

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

In the Matter of	)	
	)	
COMMONWEALTH OF VIRGINIA	)	WT Docket No. 20-241
DEPARTMENT OF STATE POLICE	)	
	)	
Request for Waiver of Section 22.565(f) of the	)	
Commission's Rules to Increase Mobile	)	
Transmitter Power Output from 60 Watts to 100	)	
Watts	)	

**ORDER**

**Adopted: March 31, 2022**

**Released: March 31, 2022**

By the Chief, Mobility Division, Wireless Telecommunications Bureau:

**I. INTRODUCTION**

1. The Commonwealth of Virginia (Commonwealth), Department of State Police (VA State Police) request waiver of section 22.565(f) of the Commission's rules<sup>1</sup> to increase the limit on its part 22 transmitter power output for its mobile transmitters from 60 watts to 100 watts, using a maximum effective radiated power (ERP) of 150 watts.<sup>2</sup> VA State Police's request is to support its effort to increase the capacity of its existing land mobile radio network (LMR), referred to as the Statewide Agencies Radio System (STARS), by upgrading to Time-Division Multiple Access (TDMA) technology, while maintaining the existing geographic coverage on which the STARS public safety communication system depends. For the reasons stated below, we grant the VA State Police Waiver Request, subject to the conditions herein.

**II. BACKGROUND**

2. STARS is a statewide shared LMR system utilizing part 90 public safety channels,<sup>3</sup> part 80 VHF Public Coast channels,<sup>4</sup> and part 22 VHF paging channels, licensed according to Basic Economic Area markets.<sup>5</sup> STARS provides digital voice and data wireless communications for 22 Virginia state

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<sup>1</sup> 47 CFR § 22.565(f).

<sup>2</sup> Commonwealth of Virginia, Department of State Police, Request for Waiver, WT Docket No. 20-241 (filed June 25, 2020) (Waiver Request).

<sup>3</sup> 47 CFR Part 90. STARS uses statewide mobile FCC Part 90 Public Safety pool trunked frequencies to transmit talk-in to base stations. Most of these frequencies are authorized for a mobile maximum transmitter power output of 125 watts, and a maximum ERP of 250 watts. Waiver Request at 4.

<sup>4</sup> 47 CFR Part 80. VA State Police acquired auctioned spectrum for two FCC Part 80 Public Coast licenses. These part 80 licensed mobile transmit frequencies have a maximum mobile transmitter power output of 125 watts and maximum ERP of 285 watts. *See* Commonwealth of Virginia, *Order*, 19 FCC Rcd 15454 (WTB 2004) (granting Virginia's request for a waiver of part 80 of the Commission's Rules to permit its public safety operations on VHF Public Coast (VPC) spectrum to be governed by part 90 of the Commission's rules).

<sup>5</sup> In addition to holding part 90 and part 80 licenses, VA State Police acquired sixty-four part 22 paging authorizations (lead call sign WPVE519), for which the instant waiver is requested. Waiver Request at 4-5.

agencies.<sup>6</sup> STARS has been in operation since 2006, facilitating interoperability with local government and federal agencies.<sup>7</sup> Its infrastructure allows “talk groups” to communicate privately, even while located in different parts of the state.<sup>8</sup> According to the VA State Police, it takes many conventional VHF channels to support public safety-grade radio communications for approximately 336 talk groups.<sup>9</sup>

3. VA State Police argue that the best way to meet STARS’s increasing capacity needs is to upgrade its network from Frequency-Division Multiple Access technology (FDMA) to the more spectrally efficient TDMA technology.<sup>10</sup> TDMA technology allows two talk-paths to be used on the same channel at the same time, significantly increasing system capacity, thereby increasing spectral efficiency.<sup>11</sup> According to VA State Police, the Commonwealth concluded that this technology transition will meet the increased capacity requirements of its public safety users while still maintaining public safety grade, high quality service.<sup>12</sup>

4. VA State Police assert that the technology upgrade from FDMA to TDMA will reduce uplink coverage and thus overall system coverage, resulting in a loss of geographical coverage that can best be regained by increasing the part 22 mobile transmitter power from 60 watts to 100 watts.<sup>13</sup> VA State Police’s maximum mobile transmitter power output (TPO) under part 22 is limited to 60 watts, and it asserts that most other STARS frequency authorizations in parts 80 and 90 have a maximum TPO between 110-125 watts, with a maximum ERP of 250 watts.<sup>14</sup> VA State Police argue that this disparity causes an imbalance between talk-out and talk-in coverage for the STARS P25 radio network.<sup>15</sup> VA State Police further claims that its operation at this increased power level will not cause any interference to

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<sup>6</sup> Waiver Request at 1.

<sup>7</sup> *Id.* at 5.

<sup>8</sup> See Waiver Request at 5 and Virginia State Police; Statewide Agencies Radio System (STARS), <https://vsp.virginia.gov/sections-units-bureaus/bass/communications/statewide-agencies-radio-system-program-stars/> (last visited Mar. 30, 2022).

<sup>9</sup> Waiver Request at 5.

<sup>10</sup> Waiver Request at 3.

<sup>11</sup> *Id.* at 6. VA State Police state that a P25 Phase 2 trunked radio system using TDMA technology increases capacity for the radio system. TDMA is an efficient technology to use in critical life safety communications since spectrum is limited, but conversion from FDMA can result in a loss of geographic coverage if there is an imbalance present.

<sup>12</sup> Waiver Request at 8. Alternatively, VA State Police suggest that in lieu of upgrading to TDMA technology, it could seek to obtain additional VHF spectrum to add channels at each of its existing sixty-three STARS sites. Waiver Request at 5. However, VA State Police note that this would require obtaining more than one hundred VHF frequencies, which, it argues, is not a viable alternative given the very limited availability and potential cost of such a huge amount of VHF spectrum. *Id.*

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

<sup>14</sup> Waiver Request at 7.

<sup>15</sup> *Id.* P25 was established to address the need for spectrum efficient interoperable digital public safety radio communications standards for first responders, homeland security, and emergency response professionals. The Telecommunications Industry Association administers the standards through its role as an ANSI-accredited standards development organization. The association published the P25 suite of standards addressing 49 separate aspects of Land Mobile Radio and TDMA implementations of P25 technology for public safety. Waiver Request Exhibit A at 14.

others operating on adjacent channels.<sup>16</sup>

5. On February 12, 2021, the Wireless Telecommunications Bureau (Bureau) released a Public Notice seeking comment on the VA State Police request for waiver of section 22.565(f) to increase mobile transmitter output power from 60 to 100 watts.<sup>17</sup> The two commenting parties responding to the public notice both supported the VA State Police Waiver Request.<sup>18</sup>

### III. DISCUSSION

6. To obtain a waiver of the Commission's rules, a petitioner must demonstrate either that: (i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the present case, and that a grant of the waiver would be in the public interest;<sup>19</sup> or (ii) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative.<sup>20</sup> An applicant seeking a waiver faces a high hurdle and must plead with particularity the facts and circumstances that warrant a waiver.<sup>21</sup>

7. We find that the underlying purpose of section 22.565(f) would not be served by strict application in the present case and further find that grant of the waiver is in the public interest. Additionally, the waiver request is unopposed and grant is consistent with Commission precedent. Further, we ensure that the risk of harmful interference to adjacent part 22 licensees is mitigated by conditioning this waiver grant as described below.

8. *Underlying Purpose Would Not Be Served.* Section 22.565(f) limits the transmitting power of mobile transmitters in order to eliminate or severely limit occurrences of harmful interference between one-way or two-way mobile communications systems. The intent and underlying purpose of this and other related part 22 rule sections is to afford part 22 licensees flexibility in providing service to the public and expand access to mobile radio networks and services while preventing harmful interference.<sup>22</sup> We find, in this specific case, that the purpose of section 22.565(f) and other related rule sections would be better served by a waiver, with the conditions imposed below, than by strict adherence to the terms of the rule.<sup>23</sup> Strictly applied, section 22.565(f) limits the services VA State Police is able to provide on its

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<sup>16</sup> Waiver Request at 8 and Exhibit A. VA State Police rely on the work of Dr. Kenneth Ballard of CTA Consultants, LLC, to research and analyze the impact of P25 TDMA modulation on the existing STARS network. A detailed analysis by Dr. Ballard is attached to the Waiver Request as Exhibit A (Ballard Analysis).

<sup>17</sup> See *Wireless Telecommunications Bureau Seeks Comment on the Commonwealth of Virginia, Department of State Police Request for Waiver of Section 22.565(f) of the Commission's Rules to Increase Mobile Transmitter Output Power from 60 to 100 Watts*, Public Notice, WT Docket No. 20-241, DA 21-125, 36 FCC Rcd 1400 (2021) (*Public Notice*).

<sup>18</sup> See Comments of the Enterprise Wireless Alliance, WT Docket No. 20-241 (March 15, 2021) (EWA Comments) and Reply Comments of Utilities Technology Council, New York State Electric & Gas Corporation, and Trott Communications Group, Inc., WT Docket No. 20-241 (March 26, 2021) (UTC Comments).

<sup>19</sup> 47 CFR § 1.925(b)(3)(i).

<sup>20</sup> *Id.* § 1.925(b)(3)(ii).

<sup>21</sup> *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (citing *Rio Grande Family Radio Fellowship, Inc. v. FCC*, 406 F.2d 664 (D.C. Cir. 1968)); *Birach Broadcasting Corp.*, Memorandum Opinion and Order, 18 FCC Rcd 1414, 1415, para. 6 (2003).

<sup>22</sup> See Federal Communications Commission 2002 Biennial Regulatory Review, Staff Report of the Wireless Telecommunications Bureau, WT Docket No. 02-310, 18 FCC Rcd 4243, 4299 (2002) (Staff Report).

<sup>23</sup> See *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("The FCC may exercise its discretion to waive a rule where particular facts would make strict compliance inconsistent with the public interest.").

public safety network, rather than enabling flexibility. Waiver of the rule will allow the STARS network to continue to provide high quality and cost-effective portable radio coverage covering 97% of Virginia's population (with over 90% geographical coverage) without unduly impacting adjacent licensees.

9. *Waiver is in the public interest.* We also find that grant of the waiver request is in the public interest. Grant of this waiver will allow VA State Police to upgrade its system to a more spectrally efficient technology, allowing it to continue unique public safety missions. Specifically, this upgrade will enable it to continue to operate its STARS public safety network, which as mentioned above, supports 22 state agencies, facilitates interoperability with local governments and federal agencies, and is routinely called upon to meet new communications and interoperability needs such as multi-agency response to public safety emergencies, requiring the addition of many new users.<sup>24</sup> Further, the network is used in more than 3,600 first responder and some public service vehicles.<sup>25</sup> Without the requested waiver, the Commonwealth would likely be faced with the options of either not upgrading to a more spectrum-efficient technology which would yield more capacity, or upgrading with the knowledge that it may lose coverage and quality in some cases due to signal imbalance.<sup>26</sup>

10. *Waiver is consistent with Commission precedent.* The Bureau has granted multiple waivers of its part 22 paging (one-way or two-way) mobile operation rules in general,<sup>27</sup> and of section 22.565(f) in particular, to increase the mobile transmitter power output limits involving public safety networks.<sup>28</sup> In both the *Wyoming Waiver Order* and the *Maine Waiver Order*, the Bureau likewise increased the mobile transmitter power output limits from 60 to 100 watts for similar state public safety systems.<sup>29</sup> In the *Maine Waiver Order*, the Bureau specifically noted that forcing the state to maintain a 60-watt limit for its part 22 mobile units when the rest of its system was operating at 110 watts would be spectrally inefficient, unnecessarily costly, and thus unduly burdensome.<sup>30</sup> In each instance, the waiver grant supported state public safety/service entities when grant of such conditional waivers was not likely to cause harmful interference to adjacent users. We find a very similar fact pattern present here and thus find grant of the VA State Police's request for waiver consistent with the Commission's precedent.

11. *Waiver is unopposed.* We also note that the Bureau sought comment on the waiver request, including from any parties whose operations could be impacted by grant of the waiver request.<sup>31</sup> Yet the waiver request was unopposed, with one supporting comment and one supporting reply comment.<sup>32</sup>

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<sup>24</sup> See Waiver Request at 5.

<sup>25</sup> *Id.* at 2.

<sup>26</sup> Switching from FDMA to TDMA causes more or larger dead spots by increasing the imbalance for two-way communications. Waiver Request at 7.

<sup>27</sup> See *State of Wisconsin*, Order and Proposed Order of Modification, 33 FCC Rcd 11080 (WTB 2018) (*Wisconsin Waiver Order*).

<sup>28</sup> See *State of Wyoming*, Order, 23 FCC Rcd 9572 (PSHSB 2008) (*Wyoming Waiver Order*); *State of Maine—MSCommNet Project, Request for Waiver of Sections 90.35(a), 20.9(a)(6), 22.377, and 22.565(f) of the Commission's Rules*, Order, 27 FCC Rcd 8891 (PSHSB/WTB 2012) (*Maine Waiver Order*).

<sup>29</sup> See *Wyoming Waiver Order*, 23 FCC Rcd at 9580, para 21; *Maine Waiver Order*, 27 FCC Rcd at 8895, para. 18.

<sup>30</sup> See *Maine Waiver Order*, 27 FCC Rcd at 8895 para. 14.

<sup>31</sup> *Public Notice*, 36 FCC Rcd at 1401.

<sup>32</sup> EWA states that the Waiver Request includes the Ballard Analysis, which supports the claim that the output power increase will not cause interference to other part 22 licensees, whether adjacent channel licensees in the STARS operating area or co-channel licensees in adjacent markets. EWA further contends that in the unlikely event that the Ballard Analysis conclusions are incorrect, they expect VA State Police to respond quickly to eliminate any problem. EWA Comments at 2-3.

12. *Conditions to Mitigate Risk of Harmful Interference.* In light of the lack of opposition from adjacent, co-channel part 22 licensees, and for the reasons discussed above, we will allow VA State Police to increase the power output of its mobile transmitters to 100 watts, subject to conditions to minimize the risk of harmful interference caused by this power increase. These conditions are consistent with the approach we have used with success in similar past instances.<sup>33</sup> With the goal of not changing the potential for interference to neighboring licensees at their license boundaries,<sup>34</sup> we approximated the potential effect that the increased mobile transmitter power could have on an interfering contour. As such, we condition our grant on VA State Police providing notice to their adjacent, co-channel paging geographic neighbors and resolving any concerns that arise over harmful interference, or if any such concerns cannot be resolved, then the VA State Police must maintain a five-kilometer set back of its mobile transmitters from the objecting licensee's geographic license area. Specially, we require that:

- 1) At least 30 days prior to operating under the waiver in a market, VA State Police must notify all adjacent market, co-channel part 22 licensees of the grant of the waiver and the intended date to begin operating at the higher transmitter power, and provide a point of contact for the licensees to express technical concerns.
- 2) If an objection is received from an adjacent market, co-channel part 22 licensee within the 30-day period, VA State Police must address the objection to the satisfaction of the adjacent licensee prior to operation, or else refrain from operations at the higher transmitter power within five (5) km<sup>35</sup> of that objecting party's license boundary.
- 3) If an objection is received after the 30-day notice period, VA State Police must address the objection to the satisfaction of the adjacent market licensee within a reasonable timeframe, or else cease operations at the higher transmitter power within five (5) km of that objecting party's license boundary until the objection can be addressed.

13. With these conditions, and for the reasons discussed above, we find that the Commonwealth of Virginia, Department of State Police has satisfied the standard for waiver of the 60-watt limit for mobile units, specified in section 22.565(f) of our rules.

#### IV. ORDERING CLAUSE

14. Accordingly, IT IS ORDERED that the Request for Waiver filed by the Commonwealth of Virginia Department of State Police IS GRANTED conditioned as discussed herein.

15. This action is taken under delegated authority pursuant to sections 0.131(a) and 0.331 of the Commission's Rules, 47 CFR §§ 0.131(a), 0.331.

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<sup>33</sup> See *Wyoming Waiver Order*, 23 FCC Rcd at 9580, para. 20 (Wyoming must accept any interference that may result from operation of co-channel transmitters authorized to incumbent licensees); *Maine Waiver Order*, 27 FCC Rcd at 8895, para 15 (limiting the area in which Maine may operate mobile units at 110 watts on part 22 frequencies to reduce the potential for interference to part 22 licensees in adjacent regions). The State of Maine was required to operate its mobile units at least eight kilometers from the edge of its part 22 service area when transmitting at power levels above 60 watts on part 22 paging frequencies. See *Maine Waiver Order*, 27 FCC Rcd at 8895, para 19.

<sup>34</sup> See 47 CFR § 22.503(h).

<sup>35</sup> Five kilometers represents the distance between interfering contours generated for the mobile transmitter, using a transmitter power output of 60 watts and 100 watts. See 47 CFR § 22.567.

FEDERAL COMMUNICATIONS COMMISSION

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