74</sup> Jeffery Seligman Comments at 1.

<sup>75</sup> Jacob R. Lauser Comments at 2.

<sup>76</sup> Michael Langford Comments at 1.

<sup>77</sup> William F. Osler Comments at 8.

<sup>78</sup> *See* ARRL Comments at 18 (citing 47 C.F.R. §§ 97.3(c), 97.305, 97.307); *see also* Steve Lampereur Comments at 1; Eric Gildersleeve Comments at 3.

<sup>79</sup> *See id.* at 44 (citing 47 C.F.R. § 97.407); *see also* Eric Gildersleeve Comments at 2.

<sup>80</sup> 47 C.F.R. § 97.113(a)(4).

<sup>81</sup> Don Rolph Comments at 1-3; William F. Osler Comments at 8; James Russell Comments at 3; Steve Waterman Comments at 6-7.

38. Finally, commenter Eric Gildersleeve suggests that modifying the prohibition on transmitting amateur communications for compensation or in which the operator has a pecuniary interest<sup>82</sup> could expand the amateur resources available during emergencies.<sup>83</sup>

### 3. Recommendations

39. Private land use restrictions. Some commenters recommend that CC&Rs be preempted if they prohibit antennas that are within certain limits.<sup>84</sup> Others suggest that private land use restrictions on amateur antennas should be permitted only for safety considerations, and not for aesthetic reasons.<sup>85</sup> As noted above, however, other commenters believe that it is not necessary to preempt private land use restrictions in order to promote amateur emergency communications, given the ways that even amateurs subject to CC&Rs can communicate effectively and the nature of amateur emergency communications. Moreover, while commenters suggest that private land use restrictions have become more common,<sup>86</sup> our review of the record does not indicate that amateur operators are unable to find homes that are not subject to such restrictions. Therefore, at this time, we do not see a compelling reason for the Commission to revisit its previous determinations that preemption should not be expanded to CC&Rs.

40. Other impediments. As noted above, the Commission has already preempted state and local regulations that do not reasonably accommodate amateur radio communications and do not represent the minimum practicable regulations to accomplish the local authority's legitimate purpose. The Commission has also addressed regulations regarding possession and operation of amateur radio equipment while driving.<sup>87</sup> Commission rules that may be an impediment to enhanced amateur service emergency communications can, as the ARRL notes, be considered through the Commission's rulemaking process.<sup>88</sup> Consequently, we do not believe that Congressional action is necessary to address any of these issues.

## IV. CONCLUSION

41. The amateur radio community and the emergency response and disaster communications communities all agree that amateur radio can be of great value in emergency response situations. Amateur radio carries with it a wide range of advantages that allow it to supplement other emergency communications activities during disasters. This has been demonstrated time and again in a wide variety

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<sup>82</sup> See 47 C.F.R. § 97.113(a).

<sup>83</sup> Eric Gildersleeve Comments at 3.

<sup>84</sup> See, e.g., Thomas W. Howey Comments at 1 (30 foot height); Michael D. Adams Comments at 5-6 (height of 45 feet or half the distance to the nearest property line); M.R. Manes Comments at 1 (one millimeter wire diameter); Eric Gildersleeve Comments at 3 (100 feet height if the tower is inspected by a local building inspector).

<sup>85</sup> See James A. Stanley Comments at 1; Slawomir J. Bucki Comments at 3-4.

<sup>86</sup> See, e.g., Nicholas B. Proy Comments at 1.

<sup>87</sup> See Federal Preemption of State and Local Laws Concerning Local Laws Concerning Amateur Operator Use of Transceivers Capable of Reception Beyond Amateur Service Frequency Allocations, PR Docket No. 91-36, *Memorandum Opinion and Order*, 8 FCC Rcd 6413, 6416 ¶¶ 11-12 (1993) (preempting state and local laws that preclude the possession in vehicles or elsewhere of amateur radio service transceivers by amateur operators merely on the basis that the transceivers are capable of the reception of public safety, special emergency, or other radio service frequencies).

<sup>88</sup> ARRL Comments at 44. For example, the Commission currently is considering a petition for rulemaking filed by ARRL that proposes to provide additional flexibility with respect to emission types. See Petition for Rule Making, RM-11625 (filed March 15, 2011); *Public Notice*, Report No. 2928 (CGB rel. Mar. 23, 2011).

of emergency and disaster situations. Amateur radio emergency communications require not only stations in a position to originate the emergency message, but also an alternative to the commercial communications infrastructure impacted by the emergency. This alternative infrastructure is the network of amateur radio operators and their stations that relay messages, build and maintain repeater stations and repeater networks, operate HF message networks to send messages greater distances than are practical with mobile or transportable transmitters, and develop new technologies to improve the reliability of these networks.

42. That value could potentially be increased, however, through cooperation among DHS, public safety, emergency management, and amateur radio emergency communications associations and groups to develop future training protocols. We also recommend that DHS work with state, local, and tribal authorities to develop disaster area access policies and qualifications for trained amateur operators who provide emergency communications support.

43. Pursuant to Section 6414 of the Statute, the Commission submits this report to Congress examining the uses and capabilities of amateur radio service communications in emergencies and disaster relief.

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