

2023

Rethinking Spectrum Governance After the FAA and FCC's Turf War Over 5G

Jace Breedlove
Southern Methodist University, Dedman School of Law

Recommended Citation

Jace Breedlove, *Rethinking Spectrum Governance After the FAA and FCC's Turf War Over 5G*, 88 J. AIR L. & COM. 701 (2023)

This Comment is brought to you for free and open access by the Law Journals at SMU Scholar. It has been accepted for inclusion in Journal of Air Law and Commerce by an authorized administrator of SMU Scholar. For more information, please visit <http://digitalrepository.smu.edu>.

**RETHINKING SPECTRUM GOVERNANCE AFTER THE
FAA AND FCC’S TURF WAR OVER 5G**

JACE BREEDLOVE*

ABSTRACT

The rollout of 5G technology promised transformative benefits for consumers and the economy. But a protracted dispute between the FCC and FAA relating to 5G interference with airplane safety equipment prevented a smooth 5G rollout. While the FCC was giving wireless companies the green light to roll out 5G service, the FAA was warning of apocalypse if they did. What resulted was a turf war between the FAA and FCC, revealing a dysfunctional process (or lack thereof) for handling spectrum interference concerns. This Comment argues that the United States’ spectrum management system needs an overhaul to prevent similar agency turf wars over spectrum policy. This overhaul can be achieved partly by consolidating some spectrum management authority, currently dispersed between multiple agencies, in a single agency. And it can be achieved by enhancing coordination and cooperation between agencies where authority over spectrum policy remains dispersed.

TABLE OF CONTENTS

I. INTRODUCTION.....	702
II. BACKGROUND.....	703
A. CAST OF CHARACTERS.....	703
B. THE 5G ROLLOUT STORY.....	705
III. DIAGNOSING THE PROBLEM.....	713
IV. EXAMINING POTENTIAL SOLUTIONS.....	716
A. CONSOLIDATION.....	718
B. COORDINATION.....	720
1. <i>Coordination Tools</i>	724

* J.D. Candidate, SMU Dedman School of Law, 2024; B.A. Government, The University of Texas at Austin, 2021. The author thanks his parents, Scott and Julie Breedlove, for their unwavering encouragement and support.

V. RECOMMENDATIONS AND CONCLUSION 729

I. INTRODUCTION

5G—THE FIFTH-GENERATION of cellular technology—has already begun to deliver on its promise of faster connectivity speeds, ultra-low latency, and greater bandwidth for mobile devices.¹ And telecommunications companies are touting many more “revolutionary applications [for 5G technology,] extending far beyond smartphones and other mobile devices,” that are still to come.² For example, 5G’s fast speeds and low latency will enable significant advancements in healthcare,³ autonomous vehicles,⁴ artificial intelligence,⁵ and virtual and augmented reality,⁶ among other applications. But 5G is not without its drawbacks—one of which being its potential to interfere with critical safety equipment used in airplanes.⁷ This complication has been exacerbated by the federal agencies tasked with dealing with this sort of issue: the FCC, the NTIA, and the FAA.⁸ A dysfunctional process for dealing with 5G interference

¹ 5G by Ericsson, ERICSSON, <https://www.ericsson.com/en/5g> [https://perma.cc/8YGY-H4CE].

² *Top Use Cases for 5G Technology*, INTEL, <https://www.intel.com/content/www/us/en/wireless-network/5g-use-cases-applications.html> [https://perma.cc/L9DL-8XEG].

³ Faiz Gani, *Will Connectivity Be the Next Cure? Health Care Implications of 5G Cellular Technologies*, HEALTH AFFS. (Oct. 30, 2020), <https://www.healthaffairs.org/doi/10.1377/forefront.20201029.420234/full/> [https://perma.cc/69MV-RWJT] (“With implementation of newer 5G networks, health care providers would be able to use robotic and other minimally invasive technologies to perform procedures remotely in real time while receiving the appropriate feedback required to complete these interventions safely.”).

⁴ Shane Schick, *The 5G Car: Why 5G Plays a Critical Role in Autonomous Vehicle Technology*, VERIZON, <https://www.verizon.com/business/resources/articles/s/why-5g-plays-a-critical-role-in-autonomous-vehicle-technology/> [https://perma.cc/G97S-F8B9].

⁵ Michael Baxter, *5G and AI Use Cases – How 5G Lifts Artificial Intelligence*, INFO. AGE (June 20, 2022), <https://www.information-age.com/5g-and-ai-use-cases-how-5g-lifts-artificial-intelligence-19985/> [https://perma.cc/H6FA-R4TE].

⁶ *5G and AR/VR: Transformative Use Cases with Edge Computing*, STL PARTNERS, <https://stlpartners.com/articles/edge-computing/how-5g-and-edge-computing-will-transform-ar-vr-use-cases/> [https://perma.cc/7K8K-39NA].

⁷ *5G and Aviation Safety*, FED. AVIATION ADMIN., <https://www.faa.gov/5g> [https://perma.cc/WJCS-3YU6].

⁸ *About the FCC*, FED. COMM’NS COMM’N, <https://www.fcc.gov/about/overview> [https://perma.cc/R282-6RYJ]; *About FAA*, FED. AVIATION ADMIN., <https://www.faa.gov/about> [https://perma.cc/NAP5-RYVR]; *About NTIA*, NAT’L TELECOMMS. & INFO. ADMIN., <https://www.ntia.doc.gov/page/about-ntia> [https://perma.cc/2B6M-7HQ2].

concerns, characterized by a lack of inter-agency communication and cooperation between the FCC, NTIA, and FAA, threatened (and continues to threaten) the rollout of 5G service and all of the benefits it promises to bring.⁹

Part II of this Comment will provide background on the rollout of 5G technology, the science behind concerns over 5G interference with airplane safety equipment, and the FCC, NTIA, and FAA's dysfunctional handling of these concerns. Part III will analyze what went wrong during the 5G rollout and argue that the 5G rollout debacle is just one example of a larger problem. Part IV will examine potential solutions to the problem that could preclude a similar debacle from happening again. And Part V will offer recommendations based on the proposals outlined in Part IV.

II. BACKGROUND

A. CAST OF CHARACTERS

Before recounting the events surrounding the 5G rollout and the calamity that ensued, it will be helpful to introduce a cast of characters, which can be sorted into two general buckets. In the first bucket are the Federal Communications Commission (FCC), the National Telecommunications and Information Administration (NTIA), and the wireless industry (specifically, AT&T and Verizon). Those in bucket one are generally dismissive of concerns that 5G networks will interfere with airplane safety equipment.¹⁰ The FCC is an independent agency tasked by Congress with, among other things, allocating radio spectrum in the United States.¹¹ Because radio spectrum is a finite resource,¹² the FCC uses an auction process to determine which private entity will control certain radio frequencies and frequency ranges.¹³ In short, private companies bid on licenses to

⁹ See Peter Elkind, *Inside the Government Fiasco That Nearly Closed the U.S. Air System*, PROPUBLICA (May 26, 2022, 5:00 AM), <https://www.propublica.org/article/fcc-faa-5g-planes-trump-biden> [<https://perma.cc/TE6R-WPUL>].

¹⁰ See *id.*

¹¹ *What We Do*, FED. COMM'NS COMM'N, <https://www.fcc.gov/about-fcc/what-we-do> [<https://perma.cc/4XRV-7UZ7>].

¹² Riley Davis, *What is Spectrum? A Brief Explainer*, CTIA (June 5, 2018), <https://www.ctia.org/news/what-is-spectrum-a-brief-explainer> [<https://perma.cc/Y6KU-HDS2>].

¹³ Dave Roos, *How FCC Auctions Work*, HOWSTUFFWORKS (Apr. 2, 2008), <https://electronics.howstuffworks.com/fcc-auction.htm> [<https://perma.cc/5KTV-MPDQ>].

use specific frequencies of available electromagnetic spectrum in specific geographic regions, and the highest bidder is awarded the license.¹⁴ The NTIA is an executive branch agency, located within the Department of Commerce, that is responsible for advising the President on spectrum-related issues and managing the federal government's use of spectrum.¹⁵ It often acts as an intermediary between federal agencies involved in spectrum-related disputes.¹⁶ Located within and chaired by the NTIA, the Interdepartment Radio Advisory Committee (IRAC) is comprised of representatives from nineteen federal agencies that use spectrum—including the FAA.¹⁷ IRAC's primary function is to advise the Assistant Secretary of the NTIA on spectrum issues.¹⁸ Additionally, when the FCC is planning to allocate spectrum through the rulemaking process, it provides draft proceeding documents to the NTIA, which are distributed to IRAC member-agency representatives for review.¹⁹ Member agencies can then provide comments to the NTIA, which generally (but not always) passes these comments on to the FCC.²⁰

In the second bucket are the Federal Aviation Administration (FAA) and the aviation industry, both of which are highly concerned that 5G networks will interfere with airplane safety equipment.²¹ The FAA is an agency within the Department of Transportation (DOT) that is charged with regulating civil aviation to promote safety and efficiency.²² Among other things, it sets minimum standards for manufacturing, maintaining, and

¹⁴ *Id.*

¹⁵ *Spectrum Management*, NAT'L TELECOMMS. & INFO. ADMIN., <https://ntia.gov/category/spectrum-management> [<https://perma.cc/2T6U-TC2N>]; *National Telecommunications and Information Administration*, U.S. DEP'T COM., <https://www.commerce.gov/bureaus-and-offices/ntia> [<https://perma.cc/FA6Q-XQTG>].

¹⁶ See Elkind, *supra* note 9.

¹⁷ *Interdepartment Radio Advisory Committee (IRAC)*, NAT'L TELECOMMS. & INFO. ADMINISTRATION, <https://ntia.gov/page/interdepartment-radio-advisory-committee-irac> [<https://perma.cc/X3ZT-P3VD>].

¹⁸ *Id.*

¹⁹ *Spectrum Management: NTIA Should Improve Spectrum Reallocation Planning and Assess Its Workforce*, U.S. GOV'T ACCOUNTABILITY OFF. (Jan. 27, 2022), <https://www.gao.gov/products/gao-22-104537> [<https://perma.cc/ZF3Y-RERX>].

²⁰ *Id.*

²¹ See Elkind, *supra* note 9.

²² *What We Do*, FED. AVIATION ADMIN., <https://www.faa.gov/about/mission/activities> [<https://perma.cc/7JW5-8WGZ>].

operating aircraft;²³ it also manages air traffic by developing air traffic rules and assigning the use of airspace.²⁴

B. THE 5G ROLLOUT STORY

In late 2010, the NTIA issued a report recommending that the C-band (radio frequencies between 3.7 GHz and 4.2 GHz) be reallocated and made available for wireless broadband use.²⁵ At that point in time, the C-band was owned by the federal government but was being used (with the government's consent) by satellite companies to relay radio and TV signals across the globe.²⁶ Seven years later, in late 2017, the FCC began seeking comment on how to free up C-band spectrum for 5G cellular networks.²⁷ The aviation industry responded, emphasizing the need to protect adjacent band aviation safety services such as radio altimeters.²⁸ Failure to do so, they warned, "poses a significant potential for loss of life for . . . users of these aviation safety systems."²⁹

Radio altimeters are devices used aboard airplanes and helicopters that measure the distance between the aircraft and the ground.³⁰ Generally, they achieve this by sending radio signals downward, which bounce off the earth's surface and return to the cockpit; the radio altimeter can then determine distance to the ground based on the time it took for the signal to make this trip.³¹ Radio altimeters are used throughout flights but are essential for landing in low-visibility conditions.³² They are also an integral part of an aircraft's ground proximity warning system,

²³ *Id.*

²⁴ *Id.*

²⁵ U.S. DEP'T OF COM., AN ASSESSMENT OF THE NEAR-TERM VIABILITY OF ACCOMMODATING WIRELESS BROADBAND SYSTEMS IN THE 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, AND 4200-4220 MHz, 4380-4400 MHz BANDS (2010), https://ntia.gov/files/ntia/publications/fasttrackevaluation_11152010.pdf [<https://perma.cc/3CFP-9JMH>].

²⁶ Elkind, *supra* note 9.

²⁷ Marguerite Reardon, *How the FAA Went to War Against 5G*, CNET (Jan. 28, 2022, 7:43 AM), <https://www.cnet.com/tech/mobile/how-the-faa-went-to-war-against-5g/> [<https://perma.cc/KP72-W4QQ>].

²⁸ FCC Expanding Flexible Use of the 3.7 to 4.2 GHz Band 47 C.F.R. 101 (2020).

²⁹ *Id.*

³⁰ Mike Howells, *What is a Radio Altimeter?*, WIKIMOTORS (Jan. 27, 2023), <https://www.wikimotors.org/what-is-a-radio-altimeter.htm> [<https://perma.cc/99KS-RRF7>].

³¹ *Id.*

³² *Id.*

which warns pilots when their aircraft descends beneath a safe flying altitude.³³ Radio altimeters operate in the 4.2–4.4 GHz range, immediately adjacent to the C-band.³⁴

The FCC heard the aviation industry's concerns over 5G interference with radio altimeters, and in July 2018, the commission sought further comment on potential interference in a notice of proposed rulemaking.³⁵ The aviation industry again responded by filing comments with the FCC. In its FCC filing, aircraft maker Boeing raised concerns that “relatively powerful mobile communications in the adjacent [C-band] could overload the radio altimeter receivers on aircraft, inhibiting their accurate operation.”³⁶ In another filing, the Aerospace Vehicle Systems Institute (AVSI), a cooperative research group comprised of major aerospace companies and government organizations,³⁷ submitted the results of its 5G interference testing, which found “a clear performance difference in altimeters as an increasing amount of” C-band interference was received.³⁸ The AVSI stressed, however, that its results were preliminary in nature and that more testing was needed to determine the real-world impact of 5G interference on radio altimeter performance.³⁹

Despite the interference concerns raised by the aviation industry, in November of 2019, then-FCC Chairman Ajit Pai announced that the agency would auction off 280 MHz of C-band spectrum to be used for 5G networks.⁴⁰ Then, in February 2020, the FCC made it official, voting 3-2 to auction the 3.7–3.98 GHz

³³ *Id.*

³⁴ *Id.*

³⁵ *In the Matter of Expanding Flexible Use of the 3.7 to 4.2 Ghz Band*, No. GN18-122, 2018 WL 3435167, at *1 (F.C.C. July 13, 2018), rule modification granted by 35 F.C.C. Rcd. 2343 (F.C.C. 2020), rule modification granted by 35 F.C.C. Rcd. 10163 (F.C.C. 2020).

³⁶ The Boeing Company, Comments on Expanding Flexible Use of the 3.7 to 4.2 GHz Band, at 6 (Dec. 11, 2018), <https://ecfsapi.fcc.gov/file/121184623679/Boeing%20C-band%20NPRM%20Reply%20Comments%2012%2011%202018%20final.pdf> [<https://perma.cc/7Y7Q-5P6Y>].

³⁷ *About AVSI*, AEROSPACE VEHICLE SYSS INST., <https://avsi.aero/about/> [<https://perma.cc/22KA-AZ9C>].

³⁸ AVSI, PRELIMINARY REPORT: BEHAVIOR OF RADIO ALTIMETERS SUBJECT TO OUT-OF-BAND INTERFERENCE, at 21 (Oct. 22, 2019), <https://avsi.aero/wp-content/uploads/2021/12/AVSI-RA-Interim-OOB-Interference-Report-211206.pdf> [<https://perma.cc/Y2T3-99H5>].

³⁹ *Id.*

⁴⁰ Marguerite Reardon, *FCC to Auction C-band Spectrum for 5G*, CNET (Nov. 18, 2019, 3:12 PM), <https://www.cnet.com/tech/mobile/fcc-to-auction-c-band-spectrum-for-5g/> [<https://perma.cc/S9R5-JZ9P>].

band.⁴¹ To protect radio altimeters and other devices operating on adjacent frequencies, the FCC left vacant a 220 MHz “guard band”;⁴² that is, the FCC would not auction the 3.98 to 4.2 GHz band so that altimeters operating in the 4.2 to 4.4 GHz band would remain unobstructed by 5G interference. In its report and order, the FCC cited a study commissioned by T-Mobile to cast doubt on AVSI’s testing that found 5G interference with radio altimeters.⁴³ The study “noted that AVSI’s analysis identified levels of interference where performance degradation occurred, but did not investigate whether these levels would occur in any reasonable scenario.”⁴⁴ The T-Mobile study also alleged that in AVSI’s testing “two of the initial altimeters types failed due to interference from other altimeters,” not due to 5G interference.⁴⁵ To the extent altimeters are susceptible to interference, the FCC argued, that problem is for the aviation industry to handle.⁴⁶ In the FCC’s view, “well-designed [altimeters] should not ordinarily receive any significant interference (let alone harmful interference) given these circumstances.”⁴⁷ Although the FCC vote was split along party lines, none of the dissenting commissioners dissented due to concerns over interference with radio altimeters.⁴⁸

Following the FCC vote, in July of 2020, the AVSI submitted another report finding that “harmful interference to [radio] altimeters in common use today will in fact occur from 5G systems operating in accordance with the FCC *Report and Order* in the 3.7–3.98 GHz band under [] real-world operational scenarios.”⁴⁹ Around this time, representatives from the aviation and wireless industries convened a working group to “examine coexistence between [5G] . . . operations in the 3.7–3.98 GHz band and aeronautical operations at 4.2–4.4 GHz.”⁵⁰ The group failed

⁴¹ *In the Matter of Expanding Flexible Use of the 3.7 to 4.2 Ghz Band*, 35 F.C.C. Rcd. 2343 (F.C.C. 2020), rule modification granted by 35 F.C.C. Rcd. 10163 (F.C.C. 2020), <https://docs.fcc.gov/public/attachments/FCC-20-22A1.pdf> [<https://perma.cc/GEG9-2QX2>].

⁴² *Id.* at 2357.

⁴³ *Id.* at 2485.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *See id.* at 2592–2600.

⁴⁹ *Id.* at 2590.

⁵⁰ Letter from Max Fenkell, On Behalf of the Aerospace Industries Association, and Kara Graves, CTIA, to Marlene H. Dortch, FCC, GN Docket No. 18-122,

to reach a consensus, however, and in a letter dated November 13, 2020, it notified the FCC that “the group does not plan on submitting any technical reports or recommendations for Commission consideration.”⁵¹ Meanwhile, one of the individual member organizations of the working group, the Radio Technical Commission for Aeronautics (RTCA), submitted its own technical report, which warned that the 5G interference “risk is widespread and has the potential for broad impacts to aviation operations in the United States, including the possibility of catastrophic failures leading to multiple fatalities.”⁵²

After nearly two years of silence while the aviation industry sounded the alarm over 5G interference concerns, the FAA finally sprang into action in December of 2020—albeit in a roundabout way—just months before the C-band auction was scheduled to take place.⁵³ Instead of writing directly to the FCC, the FAA sent a letter to the NTIA urging it to “engage with the [FCC]” to delay the impending C-band auction, and asking the NTIA to forward the letter to the FCC.⁵⁴ The NTIA never forwarded the letter.⁵⁵ When asked by the media why he didn’t forward the letter, then-head of the NTIA, Adam Candeub, said “that his agency’s engineers disagreed with the letter’s conclusions, [and] that NTIA’s main job is to advise the White House on spectrum allocation rather than represent the views of agencies.”⁵⁶ Many political and legal commentators criticized this view, however, arguing that the NTIA was duty-bound to present the FAA’s concerns to the FCC.⁵⁷ Others argued that the blame lies with the FAA, which they say should have just circumvented

at 1 (Nov. 13, 2020), <https://www.fcc.gov/ecfs/document/111346743901/1> [<https://perma.cc/L46S-XQGK>].

⁵¹ *Id.* at 4.

⁵² RTCA, INC., ASSESSMENT OF C-BAND MOBILE TELECOMMUNICATIONS INTERFERENCE IMPACT ON LOW RANGE RADAR ALTIMETER OPERATIONS, at 88 (Oct. 7, 2020), https://www.rtca.org/wp-content/uploads/2020/10/SC-239-5G-Interference-Assessment-Report_274-20-PMC-2073_accepted_changes.pdf [<https://perma.cc/XH8J-29T8>].

⁵³ See Reardon, *supra* note 27.

⁵⁴ Letter from Steven G. Bradbury and Steve Dickson, FAA, to Adam Candeub, NTIA, GN Docket No. 18-122, at 1 (Dec. 1, 2020), https://www.faa.gov/sites/faa.gov/files/2021-10/DOT_Letter_to_NTIA_FCC3.7_GHz_Band_Auction.pdf [<https://perma.cc/4Z2M-THKA>].

⁵⁵ See Elkind, *supra* note 9.

⁵⁶ Brian Fung, *How Last Week’s 5G Deployment Went So Wrong*, CNN BUSINESS (Jan. 28, 2022, 8:58 AM), <https://www.cnn.com/2022/01/28/tech/5g-faa-fcc/index.html> [<https://perma.cc/HG4C-UM38>].

⁵⁷ See *id.*

the NTIA and sent the letter directly to the FCC.⁵⁸ Still others, including Transportation Department lawyers, believed that the FAA was not permitted to submit the letter directly to the FCC.⁵⁹

Even without the FAA's letter, the FCC was fully aware of calls to postpone the C-band auction. The day before the auction, Representative Peter DeFazio, Chair of the House Committee on Transportation and Infrastructure, sent a letter to the FCC urging it to delay the auction and "immediately engage with the FAA and aviation industry experts to guarantee that the auctioned C-band spectrum will not adversely affect aviation safety."⁶⁰ Ultimately, the FCC moved forward with the C-band auction, and wireless carriers began bidding on December 8, 2020.⁶¹

On February 24, 2021, the FCC announced that the C-band auction had raised over \$81 billion in gross bids, with AT&T and Verizon accounting for \$70 billion of that total and winning 5,132 of the available 5,684 licenses.⁶² Shortly after the auction, the two companies made plans to begin deploying their C-band spectrum and rolling out 5G service to customers by the end of the year.⁶³

Despite the setback, the FAA and aviation industry were not prepared to accept defeat. Instead, they mounted a public campaign to pressure AT&T and Verizon into voluntarily delaying their 5G deployment near airports.⁶⁴ At a hearing of the House Committee on Transportation and Infrastructure in March of 2021, Transportation Secretary Pete Buttigieg testified that the DOT is "very concerned about the potential for harmful inter-

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ Letter from Peter DeFazio, Committee on Transportation and Infrastructure Chairman, to Ajit Pai, FCC Chairman, at 3 (Dec. 7, 2020), <https://nbaa.org/wp-content/uploads/aircraft-operations/cns/20201207-DeFazio-Letter-FCC-Spectrum-Auction.pdf> [<https://perma.cc/2QLF-2W9A>].

⁶¹ Reardon, *supra* note 27.

⁶² *FCC Announces Winning Bidders of 3.7 GHz Service Auction*, FEDERAL COMMUNICATIONS COMMISSION (Feb. 24, 2021), <https://www.fcc.gov/document/fcc-announces-winning-bidders-37-ghz-service-auction> [<https://perma.cc/EV5X-DVQL>]; Marguerite Reardon, *Verizon, AT&T and T-Mobile Dominate \$81 Billion 5G Spectrum Auction*, CNET (Feb. 24, 2021, 9:55 PM), <https://www.cnet.com/tech/mobile/verizon-at-t-t-mobile-dominate-81-billion-5g-spectrum-auction/> [<https://perma.cc/Q9DE-J5D8>].

⁶³ Monica Allevan, *AT&T to Spend Up to \$8B on C-band Deployment*, FIERCE WIRELESS (Mar. 12, 2021, 1:48 PM), <https://www.fiercewireless.com/operators/at-t-to-spend-up-to-8b-c-band-deployment> [<https://perma.cc/X9AG-XZ7X>].

⁶⁴ Reardon, *supra* note 27.

ference to [radio] altimeters.”⁶⁵ The campaign really heated up, however, when the FAA issued a “Special Airworthiness Information Bulletin” in early November.⁶⁶ The bulletin advised aircraft operators to “be prepared for the possibility that interference from 5G transmitters and other technology could cause certain safety equipment to malfunction, requiring them to take mitigating action that could affect flight operations.”⁶⁷ Speaking to the media, the CEOs of major airlines told reporters that hundreds of thousands of flights would be canceled or disrupted if AT&T and Verizon did not delay implementation of their 5G C-band service.⁶⁸ Not wanting to be blamed for ruining holiday travel, AT&T and Verizon agreed to a one-month delay, pushing their 5G rollout to January 5, 2022.⁶⁹ The companies also agreed to limit the power of their 5G cell towers for six months.⁷⁰

The FAA and aviation industry had bought some time, but not enough. They needed more time to study the interference issue and develop a long-term solution. One potential solution was replacing the oldest and most interference-prone radio altimeters with newer, less interference-prone models—but this solution would require significant time (and money).⁷¹ So, as January 5th approached, Secretary Buttigieg wrote the CEOs of AT&T and Verizon, asking them to postpone their 5G rollout for an additional two weeks.⁷² In addition, Airlines for America, an association of ten major U.S. airlines, filed an emergency petition with the FCC asking it to further delay AT&T and Ver-

⁶⁵ *Id.*

⁶⁶ Robert Silk, *FAA Issues Safety Warning About 5G Interference*, TRAVEL WEEKLY (Nov. 3, 2021), <https://www.travelweekly.com/Travel-News/Airline-News/FAA-issues-safety-warning-about-5G-interference> [<https://perma.cc/CY3S-RCFL>].

⁶⁷ *Id.*

⁶⁸ Marguerite Reardon, *Airline Industry Warns Upcoming 5G Deployment Could Cause Hiccups for Travelers*, CNET (Dec. 16, 2021, 1:56 PM), <https://www.cnet.com/tech/mobile/airline-industry-warns-upcoming-5g-deployment-could-cause-hiccups-for-travelers/> [<https://perma.cc/B2P6-CS76>].

⁶⁹ Elkind, *supra* note 9.

⁷⁰ Marguerite Reardon, *AT&T and Verizon Agree to 5G Power Limits to Resolve FAA Safety Concerns*, CNET (Nov. 24, 2021, 2:05 PM), <https://www.cnet.com/tech/mobile/at-t-and-verizon-agree-to-5g-power-limits-to-resolve-faa-safety-concerns/> [<https://perma.cc/A2YU-VJK9>].

⁷¹ See Elkind, *supra* note 9.

⁷² Letter from Pete Buttigieg, Secretary of Transportation, and Steve Dickson, FAA Administrator, to John T. Stankey, AT&T CEO, and Hans Vestberg, Verizon CEO (Dec. 31, 2021), <https://www.faa.gov/sites/faa.gov/files/2021-12/12.31.2021%20-%20DOT%20and%20FAA%20Letter%20to%20ATT%20and%20Verizon%20.pdf> [<https://perma.cc/6D64-GDWN>].

izon’s rollout of 5G service.⁷³ Although the FCC never responded to the airlines’ petition, AT&T and Verizon eventually voluntarily agreed to the two-week delay extension requested by Secretary Buttigieg and the FAA.⁷⁴

Once again, though, the FAA and aviation industry would need more concessions from AT&T and Verizon. Just three days before the two-week extension was set to expire, the FAA issued a statement reporting that it had only “cleared an estimated 45 percent of the U.S. commercial fleet to perform low-visibility landings at many of the airports where 5G C-band will be deployed on [January] 19.”⁷⁵ On January 17th, executives from several major U.S. airlines wrote a letter to President Biden asking his administration to “take whatever action necessary” to delay the rollout of 5G service within two miles of affected airports.⁷⁶ If 5G cell towers were to be turned on near airports, they warned, “huge swaths” of the U.S. fleet could be grounded, affecting thousands of flights and hundreds of thousands of passengers.⁷⁷

The next day, AT&T and Verizon again caved to the FAA’s demands, agreeing to “temporarily defer turning on a limited number of towers around certain airport runways as we continue to work with the aviation industry and FAA to provide further information about our 5G deployment.”⁷⁸ But the two companies were indignant. In its statement, AT&T criticized the FAA and aviation industry for not “[utilizing] the two years they’ve had to responsibly plan for this deployment.”⁷⁹ Verizon

⁷³ Airlines for America, Emergency Petition to Stay Initiation of 5G Operations at Certain Designated Airport Locations, GN Docket No. 18-122 (Dec. 30, 2021), <https://www.fcc.gov/ecfs/document/123022756098/1> [<https://perma.cc/X9AG-XZ7X>].

⁷⁴ David Lumb & Marguerite Reardon, *Verizon, AT&T Agree to FAA’s Request for a Two-Week Delay on 5G Expansion Plans*, CNET (Jan. 4, 2022, 8:11 AM), <https://www.cnet.com/tech/mobile/verizon-at-t-agree-to-faas-request-for-a-two-week-delay-on-5g-expansion-plans/> [<https://perma.cc/7GDJ-SSWY>].

⁷⁵ *FAA Statements on 5G*, FED. AVIATION ADMIN. (Jan. 17, 2022), <https://www.faa.gov/newsroom/faa-statements-5g> [<https://perma.cc/8UBC-ZXJM>].

⁷⁶ Steven Musil, *Airlines Seek More 5G Protections, Warning of Massive Travel Disruptions*, CNET (Jan. 17, 2022, 3:02 PM), <https://www.cnet.com/tech/mobile/airlines-seek-more-5g-protections-warning-of-massive-travel-disruptions/> [<https://perma.cc/8B8S-MNLB>].

⁷⁷ *Id.*

⁷⁸ Eli Blumenthal, *AT&T, Verizon Adjust 5G Launch Plans Around Airports as Carriers Blast FAA Over Delays*, CNET (Jan. 18, 2022, 12:41 PM), <https://www.cnet.com/tech/mobile/at-t-verizon-adjust-5g-launch-plans-around-airports-as-carriers-blast-faa-over-delays/> [<https://perma.cc/5AUZ-C4TB>].

⁷⁹ *Id.*

took a similar tone, lamenting that “the [FAA] and our nation’s airlines have not been able to fully resolve navigating 5G around airports, despite it being safe and fully operational in more than 40 other countries.”⁸⁰ One AT&T executive called the situation a “pretty poor reflection on the FAA,” considering “that all of these other countries have been able to launch this and we haven’t been able to do it here.”⁸¹ When AT&T and Verizon finally launched their restricted 5G service on January 19th, some 600 cell towers remained dark, and tens of millions of customers that otherwise would have received 5G service did not.⁸²

In the months that followed, tensions began to ease, and the situation started to improve. By the end of January, the FAA reported that it had “clear[ed] an estimated 90 percent of the U.S. commercial aircraft fleet . . . for most low-visibility approaches in 5G deployment.”⁸³ And as time passed, the FAA continually shrunk the size of the buffer zones surrounding airports, allowing more 5G cell towers to come online.⁸⁴ In June of 2022, the FAA, aviation industry, and wireless industry settled on a long-term solution requiring airlines and other aircraft operators to retrofit or replace interference-prone radio altimeters by either December 2022 for regional aircraft or July 2023 for the mainline commercial fleet.⁸⁵ In return, the wireless industry agreed to “continue with some level of voluntary mitigations for another year.”⁸⁶

As things stand at the time of writing, the FAA is “work[ing] with both industries to track the pace of the radio altimeter retrofits while also working with the wireless companies to relax mitigations around key airports in carefully considered phases.”⁸⁷ But the 5G saga is far from over. Just a few months after the FAA announced its long-term solution, air carriers started indicating that they would not be able to meet the July

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Elkind, *supra* note 9.

⁸³ *FAA Statements on 5G*, FED. AVIATION ADMIN. (Jan. 27, 2022), <https://www.faa.gov/newsroom/faq-statements-5g> [<https://perma.cc/6YS3-ZV74>].

⁸⁴ Elkind, *supra* note 9.

⁸⁵ *FAA Statements on 5G*, FEDERAL AVIATION ADMINISTRATION (June 17, 2022), <https://www.faa.gov/newsroom/faq-statements-5g> [<https://perma.cc/8UBC-ZXJM>].

⁸⁶ *Id.*

⁸⁷ *Id.*

2023 deadline to retrofit or replace their radio altimeters.⁸⁸ In a letter to the Biden administration requesting an extension, several major U.S. air carriers cited “global supply chain” issues as justification for their inability to meet the deadline.⁸⁹ Then there is the issue of who will pay for the new radio altimeters: each side believes the other ought to shoulder the financial burden.⁹⁰ Finally, T-Mobile and other wireless carriers are set to launch 5G service on a new part of the C-band, even closer to the radio altimeter frequency, in December of 2023.⁹¹ If the aviation industry hasn’t finished retrofitting its planes by then, the 5G saga could ignite once again.

III. DIAGNOSING THE PROBLEM

The agencies’ handling of the 5G rollout has been sharply criticized by government officials and private commentators alike. Some place the blame primarily on the FCC. One commentator remarked that “the [FCC] not only advocated for the interests of the telecommunications industry but adopted its worldview, scorning evidence of risk and making cooperation and compromise nearly impossible.”⁹² At a hearing of the House aviation subcommittee, Representative Peter DeFazio impugned the FCC’s motives, saying it exhibited “a pattern of ignoring consequences beyond the consequences to the profitability of the telecom industry, that’s their only focus.”⁹³

Others argue that the FAA is primarily to blame. They say that the FAA waited until the eleventh hour to raise concerns about 5G interference and didn’t follow proper procedure in doing so.⁹⁴ The FAA should have raised its concerns during the lengthy notice-and-comment period before the FCC voted to

⁸⁸ David Shepardson, *Exclusive: Many Airlines Will Not Meet U.S. 5G Upgrade Deadline – IATA*, REUTERS (Feb. 6, 2023, 6:14 PM), <https://www.reuters.com/business/aerospace-defense/many-airlines-will-not-meet-us-5g-upgrade-deadline-iata-2023-02-06/> [https://perma.cc/Q5RQ-ZQB9].

⁸⁹ *Id.*

⁹⁰ See Elkind, *supra* note 9.

⁹¹ *Id.*

⁹² *Id.*

⁹³ Karl Evers-Hillstrom, *Lawmakers Blast Federal Agencies Over 5G Standoff*, THE HILL (Feb. 3, 2022, 4:42 PM), <https://thehill.com/policy/transportation/aviation/592728-lawmakers-criticize-federal-agencies-for-enabling-5g-airline/> [https://perma.cc/ZFW8-8MUQ].

⁹⁴ Kristian Stout, *The FAA’s Challenge to 5G is a Regulatory Power Grab*, THE HILL (Jan. 4, 2022, 4:00 PM), <https://thehill.com/blogs/congress-blog/technology/588216-the-faas-challenge-to-5g-is-a-regulatory-power-grab/> [https://perma.cc/H5CT-XRJF].

auction off the C-band spectrum.⁹⁵ And if it was unhappy with the FCC's decision to auction off the spectrum, it should have formally appealed the commission's decision rather than circumventing the legal process altogether and publicly pressuring the wireless companies to stop doing what the FCC had given them permission to do.⁹⁶ By contrast, they say, "the FCC did everything by the book, conducting years-long public proceedings on the C-band spectrum."⁹⁷ They also say that the FAA was far too risk-averse in assessing the potential for 5G interference and did "not consider the costs its policies impose on those outside the [aviation] industry, or even on consumers within the industry."⁹⁸ They point out that the FAA has cried wolf on cellular interference before.⁹⁹ For many years, the FAA insisted that the use of cell phones by airplane passengers posed a threat to planes; eventually, however, the FAA backtracked and cell phones have been allowed for the past several years without incident.¹⁰⁰

Still others argue that the NTIA is primarily to blame.¹⁰¹ They say that the NTIA should have forwarded the FAA's letter calling for a delay in the 5G auction to the FCC.¹⁰² More broadly, the NTIA should have developed a national spectrum policy in advance of the 5G rollout and had procedures in place for dealing with inter-agency spectrum disputes.¹⁰³

Regardless of who deserves the blame, it is clear that these sorts of prolonged inter-agency turf wars hurt Americans of all stripes. In this case, the FAA and FCC's 5G dispute hurt consumers by depriving them of the myriad benefits of 5G technology for a significant period of time. It also hurt the wireless companies—specifically, AT&T and Verizon—who spent upwards of

⁹⁵ *See id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ Gus Hurwitz, *What the FAA-FCC Fight Can Teach Us About Our Approach to Risk*, REALCLEARPOLICY (Jan. 18, 2022), https://www.realclearpolicy.com/articles/2022/01/18/what_the_faa-fcc_fight_can_teach_us_about_our_approach_to_risk_812576.html [<https://perma.cc/LYK2-H877>].

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ See Mike Dano, *It's time for the Biden administration to get it together in 5G*, LIGHT READING (Jan. 4, 2022), <https://www.fcc.gov/ecfs/search/search-filings/filing/5508129955> [<https://perma.cc/2694-W8YS>].

¹⁰² *See* Elkind, *supra* note 9.

¹⁰³ Tom Wheeler, *Did the FAA Cry Wolf on 5G?*, BROOKINGS (Jan. 21, 2022), <https://www.brookings.edu/blog/techtank/2022/01/21/did-the-faa-cry-wolf-on-5g/> [<https://perma.cc/H5W5-9EAG>].

\$70 billion to get their 5G service up and running quickly.¹⁰⁴ Time was of the essence for these companies because T-Mobile, their top competitor, was widely considered to have the best 5G network in the nation, and the gap was only widening.¹⁰⁵ Finally, inter-agency disputes, and the unpredictability and uncertainty that they inevitably create, also hurt the economy and innovation more broadly, which thrive in stable and predictable regulatory environments.¹⁰⁶

The 5G rollout debacle is by no means an isolated incident; inter-agency turf wars over spectrum use have been happening for years, and the consequences have been just as damaging. One such battle involving the FCC, the Department of Defense, and a little-known wireless company lasted nearly two decades.¹⁰⁷ In a sequence of events eerily similar to the 5G saga involving AT&T and Verizon, the FCC granted Ligado Networks, a small wireless company, authorization to repurpose its existing satellite spectrum licenses to build a new 5G network.¹⁰⁸ In its order, the FCC addressed concerns raised by the commercial GPS industry that Ligado's new 5G network would interfere with neighboring spectrum used for GPS navigation.¹⁰⁹ Among other things, the FCC limited the power levels of Ligado's 5G operations and provided a significant "guard band" between Ligado's 5G spectrum and the spectrum used for GPS navigation.¹¹⁰ These concessions were sufficient to satisfy the commer-

¹⁰⁴ Mark Giles, *Why Verizon and AT&T Couldn't Wait Any Longer for U.S. C-band to Go Live*, OOKLA (Jan. 20, 2022), <https://www.ookla.com/articles/verizon-att-cant-wait-for-c-band> [<https://perma.cc/H6GM-QZNU>].

¹⁰⁵ *Id.* ("The opportunity cost of any delay is significant, as T-Mobile continues to extend its lead on 5G performance, which has helped the self-styled 'Un-carrier' attract more postpaid net additions than its key rivals combined. This is why both Verizon & AT&T had little choice but to placate the FAA.").

¹⁰⁶ D.W. MacKenzie, *Fear the Unknown: How Policy Uncertainty Hurts Growth*, FOUND. FOR ECON. EDUC. (July 11, 2016), <https://fee.org/articles/fear-the-unknown-how-policy-uncertainty-hurts-growth/> [<https://perma.cc/G6K3-GR3U>] ("[I]ntense political fights over the future of major policies and programs . . . make it harder for entrepreneurs to go forward with new projects.").

¹⁰⁷ Marguerite Reardon, *The Pentagon's Fight to Kill Ligado's 5G Network*, CNET (May 13, 2020, 5:00 AM), <https://www.cnet.com/tech/mobile/the-pentagons-fight-to-kill-ligados-5g-network/> [<https://perma.cc/26LC-HPEQ>].

¹⁰⁸ *In the Matter of Ligado Amendment to License Modification Applications*, 35 F.C.C. Rcd. 3772, 3773 (F.C.C. 2020), <https://www.fcc.gov/document/fcc-approves-ligado-l-band-application-facilitate-5g-iot> [<https://perma.cc/MT7S-LAGT>].

¹⁰⁹ *Id.* at 3805–06.

¹¹⁰ *Id.* at 3844.

cial GPS industry, but the Department of Defense, which uses GPS for many of its operations, was not satisfied.

Shortly after the FCC issued its Order and Authorization, the Department of Defense went on the attack. Secretary of Defense Mark Esper wrote in an op-ed that “the FCC’s decision will disrupt the daily lives and commerce of millions of Americans and inject unacceptable risk into systems that are critical for emergency response, aviation and missile defense.”¹¹¹ Then, during testimony before the Senate Armed Services Committee, Department of Defense CIO Dana Deasy claimed that interference from Ligado’s 5G network would adversely affect the accuracy of weapons systems as well as disrupt 911 first responder calls, both of which use GPS location information.¹¹² The FCC dismissed the DOD’s parade of horrors as “baseless fearmongering” and stood by its “unanimous, bipartisan decision based on sound engineering principles.”¹¹³

At the time of writing, nearly three years after the FCC gave Ligado the green light, the company still has not launched its 5G network.¹¹⁴ Instead, it has delayed its plans to launch a 5G network indefinitely due to interference concerns and is facing the possibility of bankruptcy.¹¹⁵

IV. EXAMINING POTENTIAL SOLUTIONS

Shared or overlapping regulatory authority between administrative agencies can create numerous problems. This fact was made abundantly clear in the 5G rollout sagas described above. Consider the overlapping authorities and conflicting interests of the parties involved in the 5G rollout: The FCC “regulates and manages spectrum for nonfederal public and private uses, such as wireless services provided over commercial mobile net-

¹¹¹ Mark Esper, *The FCC’s Decision Puts GPS at Risk*, WALL ST. J. (May 5, 2020, 6:57 PM), <https://www.wsj.com/articles/the-fccs-decision-puts-gps-at-risk-11588719423> [<https://perma.cc/4VS9-BXH3>].

¹¹² Reardon, *supra* note 105.

¹¹³ *Id.*

¹¹⁴ See Mike Dano, *Ligado Cancels 5G Network Launch Amid Ongoing Interference Concerns*, LIGHT READING (Sep. 13, 2022), <https://www.lightreading.com/private-networks/ligado-cancels-5g-network-launch-amid-ongoing-interference-concerns/d/d-id/780360> [<https://perma.cc/D7ED-QPR3>].

¹¹⁵ Mike Dano, *Bankruptcy Looms Amid Ligado’s New Fight Against Inmarsat*, LIGHT READING (Dec. 19, 2022), <https://www.lightreading.com/satellite/bankruptcy-looms-amid-ligados-new-fight-against-inmarsat/d/d-id/782449> [<https://perma.cc/375E-5SPN>].

works.”¹¹⁶ Its primary motivations are “[s]upporting the nation’s economy” by “[p]romoting competition, innovation and investment in broadband services and facilities.”¹¹⁷ The NTIA, on the other hand, is in charge of spectrum use for federal government users, such as the FAA and DOD.¹¹⁸ As the President’s principal advisor on telecommunications issues, the NTIA’s motivations may differ between administrations. At times—such as during the Trump administration—the NTIA may be closely aligned with the FCC in its goal of reallocating spectrum for 5G use by private wireless carriers.¹¹⁹ At other times, it may focus more on ensuring that government agencies have the spectrum they need, unencumbered by private spectrum users. Then there are federal spectrum users—agencies like the FAA and DOD—whose missions are entirely independent of spectrum use but nevertheless use spectrum to achieve their missions.¹²⁰ These agencies’ primary concern is that their spectrum remains unencumbered by users of adjacent spectrum, and they are typically risk-averse when it comes to potential interference concerns.¹²¹ Finally, there are private spectrum users—like AT&T and Verizon—who wish to obtain spectrum and exploit their investment in spectrum.

All of these parties’ overlapping authorities and conflicting missions combined to create a dysfunctional 5G rollout process. Potential solutions to the problems posed by overlapping regulatory authority fall into two buckets: (1) consolidation or (2) coordination.¹²²

¹¹⁶ U.S. GOV’T ACCOUNTABILITY OFF., GAO-21-474, SPECTRUM MANAGEMENT: AGENCIES SHOULD STRENGTHEN COLLABORATIVE MECHANISMS AND PROCESSES TO ADDRESS POTENTIAL INTERFERENCE, at 1 (2021), <https://www.gao.gov/assets/720/715338.pdf> [<https://perma.cc/G3A2-2TLX>].

¹¹⁷ *What We Do*, FED. COMM’NS COMM’N, <https://www.fcc.gov/about-fcc/what-we-do> [<https://perma.cc/A4NW-N9WM>].

¹¹⁸ See U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 116.

¹¹⁹ See Elkind, *supra* note 9.

¹²⁰ U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 116.

¹²¹ See Harold Feld & Gregory Rose, *Breaking the Logjam: Creating Sustainable Spectrum Access Through Federal Secondary Markets*, PUBLIC KNOWLEDGE (Dec. 29, 2009), <https://publicknowledge.org/wp-content/uploads/2022/11/Breaking-the-Logjam-Fed-2ndary-Mrkt-Whitepaper-FINAL-1.pdf> [<https://perma.cc/SE5E-CE5J>].

¹²² See Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131, 1136 (2012).

A. CONSOLIDATION

Consolidation would involve consolidating decision-making power over spectrum in a single agency.¹²³ Consolidation might look like giving the FCC (or a newly-created agency) plenary power over spectrum-related issues and taking power over spectrum decisions away from all other government entities like the NTIA. It would also mean forbidding federal spectrum users, like the FAA or DOD, from taking any action relating to spectrum use that is inconsistent with the FCC's actions. So, for example, once the FCC sold spectrum to AT&T and Verizon for 5G use, the FAA could not circumvent the FCC and attempt to pressure the wireless companies into delaying their 5G rollout.

The Commerce Spectrum Advisory Management Committee (CSMAC), which advises the Assistant Secretary for Communications and Information at NTIA on a broad range of spectrum policy issues, proposed consolidation in its 2020 report on the United States' spectrum management approach.¹²⁴ Whereas the U.S. splits spectrum governance between the FCC and NTIA, the report found "very few, if any examples, of countries who currently or in the past split spectrum management between government and non-government uses."¹²⁵ Instead, in most other countries "spectrum is managed through a single entity either at a Ministry or regulator level."¹²⁶ The report proposes that the U.S. adopt the rest of the world's approach and unify spectrum management decision-making in a "Full-Service Spectrum Agency."¹²⁷ Under the current two-entity system, "opportunities exist for conflict, delayed decision-making while the entities work out these conflicts, and overlapping responsibilities."¹²⁸ Merging the responsibilities of the NTIA and the FCC into a single agency would allow for more efficient resolution of spectrum-related issues. Consolidation would also "best address decisional dependencies, where knowledge of one issue is important to the resolution of another."¹²⁹ In other words, all of the experts and relevant information needed to make spectrum-

¹²³ See *id.* at 1210.

¹²⁴ COM. SPECTRUM MGMT. ADVISORY COMM., WORKING GROUP 1: GOVERNANCE: FINAL REPORT, at 1, 15 (2020), https://www.ntia.doc.gov/files/ntia/publications/csmac_sc1_report_july_2020_r1.pdf [<https://perma.cc/74G6-LJ5L>].

¹²⁵ *Id.* at 2.

¹²⁶ *Id.*

¹²⁷ *Id.* at 6.

¹²⁸ *Id.*

¹²⁹ *Id.* at 8.

related decisions would be housed in the same agency, eliminating the need to request information from and coordinate with outside agencies.¹³⁰

The CSMAC report also proposed including “[s]pectrum coordination offices” within the full-service spectrum agency.¹³¹ These offices would “support different user groups, and . . . would also be required to have domain knowledge of the user community and how spectrum is utilized and integrated into user operations.”¹³² User groups would include both public and private spectrum users like the FAA, DOD, and the wireless industry.¹³³ So, in CSMAC’s proposed full-service spectrum agency, the FAA and other spectrum users would have an advocate embedded in the agency itself.¹³⁴ Under the current system, the NTIA operates as an intermediary between spectrum users like the FAA and the spectrum decision-makers—the FCC.¹³⁵ As we saw during the 5G rollout, however, sometimes the NTIA’s priorities are at odds with those of spectrum users like the FAA and it fails to effectively intermediate—even going so far as to refuse to pass along the concerns of spectrum users.¹³⁶ The full-service spectrum agency would get rid of the middleman in this scenario, allowing spectrum users’ concerns to be communicated to the decision-makers before any decisions are made.¹³⁷

The benefits of consolidating spectrum regulation are obvious. They are the same benefits that typically accompany the centralization of power: greater efficiency, reduced bureaucratic redundancy, reduced costs, and greater uniformity of regulation, among other things.¹³⁸ If the goal were simply to prevent future agency turf wars like the one surrounding the 5G rollout, consolidating spectrum authority in a single agency would almost certainly achieve that. But the drawbacks of consolidation may outweigh its benefits. For example, consolidation would preclude healthy agency competition.¹³⁹ It may also “simply relocate rather than eradicate bureaucratic redundancy and ineffi-

¹³⁰ *Id.*

¹³¹ *Id.* at 7.

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *See id.* at 10.

¹³⁵ *See id.* at 4.

¹³⁶ *See* Elkind, *supra* note 9.

¹³⁷ *See* COM. SPECTRUM MGMT. ADVISORY COMM., *supra* note 124, at 7.

¹³⁸ *See* Freeman, *supra* note 122, at 1150–51.

¹³⁹ *Id.* at 1154, 1186.

ciency.”¹⁴⁰ That is, what were once inter-agency turf wars may become intra-agency turf wars between departments within the consolidated agency.¹⁴¹

B. COORDINATION

The alternative to consolidation as a remedy for the dysfunctions associated with overlapping regulatory authority is enhancing coordination or cooperation among agencies.¹⁴² Under this solution, agencies would retain their current mandates and spheres of authority—meaning overlapping authority would remain—but would work together to efficiently resolve any disputes they may have with each other.¹⁴³ Proponents of enhancing agency coordination argue that shared regulatory authority offers a number of benefits that would be lost with consolidation.¹⁴⁴

One such benefit of “[d]ispersing regulatory authority across multiple agencies” is that it “may . . . reduce congressional monitoring costs by, in effect, creating a system of interagency ‘fire alarms.’”¹⁴⁵ That is, if one agency neglects to consider some negative consequence of its regulation, another agency with different incentives and interests can step in to raise the neglected concerns. One might argue that this benefit was realized during the 5G rollout via the FAA raising concerns about how the FCC’s reallocation of spectrum for 5G use would affect aviation safety. Another benefit of dispersed authority is the ability of lawmakers to draw on the unique expertise and competencies of different agencies.¹⁴⁶

Still another benefit of dispersed regulatory authority, as opposed to consolidated authority, is the reduced likelihood of agency capture.¹⁴⁷ “Capture describes situations where organized interest groups successfully act to vindicate their goals through government policy at the expense of the public interest.”¹⁴⁸ For example, critics of the FCC have argued for years

¹⁴⁰ *Id.* at 1153.

¹⁴¹ *See id.* at 1154.

¹⁴² *Id.* at 1136.

¹⁴³ *See id.* at 1189.

¹⁴⁴ *See id.* at 1135.

¹⁴⁵ *Id.* at 1139.

¹⁴⁶ *Id.* at 1142.

¹⁴⁷ *Id.* at 1142–43.

¹⁴⁸ Michael A. Livermore & Richard L. Revesz, *Regulatory Review, Capture, and Agency Inaction*, 101 GEO. L.J. 1337, 1340 (2012).

that the agency has been “captured” by the wireless industry—namely, AT&T and Verizon.¹⁴⁹ They point to a so-called “revolving door” through which FCC commissioners take jobs as executives in the industry they used to regulate, and vice-versa.¹⁵⁰ This cozy relationship between the FCC and wireless industry, they argue, results in unduly light regulation of the industry.¹⁵¹ During the 5G rollout, these critics argued that the FCC dismissed the aviation industry’s interference concerns because those concerns, if investigated further, might hurt the wireless industry’s bottom line.¹⁵² As further evidence of agency capture, one investigative reporter noted that the FCC relied on a T-Mobile sponsored study in dismissing aviation safety concerns.¹⁵³ In a consolidated regulatory regime, the risk of capture is greater because there are fewer agencies or decision-makers that must be captured before an interest group can effectively influence government policy.¹⁵⁴ By contrast, when authority is fragmented among multiple agencies, interest groups must “diversify their lobbying efforts, thus making it more costly for those that seek to capture the regulator.”¹⁵⁵

Shared regulatory authority also has its drawbacks—which were made abundantly clear during the 5G rollout. One major drawback is unproductive agency competition and the “transaction costs to government of managing jurisdictional disputes.”¹⁵⁶ The FAA and FCC’s turf war over 5G is a prime example of this drawback. During the agencies’ standoff, Congress and the President were forced to play referee, spending time and resources sorting out an inter-agency dispute that should have never re-

¹⁴⁹ See Bruce Kushnick, *Regulatory Capture of the FCC – Time to Clean House*, HUFFPOST (May 25, 2013), https://www.huffpost.com/entry/regulatory-capture-of-the_b_2936693 [<https://perma.cc/XBE7-M9HQ>]; see also *The FCC is a Captured Agency: Commissioners are Former Wireless Industry Insiders*, ENV’T HEALTH TR. (Oct. 12, 2020), <https://ehtrust.org/the-fcc-is-a-captured-agency-commissioners-are-former-wireless-industry-insiders/> [<https://perma.cc/48ZK-5M5R>].

¹⁵⁰ See *The FCC is a Captured Agency: Commissioners are Former Wireless Industry Insiders*, ENV’T HEALTH TR. (Oct. 12, 2020), <https://ehtrust.org/the-fcc-is-a-captured-agency-commissioners-are-former-wireless-industry-insiders/> [<https://perma.cc/48ZK-5M5R>].

¹⁵¹ See Bruce Kushnick, *Regulatory Capture of the FCC – Time to Clean House*, HUFFPOST (May 25, 2013), https://www.huffpost.com/entry/regulatory-capture-of-the_b_2936693 [<https://perma.cc/XBE7-M9HQ>].

¹⁵² See Elkind, *supra* note 9.

¹⁵³ See *id.*

¹⁵⁴ Freeman, *supra* note 119, at 1142–43.

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* at 1150.

quired their attention.¹⁵⁷ And in the aftermath of this dispute and others, legislators have commissioned the Government Accountability Office (GAO) to review and provide recommendations on the federal spectrum management process.¹⁵⁸ Legislators made these requests out of concern that “[r]ather than working through the NTIA as the central repository and manager of federal spectrum . . . many of the federal agencies with spectrum allocations may have circumvented this statutory process.”¹⁵⁹ In the span of just over a year, from June 2021 to August 2022, the GAO issued three spectrum-related reports—two addressing interagency collaboration in the spectrum management context and one addressing the NTIA’s management of federal spectrum use.¹⁶⁰ These reports require a significant investment of time and money from the GAO, an agency with an annual budget of over \$700 million.¹⁶¹

¹⁵⁷ See David Koenig & THE ASSOCIATED PRESS, *Congress Takes Up Dispute Over 5G Rollout Near Airports*, FORTUNE (Feb. 3, 2022, 12:03 PM), <https://fortune.com/2022/02/03/congress-5g-rollout-airports-att-verizon-faa/> [<https://perma.cc/MP2A-9WR6>]; see also Tom Wheeler, *Did the FAA Cry Wolf on 5G?*, BROOKINGS (Jan. 21, 2022), <https://www.brookings.edu/blog/techtank/2022/01/21/did-the-faa-cry-wolf-on-5g/> [<https://perma.cc/JC3R-4X4V>] (“The Biden White House—as the Trump White House apparently did not—immediately stepped in as a referee between the differing positions of the FAA and the Federal Communications Commission (FCC). On January 18, the day before the postponed 5G relaunch, President Biden announced [] an agreement by the wireless companies to further delay deployment of the new spectrum around airports.”).

¹⁵⁸ *House Commerce Leaders Request GAO Review of Federal Spectrum Management*, BENTON INST. FOR BROADBAND & SOC’Y (Jan. 24, 2020), <https://www.benton.org/headlines/house-commerce-leaders-request-gao-review-federal-spectrum-management> [<https://perma.cc/46RW-WQ7E>] (“House Commerce Committee Chairman Frank Pallone, Jr. (D-NJ) and Ranking Member Greg Walden (R-OR) sent a letter to the US Government Accountability Office (GAO) urging the government watchdog to conduct an updated review of the National Telecommunications and Information Administration’s (NTIA) federal spectrum management processes. They asked GAO to consider as part of its review how federal spectrum users interact with NTIA and the Federal Communications Commission (FCC), how the NTIA and FCC interact with each other, and the recent federal spectrum management process breakdowns.”).

¹⁵⁹ *Id.*

¹⁶⁰ U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 114; U.S. GOV’T ACCOUNTABILITY OFF., SPECTRUM MANAGEMENT: IMPROVED PLANNING AND INTERAGENCY COLLABORATION COULD STRENGTHEN SPECTRUM REALLOCATION EFFORTS, GAO-22-106170 (2022), <https://www.gao.gov/products/gao-22-106170> [<https://perma.cc/2YVF-3ZY7>]; U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 19.

¹⁶¹ See U.S. GOV’T ACCOUNTABILITY OFF., FISCAL YEAR 2023 BUDGET REQUEST, GAO-22-900396, at 2 (2022), <https://www.gao.gov/products/gao-22-900396> [<https://perma.cc/87MM-6J7M>].

Another drawback of dispersed or shared regulatory authority are the “increased compliance costs for regulated parties who may be subject to inconsistent or duplicative rules.”¹⁶² This drawback was again evident in the 5G rollout debacle. AT&T and Verizon bought nearly \$70 billion worth of 5G spectrum licenses from the FCC on the understanding that they could use them immediately.¹⁶³ But the FAA and FCC were not on the same page: while one agency was giving the companies the green light to turn on their 5G service, the other was warning of apocalypse if they did.¹⁶⁴ As noted above, this regulatory inconsistency was very costly for AT&T and Verizon, who desperately needed an edge in the race to 5G over their competitor, T-Mobile.¹⁶⁵

Lastly, dispersed regulatory authority may increase the risk of bureaucratic drift or shirking.¹⁶⁶ Bureaucratic drift occurs when a regulatory agency creates policy that deviates from its original mandate, as supplied by the legislature that created the agency.¹⁶⁷ Shirking is a similar concept and occurs when an agency fails to regulate entirely or issues only weak, ineffectual rules designed to create the appearance that it is regulating according to its legislative mandate.¹⁶⁸ Where responsibility is shared, “[a]gencies may . . . find it easier . . . to deviate from congressional preferences and pursue their own policy prerogatives because they can blame other agencies for program failures.”¹⁶⁹ The risk of shirking is heightened in shared regulatory environments for the same reason: if agencies with overlapping authority fail to fulfill their regulatory duties, they can claim that it was the other agency’s responsibility. By contrast, in a consolidated regulatory environment, where a single agency possesses authority over a matter, that agency will not be able to play the blame game as easily. While it isn’t clear that bureaucratic drift was at play in the 5G rollout saga, one could argue that the FCC, NTIA, and FAA’s failure to cooperate was an example of shirking. For example, there is some evidence that the FCC and FAA

¹⁶² Freeman, *supra* note 119, at 1150.

¹⁶³ See Elkind, *supra* note 9.

¹⁶⁴ See *id.*

¹⁶⁵ See Giles, *supra* note 102.

¹⁶⁶ Freeman, *supra* note 119, at 1150–51.

¹⁶⁷ Jonathan R. Macey, *Separated Powers and Positive Political Theory: The Tug of War over Administrative Agencies*, 80 GEO. L.J. 671, 672 (1992).

¹⁶⁸ Jacob E. Gersen & Anne Joseph O’Connell, *Deadlines in Administrative Law*, 156 U. PA. L. REV. 923, 932–33 (2008).

¹⁶⁹ Freeman, *supra* note 119, at 1187.

failed to coordinate or collaborate with each other directly to resolve interference concerns because they believed it was the NTIA's responsibility to intermediate interference disputes.¹⁷⁰ One might also argue that the FCC shirked its duty to thoroughly and independently investigate the aviation industry's interference concerns, believing that the FAA would handle any aviation-related interference issues.¹⁷¹

1. *Coordination Tools*

Congress, the President, and agencies themselves have many tools at their disposal to enhance interagency cooperation. One of Congress' strongest tools is the mandatory consultation provision—a statutory requirement that an agency consult with another agency whose interests are implicated by the action agency's decision-making before it can take certain actions.¹⁷² Although the action agency retains ultimate decision-making authority, mandatory consultation provisions “can function as a veto because disregarding recommendations can expose an agency to civil and criminal penalties and because deviation may render a decision arbitrary and capricious on judicial review.”¹⁷³ In the spectrum context, a mandatory consultation provision might require the FCC to consult with federal owners (or users) of adjacent spectrum before reallocating or selling spectrum licenses. If the FCC were subject to such a provision, it would have had to consult with the FAA before selling C-band licenses to AT&T and Verizon.

The President also possesses several tools for enhancing agency coordination. For example, the President might direct agencies to cooperate on certain initiatives by signing executive orders or presidential memoranda.¹⁷⁴ More commonly, the executive branch promotes interagency collaboration via policy offices, councils, task forces, and working groups.¹⁷⁵ One example of a policy office is the National Security Council, which “advise[s] and assist[s] the President” and “coordinate[s] matters of national security among government agencies.”¹⁷⁶ The NTIA

¹⁷⁰ See Fung, *supra* note 56.

¹⁷¹ See *id.*

¹⁷² Freeman, *supra* note 119, at 1158.

¹⁷³ *Id.*

¹⁷⁴ *Id.* at 1175.

¹⁷⁵ *Id.* at 1176, 1198–99.

¹⁷⁶ *National Security Council*, THE WHITE HOUSE, <https://www.whitehouse.gov/nsc/> [<https://perma.cc/9DPS-KH35>].

serves a similar purpose in the spectrum context.¹⁷⁷ As we saw during the 5G rollout, however, the mere existence of an executive branch agency tasked with promoting interagency collaboration may not be sufficient to forestall destructive agency turf wars. After all, the NTIA did little to mediate the FCC and FAA’s interference dispute.¹⁷⁸ Something more is needed: formal agreements between agencies outlining procedures for collaborating and dealing with conflict.

This type of agreement is known as a memorandum of understanding—or MOU for short.¹⁷⁹ MOUs can accomplish many things and are tailored to the needs of the agencies involved, but “[a] typical MOU assigns responsibility for specific tasks, establishes procedures, and binds the agencies to fulfill mutual commitments.”¹⁸⁰ An MOU may also clarify jurisdictional lines when that boundary is unclear or in dispute.¹⁸¹ Finally, many MOUs establish procedures for information sharing or information production between agencies.¹⁸² For example, a 2010 MOU between the DHS and DOD regarding cybersecurity calls on the DHS director to “[a]ssist in coordinating . . . information sharing between the public and private sectors to aid in preventing [and] detecting” cybersecurity attacks.¹⁸³

One major limitation of MOUs is that they are generally unenforceable and unreviewable by courts—so a rogue agency could theoretically violate its MOU without consequences, and the other agency privy to the MOU would have no legal recourse.¹⁸⁴ MOUs are also generally entered into voluntarily.¹⁸⁵ The President and other political actors can pressure agencies to sign MOUs, but an obstinate agency can refuse if it wishes.¹⁸⁶ Thus, for a memorandum of understanding to be effective, the agencies involved must be willing to cooperate with each other

¹⁷⁷ *About NTIA*, NAT’L TELECOMMS. & INFO. ADMIN., <https://ntia.gov/page/about-ntia> [<https://perma.cc/Q2FS-HC6Q>].

¹⁷⁸ *See* Elkind, *supra* note 9.

¹⁷⁹ Freeman, *supra* note 119, at 1161.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ Memorandum of Agreement Between the Department of Homeland Security and the Department of Defense Regarding Cybersecurity (Sept. 27, 2010), available at <http://www.dhs.gov/xlibrary/assets/20101013-dod-dhs-cyber-moa.pdf> [<https://perma.cc/JU3J-N6YZ>].

¹⁸⁴ Freeman, *supra* note 119, at 1165.

¹⁸⁵ *See id.* at 1161.

¹⁸⁶ *See id.* at 1175.

in good faith. In this way, MOUs are less robust as a cooperation tool than, for example, mandatory consultation provisions.

Nevertheless, a memorandum of understanding might be an effective tool in the spectrum context and could have prevented the 5G rollout fiasco from happening. At the time of the 5G rollout, the FCC and NTIA's coordination efforts were guided by a three-page MOU that hadn't been updated since 2003.¹⁸⁷ The FAA, on the other hand, has never had an MOU with either the FCC or NTIA.

The FCC and NTIA's 2003 MOU offers vague aspirations for cooperation but little in the way of concrete requirements. For example, the MOU merely calls on the agencies to resolve their technical and policy differences by consensus "whenever possible."¹⁸⁸ The MOU makes clear, however, that cooperation is just a suggestion, not an imperative, and that "[f]inal action by the FCC [and NTIA] . . . does not require approval of the [other agency]."¹⁸⁹ That is, the FCC and NTIA can ultimately authorize spectrum reallocations even if the other agency protests. The MOU's information-sharing provisions require only that the agencies exchange lists of their authorized frequency assignments "as appropriate" and that the staffs of the FCC and NTIA meet to exchange information "regularly."¹⁹⁰ The agencies must also "endeavor to give notice of all proposed actions that could potentially cause interference" to the other's operations; such notice should allow the other agency time to respond, but only "[w]here possible."¹⁹¹ The most concrete requirement to be found in the MOU calls on the Chairman of the FCC and the Assistant Secretary for Communications and Information to meet to conduct joint spectrum planning "at least two times per calendar year."¹⁹² With provisions as toothless as these, it is no wonder that the FCC and NTIA's 2003 MOU did not prevent the 5G rollout debacle.

In its June 2021 report, the GAO found the nearly twenty-year-old MOU to be outdated and inadequate.¹⁹³ Although the MOU

¹⁸⁷ Memorandum of Understanding Between the Federal Communications Commission and the National Telecommunications and Information Administration (Jan. 31, 2003), available at <https://docs.fcc.gov/public/attachments/DOC-230835A2.pdf> [<https://perma.cc/D56L-AR9N>].

¹⁸⁸ *Id.* at 3.

¹⁸⁹ *Id.* at 2.

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² *Id.* at 2.

¹⁹³ See U.S. GOV'T ACCOUNTABILITY OFF., GAO-21-474, *supra* note 114, at 22.

emphasizes collaboration, “there are no clearly defined and agreed-upon processes for resolving matters when agencies cannot [reach consensus].”¹⁹⁴

Nor does the MOU provide guidance on how scientific interference studies are to be conducted or how disagreements over interference studies are to be resolved.¹⁹⁵ One reason the FCC and FAA could not reach a consensus on the 5G interference issue is that they could not agree which studies properly tested interference.¹⁹⁶ The FAA and aviation industry cherry-picked studies showing harmful interference; the FCC then countered with studies showing no harmful interference and alleged that the FAA’s studies did not reflect real-world conditions.¹⁹⁷ This problem has been persistent in the spectrum context: As the GAO report notes, the FCC has previously “disputed the characteristics, assumptions, and methodologies . . . NASA used in the design and preparation of [its interference] studies”¹⁹⁸ Recognizing this problem, the GAO recommended that the FCC and NTIA “establish procedures to help guide the design (including selection of acceptable assumptions and methodologies) of spectrum-sharing and potential-interference studies.”¹⁹⁹ Such procedures should be included in an updated MOU. By agreeing on acceptable research procedures before interference issues arise, the FCC and NTIA can forestall protracted disputes on the merits of these studies later on.

In addition to these changes, the GAO recommended that the FCC and NTIA “develop a means to continually monitor and update [their MOU], in consultation with [each other].”²⁰⁰ This could be achieved by setting an expiration date on the updated MOU, thus forcing the agencies to revisit it after a certain period of time.

In a separate report published in January of 2022, the GAO took aim at the NTIA.²⁰¹ In particular, it found that the “NTIA has not developed [or] disseminated policies and procedures to guide how it collects, considers, and communicates the views of

¹⁹⁴ *Id.* at “Highlights”.

¹⁹⁵ *Id.* at 37.

¹⁹⁶ *See* Elkind, *supra* note 9.

¹⁹⁷ *See id.*

¹⁹⁸ U.S. GOV’T ACCOUNTABILITY OFF., GAO-21-474, *supra* note 114, at 37.

¹⁹⁹ *Id.* at 39.

²⁰⁰ *Id.*

²⁰¹ *See* U.S. GOV’T ACCOUNTABILITY OFF., GAO-22-104537, *supra* note 19.

the executive branch on spectrum matters to FCC.”²⁰² Some IRAC member agencies end up communicating their concerns directly with the FCC.²⁰³ Other agencies’ concerns—like those of the FAA on 5G interference—are never communicated to the FCC by either the agency or the NTIA.²⁰⁴ It isn’t entirely clear why the FAA didn’t communicate directly with the FCC, but two possible reasons could explain the FAA’s failure: (1) the FAA believed the NTIA had already passed on their concerns to the FCC, or (2) the FAA believed it was not permitted to communicate directly with the FCC. Whatever the reason, it is clear that the NTIA “should document and disseminate to federal agencies policies and procedures describing how it collects and considers agencies’ views on spectrum-related matters to present [or not present] . . . to [the] FCC.”²⁰⁵ The GAO determined that having these procedures in place “could mitigate confusion on [the NTIA’s] role and the expectations of federal agencies involved and bolster the transparency of how and why NTIA provides the final information to FCC that it does.”²⁰⁶

Effective cooperation requires internal cooperation within agencies as much as external cooperation between agencies. In particular, agencies must have some internal system in place for deciding whether, when, and how to comment on proposed spectrum allocations by the FCC. Despite the fact that IRAC member agencies receive advanced notice of the FCC’s proposed rules, these agencies often miss the deadline for providing comment.²⁰⁷ For example, in 2014, the FCC invited comments on proposed changes to the 24 GHz band, but NASA waited two years to provide comments—by which time the FCC had already decided to take action.²⁰⁸ Something similar happened with the FAA during the 5G rollout. It failed to provide comments to the FCC during the commenting period and only attempted (unsuccessfully) to raise its concerns with the FCC after the FCC had voted to auction off the C-band.²⁰⁹ By that

²⁰² *Id.* at 23.

²⁰³ *Id.* at 27.

²⁰⁴ See Elkind, *supra* note 9.

²⁰⁵ U.S. GOV’T ACCOUNTABILITY OFF., GAO-22-104537, *supra* note 19, at 33.

²⁰⁶ *Id.* at 32.

²⁰⁷ See U.S. GOV’T ACCOUNTABILITY OFF., GAO-02-906, TELECOMMUNICATIONS BETTER COORDINATION AND ENHANCED ACCOUNTABILITY NEEDED TO IMPROVE SPECTRUM MANAGEMENT (2002).

²⁰⁸ U.S. GOV’T ACCOUNTABILITY OFF., GAO-21-474, *supra* note 114, at 27.

²⁰⁹ See Elkind, *supra* note 9.

time, it was too late to stop the impending auction, which went forward as planned.²¹⁰

The GAO attributes agencies' failure to timely comment to a lack of "written procedures to guide their internal processes for reviewing proposed domestic spectrum-management actions for potential interference concerns"²¹¹ Some IRAC member agencies, however, have recently adopted procedures to address this issue. NASA is one such example.²¹² Its new regulatory tracking tool "monitor[s] when IRAC action items are received and comments are due, log[s] which spectrum bands the actions involve and the NASA service potentially affected, notif[ies] internal NASA points of contact, and then track[s] and record[s] NASA's response, as well as the resulting FCC action"²¹³ The FAA—and all IRAC member agencies for that matter—would do well to adopt a similar system.

V. RECOMMENDATIONS AND CONCLUSION

Overlapping agency authority requires that agencies coordinate with each other, but coordination is a difficult business. The federal bureaucracy can often be factious, with agencies challenging each other's authority and exercising their own authority in controversial ways.²¹⁴ Dealing with a similar problem, James Madison proposed two solutions in Federalist No. 10: "There are two methods of curing the mischiefs of faction: The one, by removing its causes; the other, by controlling its effects."²¹⁵ That is essentially the choice to be made here: remove the causes of factious agencies by consolidating power in a single agency, or control its effects by promoting greater inter-agency coordination.

In the spectrum context, both consolidation and coordination are warranted, and the following three recommendations include elements of both.

²¹⁰ *Id.*

²¹¹ U.S. GOV'T ACCOUNTABILITY OFF., GAO-21-474, *supra* note 114, at 26–27.

²¹² *Id.* at 30–31.

²¹³ *Id.* at 31.

²¹⁴ See, e.g., *Controlling the Bureaucracy*, AMER. GOV., <https://courses.lumenlearning.com/atd-monroecc-american-government/chapter/controlling-the-bureaucracy/> [<https://perma.cc/8LZS-3M9P>].

²¹⁵ THE FEDERALIST NO. 10 (James Madison).

First, the FCC and NTIA should be consolidated into a “New FCC.”²¹⁶ As things stand now, the NTIA acts as a middleman between federal spectrum users and the federal agency in charge of allocating spectrum.²¹⁷ The problems with this structure were made clear during the 5G rollout in the NTIA’s failure to pass along the FAA’s concerns to the FCC.²¹⁸ Merging the NTIA and FCC would get rid of this middleman problem, making it easier for spectrum users to share their concerns with spectrum decision-makers. And since the NTIA and FCC’s field of expertise is substantially the same (spectrum policy), merging the two has the potential to eliminate redundancy and cut costs. The main difficulty with merging the FCC and NTIA is that it may not be politically feasible.²¹⁹ It is difficult to put the genie back in the bottle, so to speak, and eliminate agencies once they have been created. Consolidation has rarely been achieved, and when it has, highly unusual factors were at work.²²⁰ Still, putting aside its feasibility, some level of consolidation is warranted in the world of spectrum policy.

Second, the New FCC should create and sign memorandums of understanding with the FAA and other IRAC member agencies outlining procedures for handling interference issues. Most importantly, this MOU should address proper procedures and methodologies for conducting spectrum interference studies. For example, the MOU should address the dividing line between acceptable levels of interference and so-called harmful interference. The lack of such procedures during the 5G rollout was one of the primary reasons the FCC and FAA could not resolve their dispute.²²¹ Without guidance on what constitutes an

²¹⁶ William E. Kennard, *A New FCC for the 21st Century*, FCC (Aug. 1999), https://transition.fcc.gov/Bureaus/Miscellaneous/News_Releases/1999/draft_strategic_plan.pdf [<https://perma.cc/9LJN-Z6DN>].

²¹⁷ See Elkind, *supra* note 9.

²¹⁸ See *id.*

²¹⁹ See Freeman, *supra* note 119, at 1152.

²²⁰ See *id.* (“The most significant government reorganization of the last fifty years occurred after the September 11, 2001, terrorist attacks, when Congress opted to combine scores of agencies into DHS, a new mega-agency. This combination seemed politically possible only because of the sense of national emergency at the time. In normal circumstances, it is politically costly to embark on a reorganization that might lead congressional committees to lose oversight jurisdiction, create conflicts among congressional committees, provoke a backlash from agencies and their constituencies, and necessitate costly new appropriations.”).

²²¹ Kristian Stout, *The FAA’s Challenge to 5G is a Regulatory Power Grab*, THE HILL (Jan. 4, 2022, 4:00 PM), <https://thehill.com/blogs/congress-blog/technology/>

acceptable interference study, agencies are able to cite contradictory studies and have no way of resolving this contradiction. Providing this guidance in an MOU is therefore crucial.

Third and finally, the FAA and other IRAC member agencies should update their internal procedures to ensure that comments are timely provided to the New FCC before spectrum is reallocated via the rulemaking process. During the 5G rollout, the FAA failed to provide comments on the FCC's proposal to auction off C-band spectrum before that decision was made.²²² To prevent this from happening again, the FAA should adopt written procedures to ensure that proposed spectrum allocations are forwarded to the proper internal department at the FAA to be reviewed for potential interference concerns.

An overhaul of the United States' spectrum management—including both consolidation and coordination—is needed to prevent agency turf wars like the 5G rollout debacle from repeating themselves.

588216-the-faas-challenge-to-5g-is-a-regulatory-power-grab/ [https://perma.cc/LT6P-KB3C].

²²² See Elkind, *supra* note 9.