

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

In the Matter of )  
 )  
Review of Part 87 of the Commission’s Rules ) WT Docket No. 01-289  
Concerning the Aviation Radio Service )

**FOURTH REPORT AND ORDER**

**Adopted: November 7, 2018**

**Released: November 9, 2018**

By the Commission:

**I. INTRODUCTION**

1. Emergency Locator Transmitters (ELTs) are radio beacons that are carried on board aircraft and triggered in the event of a crash or other unplanned downing. The Commission authorizes these devices to serve as an effective locating aid for survival purposes. For years, the ELTs operated only at 121.5 MHz, with their transmissions monitored by an international satellite-based system (the Cospas-Sarsat system) that could determine their location over most of the world’s major air and sea travel paths. By 2010, however, the Cospas-Sarsat system limited tracking of ELTs to a newer type operating primarily at 406 MHz, thus eroding the utility of the 121.5 MHz ELTs as an effective locating aid. By accelerating the transition to 406 MHz ELTs with the rule changes we adopt in this *Fourth Report and Order*, we will enhance the ability of search and rescue personnel to locate and bring aid to the victims of plane crashes.

**II. BACKGROUND**

2. Section 332 of the Communications Act of 1934, as amended (the Act), states that the Commission, “[i]n taking actions to manage the spectrum to be made available for use by the private mobile services . . . shall consider . . . whether such actions will—, [*inter alia*], promote the safety of life and property; [or] (2) improve the efficiency of spectrum use and reduce the regulatory burden upon spectrum users, based upon sound engineering principles, user operational requirements, and marketplace demands . . . .”<sup>1</sup> Section 303 of the Act further requires the Commission, pursuant to its licensing authority, to “prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class.”<sup>2</sup> In concert with these direct statutory mandates, the Commission has an obligation to advance the goal “of obtaining maximum effectiveness from the use of radio and wire communications in connection with safety of life and property.”<sup>3</sup>

<sup>1</sup> 47 U.S.C. § 332(a)(1)-(2).

<sup>2</sup> 47 U.S.C. § 303(b); *see, e.g., Aeronautical Radio, Inc. v. FCC*, 928 F.2d 428, 441 (D.C. Cir. 1991) (citing section 303(b) in affirming that “[t]he Commission has the clear statutory authority to determine the nature of the services to be provided under particular classes of licenses”); *Cellco Partnership v. FCC*, 700 F.3d 534, 542 (D.C. Cir. 2012) (recognizing that section 303(b) authorizes the Commission to establish rules regarding “the nature of the service to be rendered” by entities licensed by the Commission), *distinguished on other grounds by Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014). The Supreme Court has emphasized that Title III endows the Commission with “expansive,” although not unlimited, powers and incorporates a “comprehensive mandate to encourage the larger and more effective use of radio in the public interest.” *Cellco Partnership*, 700 F.3d at 542 (quoting *NBC v. US*, 319 U.S. 190, 216, 219 (1943)).

<sup>3</sup> 47 U.S.C. § 154(o). The Act also mandates that the Commission “encourage the larger and more effective use of radio in the public interest.” 47 U.S.C. § 303(g). In addition, the Act and its statutory predecessors, the Radio Acts

3. In furtherance of these statutory responsibilities, the Commission authorizes and regulates three types of satellite emergency radiobeacons: Emergency Position-Indicating Radiobeacons (EPIRBs),<sup>4</sup> Personal Locator Beacons (PLBs),<sup>5</sup> and ELTs.<sup>6</sup> ELTs are activated after an aircraft crash to alert search and rescue personnel of the incident and to identify the location of the aircraft and any survivors.<sup>7</sup> Most aircraft, including most general aviation (GA) aircraft, are required by federal statute to carry an ELT.<sup>8</sup>

4. The two types of ELT now in service are the 406 MHz ELT and the 121.5 MHz ELT.<sup>9</sup> 406 MHz ELTs transmit a 406 MHz digital distress signal containing information on the type of emergency, the country and identification code of the beacon, and other data to assist search and rescue operations; and a lower-powered homing signal on 121.5 MHz to guide search and rescue teams to the aircraft once they arrive in the general area. 121.5 MHz ELTs transmit an analog signal on 121.5 MHz containing only an audio alert, intended to serve both as a distress signal and a homing signal.<sup>10</sup>

5. As technology continues to evolve, the Commission must periodically reevaluate and, to the extent necessary, modify the requirements for services it regulates. Developments in the satellite monitoring framework used by EPIRBs and ELTs have undermined their reliance on 121.5 MHz as the key frequency that enables them to effectively perform the public safety functions for which they were

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of 1912 and 1927, have long reflected Congress's special concern about protecting the integrity of distress communications. *See, e.g.*, Pub. L. 264, 37 Stat. 302, 305, § 3 (provision of Radio Act of 1912 stating that "All stations are required to give absolute priority to signals and radiograms related to ships in distress; to cease all sending on hearing a distress signal; and, except when engaged in answering or aiding the ship in distress, to refrain from sending until all signals and radiograms relating thereto are completed"); Pub. L. 69-632, 44 Stat. 1162, 1171, § 23 (similar provision in the Radio Act of 1927).

<sup>4</sup> *See* 47 CFR § 80.1061. EPIRBs are float-free emergency transmitters carried on marine vessels that alert maritime search and rescue authorities that the vessel is in distress. *See Amendments of Parts 2 and 83, Stations on Shipboard in the Maritime Services, to Permit the Use of the Frequencies 121.5 MHz and 243 MHz by Ship Stations, Survival Craft Stations, and Emergency Position Indicating Radiobeacons*, Report and Order, 45 FCC 2d 885 (1974).

<sup>5</sup> *See* 47 CFR part 95 subpart K. PLBs are emergency transmitters available to the general public to alert search and rescue personnel in case of a life-threatening emergency in a remote area. *See Amendment of Part 95 of the Commission's Rules to Authorize the Use of 406.025 MHz for Personal Locator Beacons (PLB)*, Report and Order, 17 FCC Rcd 19871 (2002) (*PLB R&O*).

<sup>6</sup> *See* 47 CFR § 87.199.

<sup>7</sup> *See Amendments of Parts 1, 2, and 87 of the Rules to Provide for the Licensing and Use of Emergency Locator Transmitters (ELT's)*, Report and Order, 39 FCC 2d 1004 (1973) (*ELT R&O*).

<sup>8</sup> *See* 49 U.S.C. § 44712; *see also* 14 CFR § 91.207 (implementing regulation).

<sup>9</sup> ELTs, like EPIRBs, were initially authorized to operate only on 121.5 MHz and (primarily for military use) on 243 MHz. *See ELT R&O*. In 1988, the Commission amended the part 80 rules to permit EPIRBs to operate on the frequency 406.025 MHz as well. *See Amendment of the Maritime Service Rules to allow ships to use 406.025 MHz emergency position indicating radio-beacons for distress alerting and search and rescue functions*, Report and Order, 3 FCC Rcd 5406 (1988). In 1993, the Commission likewise authorized the use of 406.025 MHz by ELTs, noting that doing so had "overwhelming support." *See Amendment of the Aviation Rules (Part 87) to Authorize the Use of the Frequency 406.025 MHz for Emergency Locator Transmitters (ELTs)*, Report and Order, 8 FCC Rcd 3185, 3185-86, paras. 6-7 (1993). PLBs have never been authorized to transmit a distress signal on 121.5 MHz, but only on 406.025 MHz. *See PLB R&O*, 17 FCC Rcd at 19875, para. 10.

<sup>10</sup> The term "121.5 MHz ELTs," as used here, refers only to ELTs designed to transmit the distress alert on the frequency 121.5 MHz. (Such ELTs are sometimes referred to as 121.5/243 MHz ELTs.) It does not include 406 MHz ELTs, notwithstanding that 406 MHz ELTs use 121.5 MHz for a homing signal, and we emphasize that nothing we do here prevents the certification, manufacture, importation, sale, or use of 406 MHz ELTs, or is intended to restrict the use of the 121.5 MHz frequency for homing. *See* 47 CFR § 87.199 (mandating that 406 MHz ELTs include a 121.5 MHz homing signal); *see also, e.g.*, 3<sup>rd</sup> FNPRM, 28 FCC Rcd at 513, para. 4.

authorized. More specifically, the Cospas-Sarsat satellite system<sup>11</sup> had formerly monitored both the 121.5 MHz and 406 MHz bands for EPIRBs and ELTs and had relayed distress alerts to the appropriate search and rescue authority. In 2000, however, Cospas-Sarsat announced that, beginning in 2009, it would cease monitoring 121.5 MHz because of reliability and false alert concerns with 121.5 MHz radiobeacons, and it urged 121.5 MHz radiobeacon users to switch to 406 MHz radiobeacons. The National Oceanic and Atmospheric Administration (NOAA), the U.S. Coast Guard (USCG), the U.S. Air Force, and the National Aeronautics and Space Administration (NASA)—which administer the Cospas-Sarsat system in the United States—also advised users to switch to 406 MHz radiobeacons.<sup>12</sup>

6. Because of these developments, the Commission in 2002 modified the rules governing EPIRBs to phase out use of EPIRBs designed to transmit distress alerts on the 121.5 MHz frequency (121.5 MHz EPIRBs); certification of 121.5 MHz EPIRBs ceased immediately, sale and manufacture of 121.5 MHz EPIRBs was prohibited as of 2003, and use of 121.5 MHz EPIRBs was prohibited effective December 31, 2006.<sup>13</sup>

7. The Commission in 2006 requested comment on actions it should take with regard to 121.5 MHz ELTs in light of the scheduled termination of Cospas-Sarsat monitoring of 121.5 MHz.<sup>14</sup> Commenters generally supported a phase-out of 121.5 MHz ELTs.<sup>15</sup>

8. In 2010, after Cospas-Sarsat stopped monitoring 121.5 MHz, the Commission amended section 87.195 of the rules<sup>16</sup> in the *Third Report and Order (3<sup>rd</sup> R&O)* in this proceeding to prohibit the continued certification, manufacture, importation, sale, and use of 121.5 MHz ELTs.<sup>17</sup> After the *3<sup>rd</sup> R&O* was released in 2010, the Federal Aviation Administration (FAA) and the Aircraft Owners and

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<sup>11</sup> Cospas-Sarsat is an international satellite-based search and rescue system established by Canada, France, Russia, and the United States. Cospas is an acronym for a Russian phrase meaning space system for search and distress vessels. Sarsat stands for Search and Rescue Satellite Aided Tracking. ELTs also can be monitored by ground-based air traffic control facilities and by passing aircraft.

<sup>12</sup> See, e.g., National Oceanic and Atmospheric Administration, Termination of 121.5/243 MHz Satellite Alerting, 66 Fed. Reg. 34912, 34913 (July 2, 2001).

<sup>13</sup> See *Amendment of Parts 13 and 80 of the Commission's Rules Concerning Maritime Communications*, Report and Order and Further Notice of Proposed Rule Making, 17 FCC Rcd 6741, 6761-62, para. 47 (2002).

<sup>14</sup> See *Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service*, Second Report and Order and Second Further Notice of Proposed Rule Making, 21 FCC Rcd 11582, 11609, para. 43 (2006) (*2<sup>nd</sup> FNPRM*).

<sup>15</sup> See, e.g., NOAA Comments at 1 (noting that 121.5 MHz ELTs have a much higher false alert rate than 406 MHz ELTs, and that ELT false alerts “degrade [search and rescue] services and the SRSAT system, dramatically increase the cost to taxpayers for these services, and subject [search and rescue] personnel to unnecessary risks”); USCG Comments at 1 (supporting a prohibition on the certification, manufacture, or use of 121.5 MHz ELTs after February 2009, arguing that the “use of such equipment without satellite detection will be relatively ineffective for lifesaving”); Fred J. Kissel Comments at 1; Alan C. Knox Comments at 1. The National Telecommunications and Information Administration (NTIA) and Federal Aviation Administration (FAA) stated that they generally supported the proposals in the *Second FNPRM*, but did not specifically address the issue of 121.5 MHz ELTs. See Office of Spectrum Management (NTIA) Apr. 17, 2007 Comments at 1. Only one commenter opposed a phase-out of 121.5 MHz ELTs, arguing without elaboration that “alternative ELT surveillance technology will emerge” and stating that 406 MHz ELT prices were “exorbitant.” See David Wartofsky Comments at 1 (Potomac Technology Aviation Corp.).

<sup>16</sup> 47 CFR § 87.195.

<sup>17</sup> See *Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service*, Third Report and Order, 25 FCC Rcd 7610, 7620-21, paras. 17-18 (2010). The Commission concluded that the benefits of mandating a transition to 406 MHz ELTs outweighed the compliance costs, especially since the GA community had been on notice for ten years that satellite monitoring of 121.5 MHz would end. *Id.* at 7620-21, para. 17.

Pilots Association (AOPA) asked the Commission to revisit its decision to prohibit 121.5 MHz ELTs.<sup>18</sup> In response to their concerns, the Commission stayed its amendment of section 87.195.<sup>19</sup>

9. In the 2013 *Third Further Notice of Proposed Rule Making* in this proceeding, the Commission requested additional comment on the appropriate regulatory treatment of 121.5 MHz ELTs.<sup>20</sup> Stating that it “continue[d] to believe that a phase-out of 121.5 MHz ELTs is in the public interest” based on the record established to that date, even as augmented by the information and arguments submitted after the release of the *3rd R&O*, the Commission proposed to prohibit further certification of new 121.5 MHz ELTs immediately and to prohibit any further manufacture, importation, or sale of 121.5 MHz ELTs one year after the effective date of the rule amendments.<sup>21</sup> The Commission also sought comment on whether to prohibit the use of 121.5 MHz ELTs. It also asked whether it should grandfather continued use of installed 121.5 MHz ELTs only for a defined time period, and, if so, how long; or whether installed 121.5 MHz ELTs should be grandfathered indefinitely, so that GA aircraft owners and pilots would not have to replace their 121.5 MHz ELTs until the end of the equipment’s useful life.<sup>22</sup>

10. In addition, the Commission requested information on matters that had not been fully addressed by commenters prior to adoption of the *3rd R&O*. It requested data on the costs and benefits of a mandatory phase-out of 121.5 MHz ELTs, both for aircraft owners and pilots and for search and rescue agencies and personnel.<sup>23</sup> It also asked for comment on the sufficiency of the inventory of 406 MHz ELTs to satisfy the expected demand if a transition to such equipment is mandated,<sup>24</sup> on the residual safety benefits, if any, of 121.5 MHz ELTs,<sup>25</sup> and on whether mandating a transition from 121.5 MHz to 406 MHz ELTs is warranted in light of the availability of alternative technologies that may provide

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<sup>18</sup> See Letter from James T. Eck, Director of Program Operations, FAA, to Karl B. Nebbia, Associate Administrator, Office of Spectrum Management, NTIA (July 8, 2010), forwarded to FCC under cover of Letter from Karl T. Nebbia, Associate Administrator, Office of Spectrum Management, NTIA, to Julius Knapp, Chief, Office of Engineering and Technology, FCC (July 14, 2010) (FAA Letter); Letter from Robert E. Hackman, Vice President, Regulatory Affairs, AOPA, to Marlene Dortch, Secretary, FCC (June 24, 2010) (AOPA Letter). Both the FAA and AOPA said that 121.5 MHz ELTs retain safety value even after the termination of Cospas-Sarsat monitoring of the frequency, and expressed concern about the cost and availability of 406 MHz ELTs for those who would be required to replace a 121.5 MHz ELT. See FAA Letter at 1; AOPA Letter at 1-2.

<sup>19</sup> See *Review of Part 87 of the Commission’s Rules Concerning the Aviation Radio Service*, Order, 26 FCC Rcd 685 (2011).

<sup>20</sup> See *Review of Part 87 of the Commission’s Rules Concerning the Aviation Radio Service*, Third Further Notice of Proposed Rule Making, 28 FCC Rcd 512, 512-13, paras. 1-3 (2013) (*3rd FNPRM*). The initial pleading cycle required the filing of comments by March 1 and reply comments by March 18, 2013. See 78 Fed. Reg. 6276 (Jan. 30, 2013). The Wireless Telecommunications Bureau extended those deadlines to April 1 and May 2, 2013. See *Extension of Deadlines for Comments and Reply Comments on Part 87 Third Further Notice of Proposed Rule Making Regarding 121.5 MHz Emergency Locator Transmitters*, Public Notice, 28 FCC Rcd 1884 (WTB 2013). The U.S. Department of Transportation (DOT) and the National Telecommunications and Information Administration (NTIA) separately filed comments after the close of the pleading cycle, which we will treat as *ex parte* presentations and accept into the record of this proceeding in the interest of having as complete a record as possible to inform our decisions. See *Ex Parte* Comments of the National Telecommunications and Information Administration, WT Docket No. 01-289 (filed Feb. 6, 2014) (NTIA *Ex Parte*); Letter from Kathryn B. Thomson, Acting General Counsel, DOT, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 01-289 (filed Aug. 5, 2013) (DOT *Ex Parte*). In Appendix B, we list the commenters and the short-hand names used in citations to comments.

<sup>21</sup> See *3rd FNPRM*, 28 FCC Rcd at 515-16, paras. 8-10.

<sup>22</sup> *Id.* at 516, para. 11.

<sup>23</sup> *Id.* at 516-17, para. 12.

<sup>24</sup> *Id.* at 517, para. 13.

<sup>25</sup> *Id.* at 517, para. 14.

similar or arguably greater safety benefits, such as Automatic Dependent Surveillance – Broadcast (ADS-B) service.<sup>26</sup>

### III. DISCUSSION

11. In this *Fourth Report and Order*, we prohibit the certification and, after a six-month transitional period, the manufacture, importation, and sale of 121.5 MHz ELTs. This will accelerate the transition to 406 MHz ELTs and, as a consequence, enhance the ability of search and rescue personnel to locate and bring aid to the victims of plane crashes and provide safety benefits to search and rescue personnel as well as pilots and passengers.

12. *Certification.* As proposed in the 3<sup>rd</sup> *FNPRM*, we prohibit certification of new models of 121.5 MHz ELTs as of the effective date of this *Fourth Report and Order*.<sup>27</sup> Several commenters confirm that, as the Commission previously noted, there should be no new models of 121.5 MHz ELTs to certify because in 2012 the FAA canceled its Technical Standard Order for 121.5 MHz ELTs,<sup>28</sup> which precludes approval of any new models.<sup>29</sup> We agree with the National Telecommunications and Information Administration (NTIA) and ELT manufacturers that there is no reason to hold open the possibility of certifying new 121.5 MHz ELTs.<sup>30</sup> Although some commenters oppose any measure that might restrict the availability of 121.5 MHz ELTs, including prohibiting the certification of new models of 121.5 MHz ELTs, they do not offer a rationale for allowing such continued certification.<sup>31</sup> Accordingly, we amend section 87.195 of our rules to discontinue such certification.

13. *Manufacture, importation, and sale.* We will prohibit the manufacture, importation, and sale of 121.5 MHz ELTs, beginning six months after the effective date of this *Fourth Report and Order*, as suggested by NTIA.<sup>32</sup> We conclude that this action is necessary to ensure that ELTs continue to serve their authorized purpose<sup>33</sup> of providing an effective, spectrum-based way to facilitate locating aircraft for survival purposes;<sup>34</sup> and to manage the spectrum available for use by the private mobile service to ensure the effective and efficient use of that spectrum for safety-related communications.<sup>35</sup> These rule changes will substantially improve the efficiency and reliability of the services using this spectrum.<sup>36</sup>

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<sup>26</sup> *Id.* at 517-18, para. 15. ADS-B service automatically broadcasts GPS-derived data on the location, velocity, altitude, heading, etc., of an ADS-B-equipped aircraft to other ADS-B-equipped aircraft and ground stations for distribution to air traffic control systems. See 2<sup>nd</sup> *FNPRM*, 21 FCC Rcd at 11587, n.18. ADS-B is the foundation of the Next Generation Air Transportation System, or NextGen, which is designed to transform the air traffic control system in United States airspace by shifting from reliance on ground radar and navigational aids to satellite-based tracking. See DOT, FAA, <https://www.faa.gov/nextgen/> (last visited Sept. 27, 2018).

<sup>27</sup> The effective date is 30 days after Federal Register publication.

<sup>28</sup> See Federal Aviation Administration, Notice of cancellation of Technical Standard Order (TSO)-C91a, Emergency Locator Transmitter (ELT) Equipment, 77 Fed. Reg. 28668 (May 15, 2012) (canceling, effective December 1, 2012, the FAA Technical Service Order setting forth the minimum standards for 121.5 MHz ELTs).

<sup>29</sup> See NTIA *Ex Parte* at 7; EAA Comments at 9; GAMA Comments at 2.

<sup>30</sup> See NTIA *Ex Parte* at 7-8; ACK Comments at 2; ACR Comments at 3; AEA Comments at 1; ELTech Comments at 14.

<sup>31</sup> See, e.g., AOPA Comments at 1; ASA Comments at 3. GAMA argues that prohibiting certification of 121.5 MHz ELTs would impose an unnecessary regulatory mandate. See GAMA Comments at 2. We disagree. A Commission determination not to certify any additional models of 121.5 MHz ELTs does not mandate that private sector entities take any actions or expend any funds.

<sup>32</sup> See note 62, *infra*.

<sup>33</sup> See 47 U.S.C. § 303(b) (authorizing Commission to prescribe the nature of licensed stations).

<sup>34</sup> See 47 CFR § 87.193.

<sup>35</sup> See 47 U.S.C. § 332(a); see also 47 U.S.C. §§ 154(i), 303(r).

14. The record demonstrates that 121.5 MHz ELTs were clearly inferior to 406 MHz ELTs due to interference and other concerns even prior to the termination of satellite monitoring of 121.5 MHz,<sup>37</sup> and that the advantages of 406 MHz ELTs have increased since then.<sup>38</sup> The global coverage,<sup>39</sup> reduction in false alerts,<sup>40</sup> and more precise identification of crash sites<sup>41</sup> provided by 406 MHz ELTs can

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<sup>36</sup> This action is consistent with previous Commission efforts establishing technical requirements specifically for ELTs and other emergency radiobeacons to ensure that they work efficiently and reliably as intended. *See, e.g., Amendment of Parts 80 and 87 of the Commission's Rules to authorize additional types of modulation for emergency position indicating radiobeacons and emergency locator transmitters in the maritime and aviation services*, Report and Order, 3 FCC Rcd 1027, 1028, para. 14 (1988) (“Because EPIRBs and ELTs are life saving devices, we must adopt technical standards that permit the devices to operate effectively with national and international search and rescue systems. Otherwise, the devices would be unable to perform adequately the very function for which they exist.”). It is beyond question that the Commission has an obligation ensure that the communications equipment it approves for use on aircraft is of high reliability. *See Amendment of Part 87 of the Commission's Rules to Exempt Transmitters Used at Aircraft Survival Stations from Type Acceptance Procedures*, Report and Order, 42 FCC 1239, 1239, para. 3 (1964). Indeed, the Commission has exercised its statutory authority to ensure the efficient, effective, and interference-free reception of distress communications from its inception. *See, e.g., Ford Motor Company (W8XC)*, Statement of Facts and Grounds for Decision, 1 FCC 150, 153 (1934) (“The public interest in freeing the distress frequency from sources of interference and in maintaining it as free of interference as is reasonably possible is apparent.”).

<sup>37</sup> ELTech notes that 121.5 MHz ELT transmissions are “problematic due to their harmonics.” ELTech Comments at 6. It states that the United States Air Force Rescue Command Center “has reported looking for downed aircraft and being thwarted by 121.5 signals being ‘retransmitted’ along the power grid,” *id.*, and many unintentional radiators on 121.5 MHz interfered with Cospas-Sarsat’s ability to respond to actual distress transmissions on the frequency. *Id.* at 11. In determining that helicopters conducting over-water operations be required to carry 406 MHz ELTs, the FAA cited “a stronger signal resulting in less interference” as one of the benefits of 406 MHz ELTs vis-a-vis 121.5 MHz ELTs. *See DOT Ex Parte* at 3 (citing Federal Aviation Administration, Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments, 75 Fed. Reg. 62640, 62658 (Oct. 12, 2010)).

<sup>38</sup> NTIA submitted with its comments a 1996 NOAA report quantifying the benefits of 406 MHz ELTs compared to 121.5 MHz ELTs. *See National Oceanic and Atmospheric Administration, 406 MHz Delta Study: Advantages of 406 MHz Emergency Locator Transmitters (ELTs) Over 121.5/243 MHz ELTs* (July 1996), attached as Appendix 1 to NTIA *Ex Parte*. Similarly, with respect to EPIRBs, the Commission noted that even before the termination of satellite monitoring, “[i]f lifesaving efforts [we]re often ineffective when 121.5/243 MHz EPIRBs transmit because there [wa]s no available registration information to aid detection [and] . . . 406 MHz EPIRBs [we]re responsible for four times the number of lives saved as 121.5/243 MHz EPIRBs, while being responsible for only two percent of the total number of false alerts attributed to 121.5/243 MHz EPIRBs.” *See Amendment of Parts 13 and 80 of the Commission's Rules Concerning Maritime Communications*, Notice of Proposed Rule Making and Memorandum Opinion and Order, 15 FCC Rcd 5942, 5956-57, para. 30 (2000).

<sup>39</sup> In contrast to the global coverage of a 406 MHz ELT, a 121.5 MHz ELT distress signal may not be detected “unless the incident occurs near an airport, the plane’s 121.5 MHz signal is detected by an overflying aircraft, or the downed plane fails to arrive at its intended destination,” and any notification that does occur may be hours after the crash. *See NTIA Ex Parte* at 6.

<sup>40</sup> The National Transportation Safety Board (NTSB) has noted that detectable 121.5 MHz signals can be emitted by, *e.g.*, automated teller machines, pizza ovens, CD players, and stadium scoreboards. *See NTSB Safety Recommendation A-07-51* (2007) ([http://www.nts.gov/\\_layouts/ntsb.recsearch/Recommendation.aspx?Rec=A-07-051](http://www.nts.gov/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=A-07-051)) at 5, attached to Letter from Karl T. Nebbia, Associate Administrator, Office of Spectrum Management, NTIA, to Julius Knapp, Chief, Office of Engineering and Technology, FCC (July 14, 2010). Moreover, a significant number of alerts from 121.5 MHz ELTs turn out to be false alarms. *See CAP Comments* at 1. As noted above, 406 MHz ELTs transmit a digital signal encoded with unique information about the aircraft and its owner that permits speedy verification that a distress situation is real.

<sup>41</sup> NTIA says that the greater accuracy of 406 MHz ELTs reduces the search area for a crash to less than two nautical miles (3.7 km) in radius, or approximately 43 square kilometers, and that 406 MHz ELTs, unlike 121.5 MHz ELTs, can be equipped with a GPS chip that can further refine the search area to within 100 meters of a crash. *See NTIA*

save the lives of pilots and passengers,<sup>42</sup> and reduce both the cost to taxpayers of search and rescue operations and the risks borne by search and rescue personnel.<sup>43</sup> 406 MHz ELTs also are more likely than 121.5 MHz ELTs to activate in the event of an actual crash. They have safer, more reliable batteries; and better heat, cold, vibration, and fire resistance.<sup>44</sup>

15. Although it appears that most GA aircraft owners and pilots are aware that satellite monitoring of 121.5 MHz ELTs has ceased,<sup>45</sup> some users may place unwarranted reliance on the protective value of 121.5 MHz ELTs based on a mistaken understanding of the scope and efficacy of non-satellite-based monitoring of the frequency, if these ELTs continue to be marketed indefinitely.<sup>46</sup> As discussed below, despite the claims of some commenters regarding the vestigial benefits of 121.5 MHz ELTs, the great weight of the record evidence indicates that these benefits are marginal at best and more than offset by the difficulties for search and rescue efforts that would attend allowing the indefinite continued installation of such ELTs. Finally, while the FAA and AOPA expressed concern in 2010 about the availability of 406 MHz ELTs, more recent filings in the record establish that manufacturers have more than sufficient manufacturing capacity and depth of supply chain to meet demand for such ELTs.<sup>47</sup>

16. Commenters opposed to prohibiting the manufacture, importation, and sale of 121.5 MHz ELTs argue that such action will impose costs that outweigh the benefits.<sup>48</sup> Some commenters argue that the benefits of phasing out 121.5 MHz ELTs in favor of 406 MHz ELTs have been overstated because 121.5 MHz ELTs' continued safety benefits have not been fully recognized.<sup>49</sup> The record indicates,

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*Ex Parte* at 6. In contrast, “The U.S. SARSAT program estimates that, if a commercial airliner flying at 30,000 feet detects a 121.5 MHz signal, the probable search area would have a radius of 198 miles (about 317 km), and an area of 123,613 square miles (315,696 km<sup>2</sup>).” *Id.*; see also ACR Comments at 2; Woods Comments at 2 (noting that, in her experience as a pilot and ground crew leader in a Civil Air Patrol squadron, identifying the location of a 121.5 MHz ELT is “infuriatingly difficult and [can] cause ground crews to . . . be dispatched to the wrong mountain”).

<sup>42</sup> Under FAA regulations, planes designed to carry not more than one person are exempt from the ELT carriage requirement. See 14 CFR § 91.207(f)(9).

<sup>43</sup> ACR notes that the greater precision of 406 MHz ELTs not only enhances the likelihood that a survivor will receive medical care more quickly but also minimizes risk to search and rescue personnel by allowing them to reach the crash scene with less flying, hiking, etc. See ACR Comments at 2; see also NTSB Comments at 3; NTIA *Ex Parte* at i (406 MHz ELTs are superior to 121.5 MHz ELTs “in their ability to increase the efficiency and accuracy of search and rescue operations, thereby minimizing threats to life and property, reducing the costs of Federal and state search and rescue operations, and improving the likelihood that such operations will be successful”).

<sup>44</sup> See ACK Reply Comments at 2-3; ELTech Comments at 12.

<sup>45</sup> In the 3<sup>rd</sup> FNPRM, the Commission asked whether, if it permitted the continued sale of 121.5 MHz ELTs, it should enact additional requirements, such as labeling or point-of-sale disclosure requirements, to ensure that purchasers are aware that 121.5 MHz ELTs lack satellite alerting capability. See 3<sup>rd</sup> FNPRM, 28 FCC Rcd at 516, para. 10. NTSB states that it does not believe such requirements are necessary in light of survey data indicating that 96 percent of AOPA's members are aware that Cospas-Sarsat no longer monitors 121.5 MHz. See NTSB Comments at 3. We agree and therefore decline to adopt any labeling or point-of-sale disclosure requirements during the remaining period when sale of 121.5 MHz ELTs will be permitted.

<sup>46</sup> See, e.g., ELTech Comments at 8 (stating that common misconceptions among the GA community are that 121.5 MHz ELTs are still monitored by FAA personnel in control towers and that airlines are mandated to monitor the frequency); see also Olson Comments at 1 (stating that the continued availability of 121.5 MHz ELTs “is setting up people with false security”).

<sup>47</sup> See, e.g., ACR Comments at 5; ACK Comments at 2; ELTech Comments at 3-4.

<sup>48</sup> See, e.g., AOPA Comments at 7-8; EAA Comments at 5-6; GAMA Comments at 2; NATA Comments at 4; NBAA Comments at 1.

<sup>49</sup> See, e.g., DOT *Ex Parte* at 2-3; ASA Comments at 3-4; CAP Comments at 1. DOT states, for example, that 121.5 MHz ELTs “continue to provide a beneficial means of locating missing aircraft in critical emergency situations” because 121.5 MHz ELT signals “continue to be monitored by the search and rescue community, most notably the

however, that current monitoring of 121.5 MHz distress transmissions is sporadic<sup>50</sup> and geographically limited.<sup>51</sup>

17. There is no evidence, moreover that the costs to ELT manufacturers and distributors would be substantial, for manufacturers indicate that they would not be burdened with stranded inventory. The record indicates that manufacturers, distributors, and retailers do not have significant on-the-shelf inventories of 121.5 MHz ELTs due to battery life issues.<sup>52</sup>

18. The Aviation Suppliers Association (ASA) does not dispute that existing inventories can be depleted quickly, but argues that prohibiting the sale of 121.5 MHz ELTs would work an unconstitutional taking of property under the Fifth Amendment by rendering distributors' inventory of 121.5 MHz ELTs worthless.<sup>53</sup> The Supreme Court has established a three-part test for determining whether a regulatory taking has occurred, in which a court will consider (1) the economic impact of the regulation on the claimant, (2) the extent to which the regulation interferes with the claimant's investment-backed expectations, and (3) the character of the government regulation or action.<sup>54</sup> There is no evidence in the record to suggest that these criteria have been met. Moreover, ASA does not cite, and we are otherwise not aware of, any authority for the proposition that prohibiting the sale of legacy devices, particularly following a transition period, constitutes a Fifth Amendment regulatory taking. Phasing in prohibitions such as the ones adopted herein is a common and necessary approach where the Commission has determined that ongoing use of legacy devices will be incompatible with changes in spectrum use mandated by the public interest, and operates to mitigate the "economic impact" of the governmental regulatory action.<sup>55</sup>

(Continued from previous page)

Civil Air Patrol . . . ." See DOT *Ex Parte* at 2, 3. The record indicates, however, that there is no formal CAP monitoring of the frequency, see NTIA *Ex Parte* at 3, n.8 ("[T]here is no formal Civil Air Patrol monitoring nor is there any monitoring station. CAP pilots, if they have an extra radio, will monitor 121.5 MHz when they are in flight. If they are not flying, they will not be monitoring."), and that CAP supports a deliberate transition to 406 MHz technology, see CAP Comments at 2. (Moreover, as noted, *infra*, the position of the Executive Branch, as reflected in the NTIA *Ex Parte* filed six months after the DOT *Ex Parte*, reflects support for a complete switchover to 406 MHz ELTs. See *infra* at note 74.) Others argue that since 121.5 MHz ELTs were deemed to promote aviation safety prior to satellite monitoring, they should be deemed to continue to have such value even after the cessation of satellite monitoring. See, e.g., ASA Comments at 3-4; Hodgson Comments at 1.

<sup>50</sup> NTIA, for example, notes that the FAA Aeronautical Information Manual states only that pilots are "encouraged" to monitor 121.5 MHz while in flight to assist in identifying possible ELT transmissions. See NTIA *Ex Parte* at 3, n.8.

<sup>51</sup> See, e.g., RTCM Comments at 2 (stating that 121.5 MHz ELTs "are not often monitored, especially in busy airspace[,] and [GA] aircraft sometimes fly in areas well away from designated commercial air traffic flight paths negating the benefit of potential alerting from overflying aircraft").

<sup>52</sup> See ACK Reply Comments at 8; ACR Comments at 4.

<sup>53</sup> See ASA Comments at 7-8.

<sup>54</sup> See *Penn. Cent. Transp. Co. v. City of New York*, 438 U.S. 104, 124 (1978). "Standing alone," mere allegations that government regulations limit a business's economic activities (e.g., by denying a license or other required authorization) are insufficient, when such limitations or effects arise from the legitimate exercise of an authorized governmental mandate. *Id.* at 131; see also, e.g., *Mitchell Arms, Inc. v. U.S.*, 7 F.3d 212, 215-17 (Fed. Cir. 1993) (revocation of permits that precluded sale of weapons in domestic commerce) (citing *U.S. v. General Motors Corp.*, 323 U.S. 373, 378 (1945) (stating that "the Fifth Amendment concerns itself solely with the 'property,' i.e., with the owner's relation as such to the physical thing and not with other collateral interests which may be incident to his ownership")); *Allied-General Nuclear Services v. U.S.*, 839 F.2d 1572, 1576 (Fed. Cir. 1988) (denying permit to operate plutonium recycling plant and observing that "no one has a legally protected right to use property in a manner that is injurious to the safety of the general public").

<sup>55</sup> See, e.g., *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission's Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Report and Order, 28 FCC Rcd 1663, 1686, para. 58 (2013);



19. It also does not appear that removing 121.5 MHz ELTs from the marketplace will impose significant costs on users in terms of a future price differential between 406 MHz ELTs and 121.5 MHz ELTs. The only responsive data to the Commission's request for "specific data on the costs of purchasing and installing a 406 MHz ELT"<sup>56</sup> suggests that the price differential between 406 MHz ELTs and 121.5 MHz ELTs has decreased significantly in the last few years, and will decrease further: in 2010, the FAA estimated the average cost of a 406 MHz ELT to be more than \$2,500,<sup>57</sup> but comments submitted in 2013 indicate that the price had already dropped to less than half of that.<sup>58</sup> Based on staff review of publicly available information, we believe that 406 MHz ELTs are now available for less than \$600.<sup>59</sup> Commenters who oppose the proposed prohibitions have not offered any information to quantify costs to the GA community from prohibiting the manufacture, importation, or sale of 121.5 MHz ELTs. Consequently, we are not persuaded by unsubstantiated claims that costs to GA aircraft owners and pilots resulting from the removal of 121.5 MHz ELTs from the market would hinder them from investing in other equipment or measures that would make more efficient use of this spectrum and better promote aviation safety.<sup>60</sup>

20. Nor do we agree that prohibiting the manufacture, importation, and sale of 121.5 MHz ELTs is unnecessary because a transition to 406 MHz ELTs will occur naturally over time without Commission intervention.<sup>61</sup> That a migration would occur eventually does not justify inaction, when the modest action that we are taking here should expedite the changes to the nature of this service that we have determined, pursuant to section 303(b), will maximize the efficient use of spectrum and best serve the public interest, convenience, and necessity. Similarly, in considering whether this action in managing the spectrum will promote the safety of life and property, as required by section 332(a), we find that it would disserve the public interest to take a slower path than the one we have chosen here. Moreover, for the reasons discussed below, we have determined that imposing a direct ban on licensee use of 121.5 MHz ELTs would be unlikely to produce a substantially quicker transition to 406 MHz ELT use. Accordingly, we impose this phased-in prohibition on the manufacture, importation, and sale of 121.5 ELTs to fulfill our statutory responsibilities effectively.

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*Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643, 653, para. 20 (2010).

<sup>56</sup> See 3<sup>rd</sup> FNPRM, 28 FCC Rcd at 523, Appendix B – Supplemental Initial Regulatory Flexibility Analysis.

<sup>57</sup> See FAA Letter at 2.

<sup>58</sup> ACK states that commenters opposing the Commission's proposals rely on outdated FAA data estimating the average cost of a 406 MHz ELT at \$2,800, and that retail costs of GPS-capable 406 MHz ELTs have fallen to as low as \$550. See ACK Comments at 2. It adds that a complete new installation, including parts and labor, would cost between \$830 and \$1,100. *Id.* ELTech says that 406 MHz ELTs are now available for between \$600 and \$1600, with an additional \$250 to \$400 in labor costs for installation. ELTech Comments at 3.

<sup>59</sup> See, e.g., Bill Carey, ACR Unveils Low-cost 406 MHz ELT 345 (Sept. 21, 2015) (noting availability of 406 MHz ELT for less than \$600), <http://www.ainonline.com/aviation-news/general-aviation/2015-09-21/acr-unveils-low-cost-406-mhz-elt-345>; Ian Brown, 406 ELT Prices Falling (Feb. 2016) (same), <https://www.eaa.org/en/aea/aea-news-and-aviation-news/bits-and-pieces-newsletter/02-15-2016-406-elt-prices-falling>; Swayne Martin, Your Obsolete ELT May Reduce Your Chances of Accident Survival (Sept. 13, 2016) (noting availability of 406 MHz ELTs for "roughly \$500"), <http://www.boldmethod.com/blog/learn-to-fly/systems/what-to-know-about-flying-with-your-ELT/>.

<sup>60</sup> See, e.g., AEA Comments at 2; AOPA Comments at 5-6; EAA Comments at 2, 10-11; GAMA Comments at 2.

<sup>61</sup> See, e.g., EAA Comments at 9 (stating that "[n]atural attrition, the fact that newly manufactured aircraft are delivered with 406 MHz ELTs, and industry education has resulted in a slow but steady conversion to 406 MHz ELTs though not at a rate that satisfies the search and rescue community"); SBA Advocacy Reply Comments at 5; AOPA Comments at 7; GAMA Comments at 2.

21. Commenters who favor prohibiting the manufacture, importation, and sale of 121.5 MHz ELTs support a transition period of one year (as proposed in the 3<sup>rd</sup> FNPRM) or less.<sup>62</sup> We believe that, at this juncture, a six-month transition period strikes a reasonable compromise in accelerating the removal of 121.5 MHz ELTs from the stream of commerce while avoiding undue hardship to manufacturers, importers, vendors, and users of the devices.<sup>63</sup> Manufacturers, importers, vendors, and users have been on notice for many years that 121.5 MHz ELTs would have a diminishing role in avionics, and it appears that there is currently very little manufacturing or sales activity involving 121.5 MHz ELTs.<sup>64</sup> We therefore amend section 87.195 of our rules to prohibit the manufacture, importation, or sale of 121.5 MHz ELTs, beginning six months from the effective date of this *Fourth Report and Order*.<sup>65</sup>

22. *Use.* After reviewing the record and the relevant statutory authority, we do not adopt a prohibition on the continued use of existing 121.5 MHz ELTs. Some commenters favor prohibiting the use of 121.5 MHz ELTs based on the same considerations that underlie their support for the Commission's proposals to prohibit the manufacture, importation, and sale of 121.5 MHz ELTs, albeit after a longer transition period to minimize the cost burden on the GA community.<sup>66</sup> NTIA recommends a transition period of eight years before the use of 121.5 MHz ELTs is prohibited,<sup>67</sup> while others advocate shorter grandfathering periods.<sup>68</sup>

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<sup>62</sup> See, e.g., NTSB Comments at 2 (supporting the one-year proposal); NTIA *Ex Parte* at 14 (agreeing that the proposed one-year transition is reasonable, but adding that “[a] case could be made for a more aggressive deadline, such as six months”). ELT manufacturers commenting in response to the 3<sup>rd</sup> FNPRM all favor effectuating these prohibitions as soon as or sooner than the period proposed by the Commission. See ACK Comments at 2 (supporting one-year transition period); ACR Comments at 4 (supporting one-year transition period for sale of 121.5 MHz ELTs, but an immediate prohibition on manufacture and importation); ELTech Comments at 15 (supporting immediate prohibition of manufacture, importation, and sale). Some commenters support the proposal to phase out the manufacture, importation, and sale of 121.5 MHz ELTs, but do not specifically address the length of the transition period. See, e.g., Alaska Airmen's Association Comments at 1.

<sup>63</sup> Cf. Federal Aviation Administration, Emergency Locator Transmitters, 59 Fed. Reg. 32050, 32055 (June 21, 1994) (using a six-month transition period when the FAA decided in 1994 that new 121.5 MHz ELTs should comply with a more stringent minimum operational performance standard).

<sup>64</sup> See NTIA *Ex Parte* at 14 (noting its belief that only a single firm still produces 121.5 MHz ELTs, and that only one model of 121.5 MHz ELTs is being sold); ACR Comments at 4 (noting that it last sought certification of a 121.5 MHz ELT in 1999, and that it has not manufactured, imported, or sold one since 2008); ELTech Comments at 15 (asserting that there is currently only one 121.5 MHz ELT model for sale in the United States, and the largest distributor has not delivered any units of the model to U.S. aircraft since 2011).

<sup>65</sup> ACR also favors a one-year phase-out of the sale and installation of replacement batteries, and an immediate prohibition on the manufacture and importation of battery packs, replacement parts, and on-field servicing of 121.5 MHz ELTs. See ACR Comments at 4. In the 3<sup>rd</sup> FNPRM, the Commission stated that it was “not proposing any prohibition or restriction on the manufacture, sale, or installation of replacement components, such as batteries, for 121.5 MHz ELTs in use [because] . . . permitting the continued marketing of replacement components for 121.5 MHz ELTs does not present the same concerns, and would not delay the transition to 406 MHz ELTs to the same extent, as permitting the continued marketing of stand-alone 121.5 MHz ELTs.” See 3<sup>rd</sup> FNPRM, 28 FCC Rcd at 516, n.30. The Commission also invited comment on this issue, however. *Id.* We decline to prohibit the manufacture, importation, sale, or installation of replacement components for 121.5 MHz ELTs both for the reasons stated in the 3<sup>rd</sup> FNPRM and because we believe that such action would be inconsistent with our decision to permit the continued use of 121.5 MHz ELTs, as discussed *infra*. If the continuing availability of replacement parts for 121.5 MHz ELTs appears to be frustrating our goal of speeding the transition to 406 MHz ELTs, we may revisit this issue.

<sup>66</sup> See, e.g., NTIA *Ex Parte* at 14; NTSB Comments at 3; RTCM Comments at 3-4; ACK Reply Comments at 8; ACR Comments at 4.

<sup>67</sup> See NTIA *Ex Parte* at 14.

<sup>68</sup> See, e.g., NTSB Comments at 3 (recommending a three-year period of grandfathering protection before the use of 121.5 MHz ELTs is prohibited); RTCM Comments at 3-4 (recommending varying deadlines based on type and age

23. Those who oppose a prohibition on the use of 121.5 MHz ELTs, even if accomplished gradually and with grandfathering protections, argue that it would impose costs on the GA community that outweigh the benefits;<sup>69</sup> that it is unnecessary because a transition to exclusive use of 406 MHz ELTs will occur naturally over time;<sup>70</sup> and that requiring users of 121.5 MHz ELTs to upgrade to 406 MHz ELTs by a specified deadline would foreclose them from investing in other equipment and measures that would better promote aviation safety.<sup>71</sup> While these are generally the same arguments that these parties raise against prohibiting the manufacture, importation, and sale of 121.5 MHz ELTs, the record indicates that these parties' greatest concern is with prohibiting the use of 121.5 MHz ELTs, and that they are most strongly opposed to the adoption of a rule that might require GA aircraft owners to replace 121.5 MHz ELTs before the end of their useful lives, especially given the imminence of an ADS-B mandate (scheduled to take effect in 2020) that would require an additional significant expenditure of funds for new equipment; they fear that, after purchasing and installing a 406 MHz ELT, they will be required a few years later to purchase ADS-B equipment that provides equivalent or greater safety benefits.<sup>72</sup>

24. Commenters also contend that the statutory provision requiring most fixed-wing powered civil aircraft to carry an ELT—section 44712 of Title 49 of the United States Code, which provides that an “aircraft meets the [ELT carriage] requirement . . . if it is equipped with an emergency locator transmitter that transmits on the 121.5/243 megahertz frequency or the 406 megahertz frequency or with other equipment approved by the Secretary for meeting the requirement”<sup>73</sup>—forecloses the Commission from prohibiting use of 121.5 MHz ELTs.<sup>74</sup> Those who oppose a use prohibition also argue that the Commission should defer to the FAA on this issue, and that it would be inappropriate for the Commission to prohibit the use of 121.5 MHz ELTs when the FAA has declined to do so.<sup>75</sup> The proponents of a use prohibition do not address the argument that section 44712 precludes such a prohibition.

25. We decline to prohibit the use of 121.5 MHz ELTs at this time.<sup>76</sup> The language of section 44712 casts doubt on our authority to prohibit the use of 121.5 MHz ELTs. Moreover, even if section 44712 permits such action, we question whether prohibiting the use of 121.5 MHz ELTs after a

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of aircraft, but in no case more than five years); ACK Reply Comments at 8 (generally endorsing RTCM's recommended deadlines); ACR Comments at 4 (two to three years).

<sup>69</sup> See, e.g., AOPA Comments at 7-8; EAA Comments at 5-6; GAMA Comments at 2; NATA Comments at 4; NBAA Comments at 1.

<sup>70</sup> See, e.g., EAA Comments at 9.

<sup>71</sup> See, e.g., AEA Comments at 2; AOPA Comments at 5-6; EAA Comments at 2, 10-11; GAMA Comments at 2.

<sup>72</sup> See, e.g., AEA Comments at 2; AOPA Comments at 7-9; EAA Comments at 2, 10-11; GAMA Comments at 2.

<sup>73</sup> See 49 U.S.C. § 44712(d).

<sup>74</sup> See, e.g., SBA Advocacy Comments at 5-6; AOPA Comments at 3; ASA Comments at 4-5; EAA Comments at 2; NATA Comments at 3. In comments filed in advance of the NTIA *Ex Parte*, DOT also asserts that the relevant statutory language reflects “Congress’s unequivocal intent to permit the use of 121.5 [MHz] ELTs in civil aircraft.” See DOT *Ex Parte* at 2. We note that the DOT *ex parte* comments and the later-filed NTIA *Ex Parte* take conflicting positions regarding a use prohibition. While the DOT *Ex Parte* opposing a prohibition on the use of 121.5 MHz ELTs state that “DOT and FAA officials have shared the views expressed here with representatives of . . . NTIA,” *id.* at 1, n.1, NTIA says that its later-filed comments supporting the prohibition on the use of 121.5 MHz ELTs include the input of the FAA, supersede the earlier DOT *ex parte* comments, and “reflect the views of the Executive Branch on the issues raised in the [3<sup>rd</sup> FNPRM].” See NTIA *Ex Parte* at 1-2.

<sup>75</sup> See, e.g., AOPA Comments at 3; EAA Comments at 8-9.

<sup>76</sup> In light of this decision, we need not address arguments that we may not prohibit the use of 121.5 MHz ELTs because the Commission failed to provide adequate notice in the 3<sup>rd</sup> FNPRM that it was contemplating a use prohibition, failed to provide an adequate cost/benefit analysis of such a prohibition, or relied on a deficient Supplemental Initial Regulatory Flexibility Analysis. See, e.g., SBA Advocacy Comments at 5-8; AOPA Comments at 2, 5-7, 11; EAA Comments at 2-7; GAMA Comments at 1-2, 4; NATA Comments at 5-6.

substantial transition period would bring about an end to the use of 121.5 MHz ELTs significantly sooner than what would occur naturally after such ELTs can no longer be certified, manufactured, imported, or sold. We anticipate that a transition to 406 MHz ELTs will occur naturally over time without additional Commission intervention beyond phasing out the certification, manufacture, importation, and sale of 121.5 MHz ELTs. It is possible, and perhaps likely, that a decision now to prohibit the use of 121.5 MHz ELTs after a transition period of up to eight years, as proposed by NTIA, could be overtaken by federal legislation, other legal developments, and/or technological advances, particularly with regard to ADS-B deployment.<sup>77</sup> We have rejected the idea that we should take no action at all to remove 121.5 MHz ELTs from the marketplace based on the argument that such devices would eventually cease to be marketed. However, we conclude that, in terms of accelerating the transition to exclusive use of 406 MHz ELTs, the marginal benefits of banning the use of 121 MHz ELTs, given the ban on future sales, do not outweigh the costs. Therefore, the public interest would not be advanced by a further rule change to the actions we are taking here, as it would not appear to provide any added net benefit. We reserve discretion to revisit this matter in furtherance of our statutory obligation to ensure the effective and efficient use of spectrum for safety-related communications if future events so warrant. Meanwhile, we encourage users to switch to 406 MHz radiobeacons at the earliest practical opportunity, in light of the safety benefits discussed above.

26. Finally, as proposed in the 3<sup>rd</sup> FNPRM, we revise section 87.147(b) of the rules<sup>78</sup> to delete an outdated cross-reference.<sup>79</sup> The rule cross-references subpart N of part 2 of the rules, but subpart N has been deleted.<sup>80</sup> No commenter addressed this issue.<sup>81</sup>

#### IV. PROCEDURAL MATTERS

27. *Final Regulatory Flexibility Analysis.* Pursuant to the Regulatory Flexibility Act of 1980, as amended,<sup>82</sup> the Commission's Final Regulatory Flexibility Analysis for the Fourth Report and Order is attached as Appendix C.

28. *Paperwork Reduction Act.* This document does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4).

29. *Congressional Review Act.* The Commission will send a copy of this *Fourth Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

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<sup>77</sup> Other commenters proposed shorter transition periods, but still long enough to raise questions regarding the incremental benefit of a use prohibition in light of these concerns. *See* RTCM Comments at 3 (up to four years, depending on the age of the aircraft); ACR Comments at 4 (up to three years from the effective date of the rule change). No party proposed an immediate or short-term transition.

<sup>78</sup> 47 CFR § 87.147(b).

<sup>79</sup> *See* 3<sup>rd</sup> FNPRM, 28 FCC Rcd at 515, n.28.

<sup>80</sup> *See Amendment of Parts 2, 15 and 18 of the Commission's Rules*, Order, 26 FCC Rcd 16784, 16784, para. 2 (OET/OMD 2011).

<sup>81</sup> RTCM's recommendation that we remove the labeling requirement in section 87.147(b) is beyond the scope of the 3<sup>rd</sup> FNPRM. *See* RTCM Comments at 4-5. In addition, as long as the manufacture, importation, and sale of 121.5 MHz ELTs is permitted, we believe that the labeling requirement should remain unchanged in order to avoid any confusion about the standard to which the unit was certified.

<sup>82</sup> *See* 5 U.S.C. § 603.

**V. ORDERING CLAUSES**

30. Accordingly, IT IS ORDERED that, pursuant to sections 4(i), 4(j), 303(b), 303(r) and 332(a) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303(b) 303(r), and 332(a), this *Fourth Report and Order* IS HEREBY ADOPTED.

31. IT IS FURTHER ORDERED that the stay of the amendment to section 87.195 of the Commission's Rules adopted in the *Third Report and Order* in this proceeding IS LIFTED, and the amendment to section 87.195 of the Commission's Rules adopted in the *Third Report and Order* IS SUPERSEDED by the amendment to section 87.195 of the Commission's Rules adopted in this *Fourth Report and Order*, effective 30 days after publication in the Federal Register.

32. IT IS FURTHER ORDERED that part 87 of the Commission's Rules IS AMENDED as set forth in Appendix A, effective 30 days after publication in the Federal Register.

33. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of the *Fourth Report and Order* in a report to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. § 801(a)(1)(A).

34. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of the *Fourth Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

35. IT IS FURTHER ORDERED that this proceeding IS TERMINATED pursuant to section 4(i) and 4(j) of the Communications Act, 47 U.S.C. §§ 154(i) and (j).

**VI. FURTHER INFORMATION**

36. For further information, contact Jeffrey Tobias, Mobility Division, Wireless Telecommunications Bureau, 202-418-1617 or 202-418-7233 (tty), or via electronic mail at [jeff.tobias@fcc.gov](mailto:jeff.tobias@fcc.gov).

37. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty). This *Fourth Report and Order* can also be downloaded at: <http://www.fcc.gov/>.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

**APPENDIX A****Final Rules**

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 87 as follows:

**PART 87—AVIATION SERVICES**

1. The authority citation for part 87 continues to read as follows:

**AUTHORITY: 47 U.S.C. 154, 303 and 307(e) unless otherwise noted.**

2. Section 87.147 is amended by revising paragraph (b) to read as follows:

**§ 87.147 Authorization of equipment.**

\* \* \* \* \*

(b) ELTs manufactured after October 1, 1988, must meet the output power characteristics contained in §87.141(i). A report of the measurements must be submitted with each application for certification. ELTs that meet the output power characteristics of the section must have a permanent label prominently displayed on the outer casing state, "Meets FCC Rule for improved satellite detection." This label, however, must not be placed on the equipment without authorization to do so by the Commission. Application for such authorization may be made either by submission of a new application for certification accompanied by the required fee and all information and test data required by parts 2 and 87 of this chapter or, for ELTs approved prior to October 1, 1988, a letter requesting such authorization, including appropriate test data and a showing that all units produced under the original equipment authorization comply with the requirements of this paragraph without change to the original circuitry.

\* \* \* \* \*

3. Section 87.195 is amended to read as follows:

**§ 87.195 121.5 MHz ELTs.**

ELTs that operate only on frequency 121.5 MHz will no longer be certified. The manufacture, importation, and sale of ELTs that operate only on frequency 121.5 MHz is prohibited beginning [180 DAYS AFTER EFFECTIVE DATE]. Existing ELTs that operate only on frequency 121.5 MHz must be operated as certified.

## APPENDIX B

## Commenters

Comments:

Abrams, David  
ACK Technologies, Inc. (ACK)  
ACR Electronics, Inc. (ACR)  
Adams, Ed  
Ahrens, Merrill  
Aircraft Electronics Association (AEA)  
Aircraft Owners and Pilots Association (AOPA)  
Alaska Airmen's Association, Inc.  
Alburn, Cary  
Amick, Michael  
Armstrong, Robert  
Asmus, Edward William III  
Audritsh, John  
Aviation Suppliers Association (ASA)  
Barry, Patric  
Bayer, William C.  
Behrend, Brian  
Beiderman, Allan  
Bland, Ronald  
Boring, Brian  
Bottoms, Donald M.  
Bowers, Tom  
Bright, Grant  
Brooksby, Lyle Scott  
Burgher, P.H.  
Burns, Mark  
Busch, James  
Callaway, Terry  
Cannady, Edward J.  
Carpenter, Jr., Roy R.  
Carvalho, Edward P.  
Cheney, Douglas  
Chesney, David R.  
Chow, Timothy  
Civil Air Patrol (CAP)  
Cole, David  
Collins, John  
Craig, Alexander  
Craigle, Steve  
Criel, James J.  
Crouse, W. Frank  
Cunningham, Samuel  
Dabney, Richard  
de Tuncq, George  
Debnath, Bodi  
Dietrich, Bob  
Don, Warren D.  
Dufford, Michael W.  
Dunlap, Thomas  
Emerging Lifesaving Technologies (ELTech)  
Experimental Aircraft Association (EAA)  
Fell, Barry  
Fleischman, James  
Ford, Gary  
Foreman, Richard A.  
Foster, Carl  
Foster, Hartford  
Frett, Dennis  
Garley, Daniel P.  
Gartman, Jerald  
Geisz, Geoffrey  
General Aviation Manufacturers Association (GAMA)  
Gibbard, Donald R.  
Gilliam, Laurence  
Gores, Joe  
Greenwell, Eric  
Gribble, David  
Griffin, Alvin  
Grossbohlhlin, Richard  
Hall, Dan  
Hayward, Roy  
Herd, Jim  
Hodgson, John (Hodgson)  
Hoffart, Paige  
Hoffberg, Alan M.  
Hollars, Timothy L.  
Holsinger, Kent  
Hopp, Gregory  
Hornal, Douglas  
Hubelbank, Mark  
Huddleston, Robert  
Huffman, G. Michael  
I., Robert  
Jerch, Richard A.  
Johnson, Mark  
Juhl, Timothy  
Katzmann, Steve  
Killian, Joe  
Kinney, Robert L.  
Klarich, Richard  
Koehler, Richard (Koehler)  
Kressin, Ray  
La Beau, Larry



Lawson, Jeff  
LeBrasseur, Philip J.  
Lee, Jong  
Lee, Richard  
Leggett, Nikolaus E.  
Lemke, Karen  
Liddel, Bruce  
Lomax, John  
Mak, Mac  
Martin, Tom  
Matt  
Maxwell, Mark  
Mayberry, Joe  
McCann, Michael  
Millan, Kenneth  
Miller, J.  
Miller, Judy  
Mock, Madison  
Morin, Philip Charles  
Morris, Timothy R.  
Moskin, Jeffrey M.  
National Air Transportation Association  
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## APPENDIX C

## Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),<sup>1</sup> a Supplemental Initial Regulatory Flexibility Analysis (SIRFA) was incorporated in the *Third Further Notice of Proposed Rule Making (3<sup>rd</sup> NPRM)*.<sup>2</sup> The Commission sought written public comment on the SIRFA. The comments received are discussed below. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.<sup>3</sup>

**A. Need for, and Objectives of, the Rules**

2. The rules adopted in this *Fourth Report and Order* are intended to fine-tune certain aspects of the Emergency Locator Transmitter (ELT) component of the aeronautical mobile service to maintain the essential nature of this component of the service as an effective locating aid for survival purposes, pursuant to our statutory obligations to regulate communications services by prescribing the nature of the service so as to maximize the efficient use of electromagnetic spectrum and promote the safety of life and property. Specifically, we amend part 87 of the Commission's rules to prohibit the certification of 121.5 MHz ELTs and, after a six-month transition period, to prohibit the manufacture, importation or sale of 121.5 MHz ELTs. We do so because 121.5 MHz ELTs are unreliable and imprecise, and are no longer capable of transmitting distress signals via satellite to search and rescue authorities. They are also prone to false alerts that unnecessarily endanger search and rescue personnel. Our decision will promote safety and the efficient and effective use of the spectrum resource by accelerating the transition from 121.5 MHz ELTs to the more efficient and reliable 406 MHz ELTs, and will benefit the pilots and passengers of general aviation aircraft as well as search and rescue personnel.

**B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA and the SIRFA**

3. SBA Advocacy, AOPA, EAA, and NATA assert that the IRFA accompanying the *3<sup>rd</sup> FNPRM* is deficient for four reasons:<sup>4</sup> the IRFA does not (1) adequately identify and estimate the number of small entities to which the proposed rules would apply, ignoring, for example, flight schools, air charters, air taxis and other small businesses that operate GA aircraft; (2) include projected reporting, recordkeeping, and other compliance costs that small entities would incur; (3) identify all relevant federal rules which may duplicate, overlap, or conflict with the proposed rules, such as statutory provisions and FAA regulations that require ELTs to be carried on aircraft, and specify that carriage of a 121.5 MHz ELT can satisfy that requirement; and (4) contain a description of significant alternatives which would accomplish the stated objectives while minimizing the impact on small entities.<sup>5</sup>

4. The arguments regarding alleged deficiencies in the IRFA are framed as bearing on a Commission determination to prohibit the use of already-installed 121.5 MHz ELTs and to require aircraft owners and pilots to replace their 121.5 MHz ELTs with 406 MHz ELTs on a date certain dictated

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<sup>1</sup> See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> See *Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service*, Third Further Notice of Proposed Rule Making, 28 FCC Rcd 512 (2013) (*3<sup>rd</sup> FNPRM*), Appendix B.

<sup>3</sup> See 5 U.S.C. § 604.

<sup>4</sup> Although these comments were filed after the release of the *3<sup>rd</sup> FNPRM* and the accompanying SIRFA, they allege deficiencies in the IRFA but do not specifically discuss whether the SIRFA has cured any of those alleged deficiencies.

<sup>5</sup> See, e.g., SBA Reply Comments at 6-9.

by the Commission.<sup>6</sup> The Commission, however, has decided not to prohibit the continued use of 121.5 MHz ELTs. We therefore conclude that the challenges to the IRFA for allegedly failing to fully assess the effect on small entities of prohibiting the continued use of 121.5 MHz ELTs have been rendered moot by the Commission's decision declining to impose such a prohibition.

### C. Description and Estimate of the Number of Small Entities to Which Rules Will Apply

5. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the rules adopted herein.<sup>7</sup> The RFA defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."<sup>8</sup> In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.<sup>9</sup> A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).<sup>10</sup>

6. Small businesses in the aviation and marine radio services use a marine very high frequency (VHF), medium frequency (MF), or high frequency (HF) radio, any type of emergency position indicating radio beacon (EPIRB) and/or radar, an aircraft radio, and/or any type of emergency locator transmitter (ELT). The Commission has not developed a definition of small entities specifically applicable to these small businesses. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except satellite),<sup>11</sup> which is 1,500 or fewer employees.<sup>12</sup> Census data for 2012 shows that there were 967 firms in that category that operated for the entire year.<sup>12</sup> Of those 967, 955 had fewer than 1,000 employees, and 12 firms had 1,000 or more employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

7. Some of the rules adopted herein may also affect small businesses that manufacture aviation radio equipment. The Census Bureau does not have a category specific to aviation radio

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<sup>6</sup> See, e.g., *id.* at 6-7 ("[T]he largest impact of the proposed rules would appear to be on small entities in the aviation industry that would be required to replace their existing 121.5 MHz ELTs if the FCC prohibits or phases out their continued use. These entities include aviation flight schools, air charters, and air taxis, many of whom are small entities.") (emphasis added); *id.* at 7 (noting, in regard to an alleged failure to project the compliance costs that might be incurred by small entities, that one small business aviation stakeholder stated, at a roundtable meeting, "that a prohibition on the continued use of 121.5 MHz ELTs could affect as many as 180,000 general aviation aircraft at a cost of between \$1,000 and \$2,000 per aircraft . . .") (emphasis added); *id.* (faulting the IRFA for not recognizing that any "proposed rules to prohibit the continued use of 121.5 MHz ELT[s] appear to overlap and conflict with FAA regulations that require ELTs to be installed on aircraft and provide that a 121.5 MHz ELT is acceptable for compliance . . .") (emphasis added); *id.* at 8 (faulting the IRFA for failing to consider alternatives to prohibiting the use of 121.5 MHz ELTs, such as "whether the FCC should consider allowing the continued use of 121.5 MHz ELTs, grandfathering those currently in use, or providing an extended transition period . . .").

<sup>7</sup> 5 U.S.C. § 604(a)(4).

<sup>8</sup> *Id.* § 601(6).

<sup>9</sup> *Id.* § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

<sup>10</sup> Small Business Act, 15 U.S.C. § 632 (1996).

<sup>11</sup> 13 CFR § 121.201, NAICS code 517210.

<sup>12</sup> U.S. Census Bureau, 2012 Economic Census, Sector 51, 2012 NAICS code 517210 (rel. Oct. 20, 2009), [https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN\\_2012\\_US\\_51SSSZ5&prodType=table](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ5&prodType=table).

equipment manufacturers. The appropriate category is that for wireless communications equipment manufacturers. The Census Bureau defines this category as follows: “This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.”<sup>13</sup> The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees.<sup>14</sup> According to Census bureau data for 2012, there were a total of 841 firms in this category that operated that year. Of this total, 828 had fewer than 1,000 employees and 13 had 1,000 or more employees.<sup>15</sup> Thus, under this size standard, the majority of firms can be considered small.

**D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities**

8. The rule changes adopted in the *Fourth Report and Order* do not impose any new reporting or recordkeeping requirements on any entity. The rule changes in the *Fourth Report and Order* prohibit manufacturers from filing applications with the Commission for the certification of new models of 121.5 MHz ELTs. This prohibition should not create any new burden for manufacturers, however, because the FAA’s earlier cancellation of the TSO for 121.5 MHz ELTs already prohibits them from seeking such certifications. In addition, after a six-month transition period, no entity may manufacture, import or sell 121.5 MHz ELTs. This rule change does not directly impose any requirements on aircraft owners or pilots or other users of 121.5 MHz ELTs, but as a consequence of the rules adopted in the *Fourth Report and Order*, after the specified transition period, a user of a 121.5 MHz ELT that has reached the end of its useful life will be required to purchase a 406 MHz ELT rather than another 121.5 MHz ELT to replace it. Although some commenters expressed concern regarding the cost of 406 MHz ELTs, based on cost estimates exceeding \$2,500 per aircraft, we believe that the price of 406 MHz ELTs has dropped significantly in the period after those cost estimates were derived, and that 406 MHz ELTs are now available at a cost of \$600 or less per aircraft.

**E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered**

9. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”<sup>16</sup>

10. We believe that the decision in the *Fourth Report and Order* to prohibit certification of 121.5 MHz ELTs should not have an impact on small entities, including manufacturers, because the Federal Aviation Administration’s May 2012 cancellation of its Technical Standard Order (TSO) for 121.5 MHz ELTs, TSO C-91a, already precludes approval of any new models of 121.5 MHz ELTs.

11. To minimize the economic impact on small entities of the decision in the *Fourth Report and Order* to prohibit the manufacture, importation and sale of 121.5 MHz ELTs, we provide for a six-month transition period. That is, the prohibition will not take effect until six months after the effective

<sup>13</sup> <http://www.census.gov/econ/industry/def/d33422.htm>.

<sup>14</sup> 13 CFR § 121.201 NAICS code 334220.

<sup>15</sup> See <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.

<sup>16</sup> 5 U.S.C. § 603(c)(1)-(c)(4).

date of the *Fourth Report and Order*, i.e., approximately seven months after the *Fourth Report and Order* or a summary thereof is published in the Federal Register. The record indicates that this six-month transition period is more than sufficient to ensure that manufacturers and distributors of 121.5 MHz ELTs do not experience stranded inventory. In addition, the economic impact of these prohibitions on aircraft owners and pilots is minimized by the fact that we are not prohibiting the continued use of installed 121.5 MHz ELTs, and we are not prohibiting the manufacture, importation or sale of replacement parts for those 121.5 MHz ELTs.

#### **Report to Congress**

12. The Commission will send a copy of the *Fourth Report and Order* in WT Docket No. 01-289, including this Final Regulatory Flexibility Analysis, in a report to Congress pursuant to the Congressional Review Act.<sup>17</sup> In addition, the Commission will send a copy of the *Fourth Report and Order* in WT Docket No. 01-289, including this Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the SBA. A copy of the *Fourth Report and Order* in WT Docket No. 01-289 and this Final Regulatory Flexibility Analysis (or summaries thereof) will also be published in the Federal Register.<sup>18</sup>

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<sup>17</sup> See 5 U.S.C. § 801(a)(1)(A).

<sup>18</sup> See *id.* § 604(b).