

## ORAL ARGUMENT NOT YET SCHEDULED

No. 20-1190 (consolidated with Nos. 20-1216, 20-1272, 20-1274, 20-1281, 20-1284)

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**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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AT&T SERVICES, INC.,*Petitioner,*

v.

FEDERAL COMMUNICATIONS COMMISSION; UNITED STATES OF AMERICA,

*Respondents.*

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APPLE INC., BROADCOM INC.; CISCO SYSTEMS INC.; GOOGLE LLC;  
HEWLETT PACKARD ENTERPRISE CO.; INTEL CORP.; MICROSOFT CORPORATION;  
NCTA - THE INTERNET & TELEVISION ASSOCIATION; WI-FI ALLIANCE,*Intervenors for Respondent.*

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On Petitions for Review from the Federal Communications Commission

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**INITIAL JOINT REPLY BRIEF OF PETITIONERS**

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Jeffrey S. Cohen  
Mark Reddish  
APCO INTERNATIONAL  
1426 Prince Street  
Alexandria, VA 22314  
(571) 312-4400  
cohenj@apcointl.org  
reddishm@apcointl.org*Counsel for APCO International*

April 2, 2021

Jonathan E. Nuechterlein  
C. Frederick Beckner III  
SIDLEY AUSTIN LLP  
1501 K Street, N.W.  
Washington, D.C. 20005  
(202) 736-8000  
jnuechterlein@sidley.com  
rbeckner@sidley.com*Counsel for AT&T Services, Inc.*

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[Additional Counsel Listed on Inside Cover]

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Rick Kaplan  
Jerianne Timmerman  
NATIONAL ASSOCIATION OF  
BROADCASTERS  
1 M Street, S.E.  
Washington, D.C. 20003  
(202) 429-5430  
rkaplan@nab.org  
jtimmerman@nab.org

*Counsel for National Association of  
Broadcasters*

Craig A. Gilley  
Mitchell Y. Mirviss  
Elizabeth C. Rinehart  
VENABLE LLP  
600 Massachusetts Avenue, N.W.  
Washington, D.C. 20001  
(202) 344-4703  
cagilley@venable.com  
mymirviss@venable.com  
lcrinehart@venable.com

*Counsel for Edison Electric Institute,  
the Utilities Technology Council, the  
National Rural Electric Cooperative  
Association, and the American Public  
Power Association*

Russell P. Hanser  
Ethan D. Jeans  
WILKINSON BARKER KNAUER LLP  
1800 M Street, N.W.  
Suite 800N  
Washington, D.C. 20036  
(202) 383-3408  
rhanser@wbklaw.com  
ejeans@wbklaw.com

Jeffrey S. Lanning  
CENTURYLINK, INC.  
1099 New York Avenue, N.W.  
Suite 250  
Washington, D.C. 20001  
(202) 429-3113  
jeffrey.s.lanning@centurylink.com

*Counsel for CenturyLink, Inc.*

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**GLOSSARY**

<b>APA</b>	Administrative Procedure Act
<b>Broadcast Engineers</b>	Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (also known as EIBASS)
<b>dBm</b>	Decibel milliwatts
<b><i>Draft Order</i></b>	[Draft] Report and Order and Further Notice of Proposed Rulemaking, <i>Unlicensed Use of the 6 GHz Band</i> , FCC-CIRC2004-01, ET Docket No. 18-295 (rel. Apr. 2, 2020)
<b>FCC</b>	Federal Communications Commission
<b>FCC Stay Opp.</b>	FCC Opp. to Stay Mot. of APCO and Edison (D.C. Cir. Sept. 14, 2020), Doc. No. 1861340
<b>GHz</b>	Gigahertz (billion cycles per second)
<b>MHz</b>	Megahertz (million cycles per second)
<b>NAB</b>	National Association of Broadcasters
<b><i>Notice</i></b>	Notice of Proposed Rulemaking, <i>Unlicensed Use of the 6 GHz Band</i> , FCC 18-147, ET Docket No. 18-295 (rel. Oct. 24, 2018)
<b><i>Order</i></b>	Report and Order and Further Notice of Proposed Rulemaking, <i>Unlicensed Use of the 6 GHz Band</i> , FCC 20-51, ET Docket No. 18-295 (rel. Apr. 24, 2020)
<b><i>Public-Safety Petitioner</i></b>	Petitioner Association of Public-Safety Communications Officials (also known as APCO)

## INTRODUCTION AND SUMMARY OF ARGUMENT

In defending the *Order*, the FCC and its supporters mischaracterize the basic choice before the FCC. That choice was not whether to allow unlicensed devices to operate in the 6 GHz band at all, but how to mitigate their interference risks. The FCC never faced up to that choice. For example, it rejected—without explanation—proposals to require Automated Frequency Coordination, a safeguard the FCC itself had called “simple” and “easy to implement” (*Notice* ¶25 (JA\_\_)). This and other failures of reasoned decisionmaking have enormous real-world consequences. Without petitioners’ proposed safeguards, *some* of these billion-odd devices will almost certainly disrupt *some* of the nation’s nearly 100,000 fixed-microwave links essential to public safety communications and critical infrastructure.

The FCC is studiously ambiguous about whether the *Order* even disputes petitioners’ showing on that point (§I). At the stay stage, the FCC represented that the *Order* found “no significant risk” that any of these one-billion devices will cause harmful interference to fixed-microwave links. But the FCC’s brief now appears to abandon that assurance. If so, the *Order* not only violates the Communications Act and its implementing regulations; it also arbitrarily ignores petitioners’ submission that the potentially catastrophic costs of disrupted



microwave links exceed the costs, if any, of requiring safeguards such as Automated Frequency Coordination.

The FCC and intervenors try to distract attention from the FCC's explanatory failures by misrepresenting petitioners' position on two key issues. *First*, we do not argue, as intervenors claim (at 14), "that the Commission may not authorize unlicensed operations in the 6 GHz band if there is *any possibility*, no matter how remote, that any device will cause harmful interference to any fixed-service link at any time." We challenge the *Order* because it is *very likely* to result in harmful interference at unpredictable places and times and because, without explanation, it arbitrarily rejects readily available safeguards.

Like the *Order*, the FCC's brief assumes away, as "worst cases," the very scenarios most likely to cause interference. But worst cases are real cases. As petitioners' studies illustrated, *some* of these billion 6 GHz devices will almost certainly harm *some* microwave links over the coming years. Whether or not such worst-case scenarios constitute a small percentage of total scenarios, their absolute numbers will be unacceptable, and they will endanger public safety and the electric grid. Analogously, no one should allow cars on the road with a brake defect simply because the defect causes brakes to fail only occasionally. Yet that is the logic the FCC has adopted in dismissing real-world scenarios as "worst cases" (§II.A).

*Second*, our challenge is not “to the FCC’s use of probabilistic risk analysis” in general (CableLabs Br. 10), but to the FCC’s reliance on CableLabs’ study in particular. That study is fatally flawed because:

- CableLabs refused to show its work, and thus neither the FCC nor the public knows what CableLabs did to generate its partisan, non-peer-reviewed conclusions.
- Key assumptions that CableLabs *has* revealed were wrong, as the *Order* acknowledges.
- There is no reason to suppose, and every reason to doubt, that CableLabs’ 1500 snapshots in time can support statistically sound inferences about accumulating risks of interference in the coming years.

These flaws violate law or logic and cannot be defended with invocations of “deference” (§II.B).

The FCC also cannot rehabilitate the *Order*’s independently essential but equally arbitrary findings that (1) 5 dBm/MHz is a reasonable power limit simply because it is lower than another limit the FCC itself found too risky (§II.C); (2) consumers will never use these explicitly portable devices outside (§III); and (3) contention-based protocols will somehow avoid, rather than momentarily delay, harmful interference to microwave links (§IV). Similarly, the FCC does not explain how enforcement officials could immediately identify and shut down the *particular* device responsible for suddenly disrupting a microwave link among the *tens of thousands* of other potentially responsible devices in nearby buildings (§V). Finally, the FCC offers no persuasive response to the specific arguments of Public-

Safety Petitioner, Edison, or NAB (§VI). For all these reasons, the *Order* should be vacated and remanded.

## ARGUMENT

### I. THE FCC'S REFUSAL TO CLARIFY WHAT THE *ORDER* FOUND ABOUT INTERFERENCE RISKS HIGHLIGHTS THE *ORDER*'S APA VIOLATIONS.

The FCC's defense of the *Order* rests on a shell game regarding what exactly the *Order* found about interference risks.

In passage after passage, the *Order* asserted that “the risk of harmful interference to incumbent operations [is] insignificant,” *Order* ¶110 (JA\_\_), or words to that effect. *See* Pet. Br. 21 n.9. Under a trivial interpretation, the FCC might have meant only that *any given* unlicensed device, picked at random, is itself unlikely to cause harmful interference at any given moment. That interpretation seems implausible because it would not logically address petitioners' concern that, under the law of large numbers, *some* of these billion-odd devices will likely disrupt *some* microwave links over their operational lifetimes, particularly in the absence of Automated Frequency Coordination.

The cited passages are thus more plausibly construed to find, albeit without any valid basis, that *no* microwave link is likely to suffer harmful interference from any of these devices. In its stay opposition, the FCC confirmed that the *Order*

adopts this aggressively optimistic finding.<sup>1</sup> That position served the FCC's purpose at the time. The FCC was disputing stay movants' argument that the *Order* would violate the Communications Act and cause irreparable harm because *some* of these billion-odd devices would likely cause harmful interference to *some* microwave links. Taking the FCC at its word, our opening merits brief and the balance of this brief explain why the *Order*'s "no significant risk" finding, as optimistically interpreted in the FCC's stay opposition, ignores logic and record evidence.

The FCC now appears to abandon that interpretation, but at its own peril. It asserts (at 31) that our "proffered reading is not what the *Order* held." Although the FCC does not clarify what the *Order* did hold, it implies that the *Order* does not contain the aggressively (and implausibly) optimistic finding the FCC's stay opposition attributed to it. *See* Br. 31-32 & n.9. If so, the FCC does not contest our central claim that, by the law of large numbers, unleashing a billion unlicensed devices is *likely* to disrupt *some* microwave links at unpredictable places and times. The FCC also does not "dispute that interference with any given link could endanger public safety and critical infrastructure." Pet. Br. 20. By abandoning the

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<sup>1</sup> *See* FCC Stay Opp. 23 (defending "the Commission's conclusion that *all* fixed microwave links are protected from harmful interference") (emphasis in original); *id.* at 26 (claiming that the *Order* rejects "the contention that ... even one device" carries "any significant likelihood of causing harmful interference").

optimistic interpretation, the FCC would thus have to concede that unleashing a billion uncontrolled devices will “endanger[] ... safety services” and otherwise cause “harmful interference.” 47 C.F.R. §15.3(m); *see* Pet. Br. 5. Under the FCC’s apparent new reading, therefore, the *Order* would violate the Communications Act and its implementing regulations for the reasons we highlighted in our opening brief (at 18-19), which the FCC nowhere disputes.<sup>2</sup>

Equally important, the FCC’s apparent new reading raises grave policy concerns that the APA would require the FCC to address but that the *Order* completely ignored. *See* Pet. Br. 20-21. For example, if the *Order* will likely result in interrupted fixed-microwave communications at *some* places and times, how often will such interruptions occur? What are the costs of dropped 911 calls, disconnected first-responder communications, and power-grid failures? And on what basis did the FCC refuse to mitigate those costs by requiring all unlicensed 6 GHz devices to use Automated Frequency Coordination, which the FCC itself has called “simple” and “easy to implement” (*Notice* ¶ 25 (JA\_\_))?<sup>3</sup>

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<sup>2</sup> The 2018 legislation cited by the FCC (at 6-7) did not even identify the 6 GHz band as preferred spectrum for new unlicensed uses, let alone direct the FCC to withhold necessary interference safeguards.

<sup>3</sup> *Cf.* Pet. Br. 20 n.7 (noting Public-Safety Petitioner’s position that Automated Frequency Coordination is necessary but not sufficient remedy).

The FCC's refusal to address these basic questions is a textbook APA violation. "When the government regulates in a way that [imperils its citizens'] safety, it owes them reasonable candor. If it provides that, the affected citizens at least know that the government has faced up to the meaning of its choice." *Competitive Enter. Inst. v. NHTSA*, 956 F.2d 321, 327 (D.C. Cir. 1992). But the FCC has refused to face up to the meaning and consequences of its *Order*, both in the *Order* itself and now in its brief.

## **II. THE ORDER'S INTERFERENCE FINDINGS REST ON BASIC LOGIC ERRORS.**

The *Order* is a three-legged stool: it asserts that (1) the power limits for nominally "low-power" devices; (2) the measures to restrict outdoor usage; and (3) the required use of "contention-based" protocols will, *in combination*, prevent any significant likelihood of harmful interference. No one disputes our observation that the *Order* by its terms "depends on the independent efficacy of each requirement; if any fails, the *Order* is invalid." Pet. Br. 17. This Section explains why the first fails—and thus why the *Order* should be vacated even if consumers could be expected to keep all their devices indoors. Sections III and IV then explain that the *Order* is independently invalid because the indoor-only and contention-based-protocol rules will each also be ineffective.

**A. The FCC Assumes Away The Precise Scenarios Where Harmful Interference Is Most Likely By Labeling Them “Worst Cases.”**

All parties concede that the *Order* will unleash approximately one-billion “low-power indoor” devices throughout America, using the same frequency bands as the nation’s nearly 100,000 fixed-microwave links, but without Automated Frequency Coordination safeguards. The FCC stresses that *most* interactions between these billion unlicensed devices and the 100,000 microwave links will be harmless—and ends its analysis there. But that claim, even if true, irrationally ignores the interactions that *will* cause harmful interference.

Assume *arguendo* that 99.9% of the one-billion devices will never operate in scenarios that cause harmful interference. That still leaves the other 0.1%—small as a percentage, but huge in absolute terms: *one million* potentially interfering devices across America. The scenarios involving these one-million devices may not be “representative” of those involving the other 999,000,000 devices, but that is irrelevant if those devices will likely cause harmful interference. For example, some devices will pose severe interference risks because they are placed on windowsills or in structures with thin walls, and their transmissions will thus be subject to far less building loss than average. In those circumstances, one of the *Order*’s central interference “protections”—indoor use—evaporates even if the devices nominally remain inside.

In the *Order* and now in its brief, the FCC dismisses these scenarios as “not representative” or “worst cases.” *See* Br. 18, 37-38, 41, 43-44, 59. But that is not a rational basis for ignoring them. It makes no difference how many scenarios will *not* pose significant interference risks if the FCC’s rules do not prevent the very real and very likely scenarios that *will* disrupt communications essential to public safety and the power grid.

For example, consider the FCC’s response to the three scenarios that CTIA photographed for the record. *See* Pet. Br. 36-37. CTIA’s photos show ordinary frame houses close to, and in direct line-of-sight of, microwave receivers located in residential neighborhoods. The FCC dismisses these examples because they show only “a handful of scenarios.” Br. 41 & n.14. That would not be a basis for allowing harmful interference in these and similar scenarios even if such scenarios were uncommon. But they are *not* uncommon. As CTIA told the FCC, it identified these three scenarios by taking a small sample at random—by pulling “the first 25 entries” in a search for 6 GHz microwave licenses in an official FCC database that contains tens of thousands of such entries. CTIA 1/24/2020 Letter 1 (JA\_\_). By extrapolation, there are likely thousands of microwave receivers subject to the same types of obvious interference risks illustrated in these scenarios.

Similarly, the FCC illogically dismisses the interference risks documented in AT&T’s six real-world case studies on the ground that they “represent ‘worst-case’



scenarios” in which “the unlicensed devices are close to the microwave receivers or have terrain features that place the unlicensed device squarely in the main beam.” Br. 41 (quoting *Order* ¶130 (JA\_\_)). But “worst cases” are real cases. What matters is that they will sometimes occur and interrupt microwave links, not that a larger number of “normal” cases will avoid similar harms.

The FCC commits the same error when defending its manipulation of key inputs in AT&T’s real-world scenarios. The *Order* arbitrarily assumes that all unlicensed devices in such scenarios will always be subject to average “building loss”—*i.e.*, will *always* be operating away from windows and behind thick, signal-attenuating walls. *See* Pet. Br. 29-30. Yet half of these one-billion devices will encounter building loss lower than the average, and some will encounter little or none, as illustrated by the industry-standard distribution curve (*see* Pet. Br. 26). The FCC’s assumption that all these scenarios will feature average building loss thus ignores all cases where building loss is minimal and the devices may as well be operating outside. The FCC should have focused on those cases. Instead, the *Order* arbitrarily assumes them away and, on that basis, concludes that the AT&T study supports the FCC’s sanguine predictions about interference risks. *See* Br. 13 (noting that the FCC affirmatively “relied on a study by petitioner AT&T ... [a]fter substituting” its own inputs for AT&T’s).

The FCC does not defend the *Order*'s use of an average value in manipulating AT&T's study. It responds only that it preferred CableLabs' New York study because that study "analyzed building loss using 'attenuation values drawn from a probability distribution for each access point in the simulation.'" Br. 35. We discuss in Section II.B.2 below why CableLabs' own treatment of that issue was flawed. But for present purposes, the FCC's response is a non-sequitur. The FCC did not use any "probability distribution" when manipulating AT&T's study; it simply plugged in a single average value for building loss across all six real-world scenarios. That undefended misstep undermines both (1) the *Order*'s basis for dismissing *petitioners*' reliance on AT&T's study and (2) the *Order*'s effort to turn the results of AT&T's study against petitioners after arbitrarily changing this input. *See* Pet. Br. 29-30.<sup>4</sup>

As we have explained (Pet. Br. 31), the FCC's use of average values in all scenarios contradicts its traditional attention to deviations from the mean in approving other unlicensed devices. Although the *Order* ignores that contradiction,

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<sup>4</sup> Amicus CableLabs (at 19-21), but not the FCC, cites CableLabs' "Link Study" (distinct from its New York study) to attack AT&T's six real-world scenarios. That "study"—another black-box slide deck—is irrelevant *because the Order does not rely on it*. The FCC instead performed its own analysis of AT&T's scenarios with its own chosen inputs. *See Order* ¶¶127-129 (JA\_\_ - \_\_); *see also id.* ¶126 (JA\_\_ - \_\_) (reciting, without endorsing, what "CableLabs claims" about AT&T's six scenarios); *id.* ¶130 (JA\_\_) (deeming the AT&T study less "persuasive" than CableLabs' New York study).

FCC counsel now offer the post-hoc rationalization that the traditional approach “exaggerate[s] the likelihood of interference.” Br. 37 n.11 (internal quotation marks omitted). But accounting for deviations from the mean *reflects*, rather than “exaggerates,” the likelihood that harmful interference will arise across a very large number of scenarios where, as here, some scenarios will indisputably involve deviations from the mean. Ignoring deviations from the mean, as the FCC has done here, radically underestimates interference risks.

Also unavailing is the FCC’s reliance on two FCC orders using “average values for building loss.” *Id.* The first-cited order post-dates the *Order* under review, cites only the *Order* itself as precedent, and does not acknowledge the contradiction with prior precedent. *Use of the 5.850-5.925 GHz Band*, 35 FCC Rcd. 13440, 13471 ¶74 (2020). Relying on that case to support the *Order* is thus circular.

The second-cited order used an average value for building loss only because it was measuring the aggregate interference potential of multiple devices operating in the same building simultaneously. *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, 17 FCC Rcd. 7435, ¶87 (2002) (“*Ultra-Wideband Order*”). That approach might make sense in that context but makes no sense here, where the concern relates to the *individual* interference potential of *each* of many devices with materially disparate attributes. By analogy,

if the question is how much 100 random people weigh in the aggregate, it may be reasonable to estimate by taking the average human weight and multiplying by 100. But it is irrational to assume an average weight for everyone if the question is how likely it is that *at least one* of those 100 people weighs more than 200 pounds.

The FCC likewise ignored deviations from the mean when manipulating another critical variable in AT&T's scenarios: clutter loss. AT&T submitted photographs of real-world cases where clutter loss will be zero because no hills or other objects ("clutter") will stand between (1) victim microwave receivers and (2) buildings housing unlicensed devices. *See* Pet. Br. 33-34. Yet the *Order* assumes that new objects will magically materialize between the unlicensed device and victim receiver and cut the transmitter's signal strength to 1/70th of the power level it otherwise would have had when it reached the receiver. *See* Pet. Br. 34 & n.18. The FCC defends that input flaw by citing a different passage of the *Order* relating to signal-propagation models. Br. 40 (citing *Order* ¶67 (JA\_\_)). But that passage asserts only that some clutter loss should be assumed for transmissions over long distances "where clutter and terrain data *are not known.*" *Id.* (emphasis added). Here, "clutter and terrain data" *are* known, and they are zero.

The FCC does not dispute that using zero clutter loss places the relevant AT&T scenarios dangerously above the FCC's own harmful-interference

benchmark. *See* Pet. Br. 34 & n.19.<sup>5</sup> The FCC asserts once more (at 41) that it can ignore such “worst-case” scenarios. But these are real cases—the photographs do not lie—and similar cases will proliferate in a landscape populated by a billion devices. The FCC had no rational basis for assuming them away.

**B. CableLabs’ New York Study Provides No Basis For Ignoring The Accumulating Risks That One Billion Devices Pose To 100,000 Microwave Links Over A Multiyear Time Span.**

**1. *The FCC’s Singular Reliance On CableLabs’ Black-Box PowerPoint Violates ARRL.***

The *Order* relies overwhelmingly on CableLabs’ New York study for the proposition that releasing a billion unlicensed devices into the wild is unlikely to cause harmful interference to America’s critical fixed-microwave infrastructure. As discussed below, what little we know about the study undermines any basis for relying on it. Equally important, however, is what we *don’t* know about the study, such as where in New York’s five boroughs CableLabs modeled unlicensed 6 GHz devices and where in Manhattan it located the lone microwave tower. *See* Pet. Br. 40-44. As we have explained, this Court’s decision in *American Radio Relay League, Inc. v. FCC*, 524 F.3d 227, 236-37 (D.C. Cir. 2008) (“*ARRL*”), forecloses

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<sup>5</sup> Intervenors assert (at 19) that signals can sometimes exceed the FCC’s benchmark without causing harmful interference. That is irrelevant because the FCC chose that benchmark as its only proxy for judging unacceptable threats of interference. The *Order*’s validity thus depends on whether the FCC reasonably concluded that these devices will not result in values exceeding that threshold. *See* Pet. Br. 29 n.14.

the FCC from placing central reliance on the results of a study that the public cannot vet. *See id.* Indeed, application of that principle follows *a fortiori* from *ARRL* because the *ARRL* studies, at least, were conducted by the Commission's staff rather than an interested third-party advocate. *See id.* at 237.

In the *Order*, the FCC ignored petitioners' arguments on this point. The FCC now tries to distinguish *ARRL* on the ground that, in that case, "parts of individual pages [in the FCC staff reports] had been redacted" of certain "scientific data" before the FCC made the reports public. Br. 48-49. But that distinction cuts *against* the FCC because there, at least, the FCC had access to its own redacted material. Here, CableLabs "redacted" critical information by withholding it from everyone, including the FCC.

The FCC (at 46) also cites *Coalition of Battery Recyclers Ass'n v. EPA*, 604 F.3d 613 (D.C. Cir. 2010), and *American Trucking Ass'ns v. EPA*, 283 F.3d 355, 372 (D.C. Cir. 2002), for the notion that agencies may rely on cursory advocacy filed by industry partisans who claim to have performed a "study" but refuse to release critical details. Those cases hold nothing of the kind. In both, EPA relied on *peer-reviewed* articles published in respected journals. *See, e.g., Am. Trucking*, 283 F.3d at 372 (finding it significant that petitioners had "[c]laim[ed] neither that they were unable to obtain the studies [on which EPA relied], nor that the studies were improperly published or peer reviewed"). The CableLabs study bears no

resemblance to those articles. CableLabs—which appeared before the FCC not as a neutral researcher, but as an industry lobbyist—did not submit a “study” in any conventional sense, but a 20-slide PowerPoint deck with conclusory talking points. *See* JA\_\_ - \_\_. And that deck was accompanied by no research paper, let alone by a published, peer-reviewed article.

If the FCC may rely conclusively on that submission as “the best evidence in the record,” *Order* ¶120 (JA\_\_), it or any other agency may evade basic principles of administrative accountability when resolving empirical disputes. Any agency could simply elicit, from its preferred industry faction, an opaque slide deck with high-level conclusions about a “study” while denying everyone else an opportunity to vet it. That is not the law: it is “a fairly obvious proposition that studies upon which an agency relies in promulgating a rule must be made available during the rulemaking” with sufficient granularity to allow for “meaningful commentary” and a “genuine interchange” of views. *ARRL*, 524 F.3d at 236-37.

The CableLabs Study fails that test, as discussed in our opening brief (at 40-44). For example, we do not know the locations of the 800,000 unlicensed devices and lone microwave tower that CableLabs modeled. CableLabs claimed to have located the tower “in Manhattan” and the devices “across the NYC market.” 12/20/2019 PowerPoint 17-18 (JA\_\_ - \_\_). But “NYC” encompasses five boroughs and more than 300 square miles. For all we know, CableLabs modeled the vast

majority of its 800,000 devices in locations calculated to avoid interference concerns, such as behind the modeled receiver dish in Manhattan and in far-flung neighborhoods of Queens, Brooklyn, Staten Island, and the Bronx. If so, the study grossly understates the probability of interference. *See* Pet. Br. 42. But as with other details of this “study,” we can only speculate because CableLabs refused to show its work.

**2. *What We Do Know About The CableLabs Study Discredits It.***

Concerns about the *unknown* features of the CableLabs study are particularly troubling because what we *do* know reveals inexplicable sloppiness. Pet. Br. 45-47.

For example, even the *Order* acknowledges (§122 (JA \_\_)) that CableLabs had no defensible basis for ignoring cases where building loss is lowest and interference risks greatest. This building-loss error was highly material; even standing alone, it forecloses reliance on CableLabs’ results. Pet. Br. 46-47. The *Order* addresses that concern in a single incoherent footnote, stating that “[t]here are many probabilistic factors that must be considered” besides building loss and that “several, if not all, of these factors must all tend towards worst-case situations” for a 6 GHz device to harm fixed-microwave links. *Order* §122 n.317 (JA \_\_). Again, those factors *will* all tend towards “worst-case situations” on occasion, and the point of any Monte Carlo analysis is to assess how often they do. *See* Pet. Br. 46. If low-building-loss cases are less frequent than cases with average building



loss, they should be modeled as such. They should not be ignored entirely, as CableLabs did here, assuming away the very cases showing the greatest likelihood of harmful interference.

The FCC has no meaningful response; it simply requotes the footnote we have already shown to be vacuous. *See* Br. 37-38. The FCC has nothing more to say because it *cannot possibly know* how material CableLabs' building-loss error was. It could not rerun CableLabs' model to correct for the error because, like the public, it lacks access to the CableLabs model—illustrating again why fidelity to *ARRL*'s transparency principle is critical to reasoned decisionmaking.

**3. *The FCC Does Not Explain How CableLabs' 1500 Snapshots Can Support Statistically Valid Conclusions About Accumulating Risks Over Time.***

Apart from CableLabs' input errors, the FCC had no logical basis for concluding that CableLabs' 1500 instantaneous snapshots in time can support statistically valid conclusions about accumulating risks over time. *See* Pet. Br. 47-49. Our opening brief illustrated this point with a traffic analogy, in which a consultant devises a Monte Carlo simulation to determine whether increasing a city's speed limit from 20 to 45 would result in more pedestrian accidents. We showed that the consultant could easily model 1500 snapshots of cars and pedestrians on the city's streets without capturing a single accident *even if the new speed limit would almost certainly result in increased accidents over time. Id.* at

48-49. We explained that CableLabs’ study suffers from the same flaw, that 1500 “iterations” cannot support statistically sound conclusions about accumulating interference risks, and that the FCC arbitrarily ignored petitioners’ arguments about statistical sufficiency below. *Id.*; AT&T 4/16/2020 Letter 3-8 (JA\_\_ - \_\_).

Tellingly, the FCC and its supporters do not mention this analogy. In fact, there is no way to distinguish it—and no way to defend this fatal flaw at the heart of the CableLabs study.

To recap, CableLabs claims to have taken 1500 snapshots in time (“iterations”) of 800,000 hypothetical devices dispersed throughout New York City.<sup>6</sup> Each snapshot purportedly captured the state of each device at each of 1500 instants, based on probability distributions for variables relevant to the device’s potential for interfering with the microwave receiver. Two critical variables, among others, are a device’s “activity factor” (*i.e.*, what percentage of the time it is

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<sup>6</sup> Our opening brief assumed (at 47) that “iteration” means “snapshot in time” but noted (at 43-44) that CableLabs had not defined the term. The FCC has now agreed that “each iteration is a snapshot in time.” Br. 50; *accord* CableLabs Br. 25. That agreement moots the FCC’s narrow and now-irrelevant allegation that we are “preclud[ed]” from complaining that CableLabs “did not define the term ‘iteration’” below. Br. 49-50. The FCC does *not* allege that we inadequately preserved our *substantive* argument—that 1500 snapshots in time are insufficient to support statistically valid conclusions. We presented that argument in detail before the *Order* was issued. *See* AT&T 4/16/2020 Letter 3-8 (JA\_\_ - \_\_). Amicus CableLabs’ claim (at 25) that “this argument was not raised until October 13, 2020” is thus false, which is presumably why the FCC does not make it.

on rather than off) and its likelihood of “co-channel operation” on the same frequencies as the microwave link.

CableLabs used an activity factor of 0.4%.<sup>7</sup> This means that, during each of its 1500 snapshots in time, CableLabs assumed that on average *796,800 of its modeled 800,000 devices would be off*. CableLabs further assumed that only a small fraction of the remaining 3200 devices would be transmitting at any given instant on the same 6 GHz channel as the microwave link. Although CableLabs did not specify the value it used for co-channel operation, the *Order* endorses a figure of 6.25% for a typical device.

The mathematical implications of these assumptions are straightforward and striking. In each of CableLabs’ 1500 snapshots in time, the model assumed that on average *799,800* of the 800,000 modeled devices ( $800,000 \times 0.004 \times 0.0625$ ) would be either (1) off altogether or (2) if on, using a channel different from the victim receiver’s. But the issue before the FCC was not the probability of interference when a device is not transmitting or is not co-channel. The issue was the probability of interference when a device *is* transmitting co-channel, as these

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<sup>7</sup> Our discussion in this subsection assumes that 0.4% figure *arguendo*. We have separately explained, however, that this figure is implausible and that the FCC acted arbitrarily in accepting it: CableLabs simply borrowed the number from intervenor Broadcom, which never disclosed its data. Pet. Br. 42-43. The FCC (at 43-44) has no response; it simply accepts CableLabs/Broadcom’s numbers at face value and never answers why it deemed them reliable.

devices will do innumerable times over their expected lives. *See* Pet. Br. 38-39, 47-49.

The CableLabs study simply wished away the interference potential of most of its modeled devices by assuming that they would almost always be off (or off-channel) and taking only 1500 snapshots of them at discrete instants in time.<sup>8</sup> But those 1500 instants constitute only a statistically insignificant percentage of the *countless* instants in which unlicensed devices will be operating over the coming years. *Some* of those devices will inevitably cause harmful interference during those countless instants.

More to the point, the FCC (1) had no basis for assuming that CableLabs' 1500 snapshots *were* sufficient to support statistically valid conclusions and (2) completely ignored petitioners' detailed critique of the CableLabs study on this issue. *See* AT&T 4/16/2020 Letter 3-8 (JA\_\_ - \_\_). The FCC has no valid response; it asserts only that “[p]etitioners provide no basis for concluding that 1500 iterations is *insufficient*, nor do they suggest how many iterations would, in their view, be necessary.” Br. 51 (emphasis added). That is both false—we have indeed provided a basis for doubting the sufficiency of 1500 iterations—and irrelevant. It

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<sup>8</sup> CableLabs notes (at 25) that its 1500 iterations nominally “generated 1.2 billion access point models” of interactions between the 800,000 devices and the Manhattan microwave link ( $1500 \times 800,000 = 1.2$  billion). But in 1,199,700,000 of those modeled interactions, the relevant devices were either turned off or using a different channel ( $1.2$  billion  $\times$  0.004  $\times$  0.0625).

was not *our* burden to specify how many iterations CableLabs should have run of its model, which CableLabs refused to share with anyone, and which suffered from independently fatal defects. It was the *FCC*'s responsibility "'to respond meaningfully' to objections raised by a party" to its proposal to place overwhelming reliance on the CableLabs Study. *PPL Wallingford Energy LLC v. FERC*, 419 F.3d 1194, 1198 (D.C. Cir. 2005). This Court "ha[s] not hesitated to vacate a rule when the agency has not responded to empirical data or to an argument inconsistent with its conclusion." *Comcast Corp. v. FCC*, 579 F.3d 1, 8 (D.C. Cir. 2009). It should not hesitate to do so here.

Finally, to divert attention away from CableLabs, the FCC adds that the *Order* mentions (in a footnote) two unrelated "simulations [that] assumed a large number of devices" but that supposedly found "very little risk of harmful interference": the so-called "RKF report" and another report from Europe. Br. 44-45 (quoting *Order* ¶141 n.373 (JA\_\_ - \_\_)). But the *Order* does not even describe those simulations; indeed, it omits them altogether from the list of seven fixed-microwave studies it does purport to consider. See *Order* ¶¶117-140 (discussing CableLabs/New York, AT&T, CTIA, Southern, Critical Infrastructure, and two studies by Apple/Broadcom) (JA\_\_ - \_\_). The *Order* thus ignores (1) extensive

criticism of the RKF report in the record<sup>9</sup> and (2) AT&T's showing that the European study *supports petitioners' interference concerns* and contradicts the FCC's no-interference conclusions.<sup>10</sup> The FCC cannot predicate its optimistic findings on these studies without answering those basic points. And it did not even try to do so, instead relying almost exclusively on the flawed and largely undefended CableLabs study.

**C. This Court's Precedent Does Not Entitle An Agency To Pick A Standard Simply By Deeming It More "Conservative" Than A Discredited Standard.**

The *Order* ultimately admits that "the presence of [tens of thousands of licensed microwave links] across the U.S. would suggest that some number" of "worst case[]" interference scenarios "would occur" if the power limit were set at 8 dBm/MHz, as the CableLabs study assumed. *Order* ¶132 (JA\_\_). The FCC claimed, however, that it could not "conduct an analysis" of the extent and severity of that interference risk on the existing record. *Id.* Instead of augmenting the record or mitigating the risk through other means, such as Automated Frequency Coordination, the FCC arbitrarily chose a 5 dBm/MHz limit. But it identified no

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<sup>9</sup> *E.g.*, NAB Comments 5 (JA\_\_) ("the study is based on a flawed statistical analysis" that, *inter alia*, "relies on average values for many parameters, much like the statistician who drowns crossing a river with an average depth of two feet").

<sup>10</sup> AT&T 8/2/2019 Letter 2 (JA\_\_ - \_\_) ("The [European study] thus underscores the need to adopt automated frequency coordination ... requirements for *all* devices ... introduced into any portion of the 6 GHz band.").

logical reason, let alone an empirical basis, for assuming that lowering the number to 5 will prevent the unacceptable interference risks the FCC acknowledged would arise at 8. Pet. Br. 49-51.

On review, the FCC defends its choice on the ground that courts must defer to whatever number an agency picks within a “zone of reasonableness.” Br. 60. Even if that legal proposition were correct, *but see* Pet. Br. 51, the FCC’s logic is circular because the FCC cites no basis for asserting that its chosen number is within such a zone. We know only that 5 is less than 8—which, on this record, is *outside* the zone of reasonableness. But the FCC offers no reason why 5 is sufficiently low to fall *within* that undefined zone. The FCC’s position implies that any agency may propose an admittedly reckless standard, adopt any less reckless number it likes, and deem the result “reasonable” and indeed “conservative.” FCC Br. 59-60. That argument defies both logic and this Court’s precedent. *See* Pet. Br. 50-51.

### **III. THE FCC’S RATIONALES FOR CONCLUDING THAT CONSUMERS WILL NOT TAKE UNLICENSED 6 GHZ DEVICES OUTSIDE ARE UNSUPPORTED AND IMPLAUSIBLE.**

The prior section explains why the *Order* is invalid even if consumers could always be expected to use unlicensed devices indoors. But the *Order* is independently invalid because consumers will sometimes take these devices outside—as illustrated by the “Google Wifi” ad (CTIA 4/14/2020 Letter 17

(JA\_\_))—and the FCC had no reasoned basis for concluding otherwise. Pet. Br. 51-56.

The FCC responds (at 53) by emphasizing the difficulty of “weatherproofing” these devices for permanent outdoor use. But these access points are *portable*, and many consumers will place them on porches, balconies, and decks for hours at a time.<sup>11</sup> The result will be catastrophic. An access point taken outside will blast a nearby fixed-microwave receiver with transmission power *orders of magnitude* greater than the FCC assumes. *See* Pet. Br. 54.

The FCC does not dispute that point. It claims only that, in two prior orders, it “restricted certain unlicensed devices in other [spectrum] bands to indoor operation without reports of harmful interference.” Br. 53 & n.16. The FCC cites nothing to support that proposition, which in all events compares apples and eggs: the interference concerns in those other bands were radically dissimilar from those here. The cited 1997 *Order* found “that interference from [the relevant unlicensed] devices to [incumbent satellite telephone] operations could potentially occur only as a result of the *cumulative* effect of *many millions* of [such] devices and not by

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<sup>11</sup> *See* Pet. Br. 52-53. The FCC’s brief (at 54 n.17), but not the *Order*, cites an advocacy document by intervenors stating that access points in certain “high-rise buildings” are “installed in such a way” that “moving the access point” would “expose[] a long run of unsightly cable.” That argument is both irrelevant (as *post hoc* rationalization) and meritless: most people do not live in these high-rise buildings.



any single device.” *Unlicensed NII Devices in the 5 GHz Frequency Range*, 12 FCC Rcd. 1576, 1615 ¶95 (1997) (emphases added). The other cited order—the *Ultra-Wideband Order* discussed above (pp. 12-13)—is distinguishable on the same ground.

It may have been reasonable in those orders to suppose that *most* users would keep their unlicensed devices inside, avoiding the *aggregate* interference concerns identified there. Here, however, it takes only a *single* 6 GHz device to bring down a fixed-microwave link. Some consumers will take their 6 GHz access points outside even if most do not, and each will individually endanger fixed-microwave links in the vicinity.

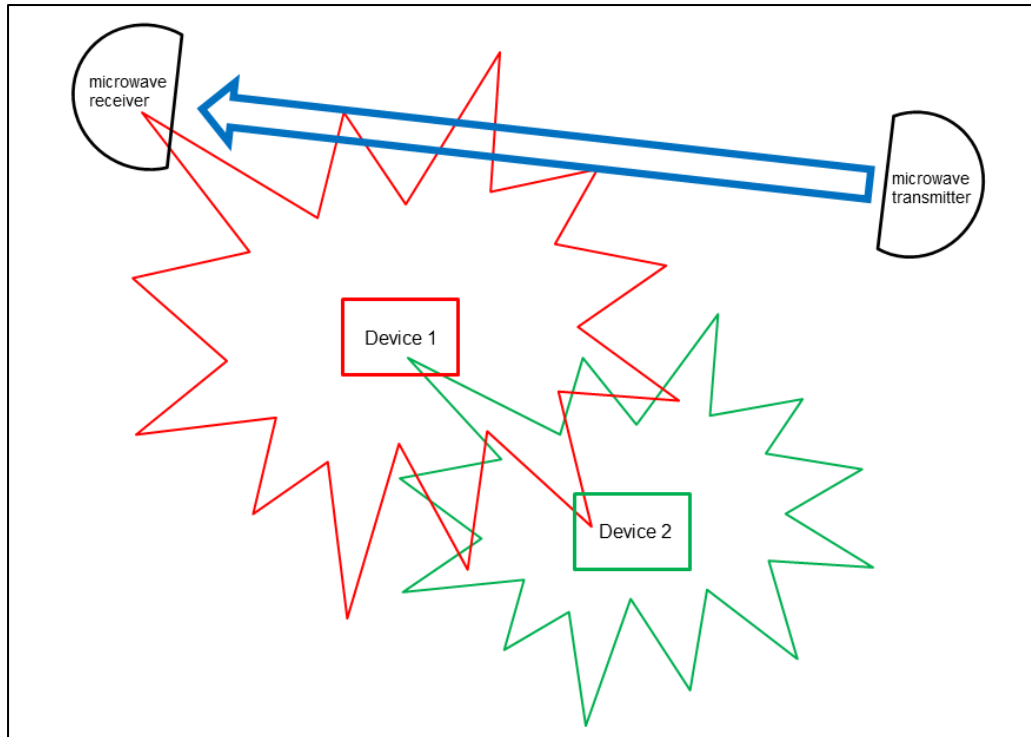
Finally, access points are only part of the problem; each access point will be associated with laptops, phones, and other client devices, which the FCC acknowledges will transmit outdoors using the 6 GHz band. The FCC responds (at 54) that these devices are subject to “much lower permissible power levels” than their associated access points. As we have explained, however, “the increased interference risk associated with taking any client device outdoors will not only offset but completely overwhelm any decreased interference risk associated with those lower power levels,” and “countless client devices will operate outdoors at power levels *more than 25 times greater* than the power levels that the FCC concedes will be felt outdoors from indoor operation of 6 GHz access points

subject to the FCC’s building-loss assumptions.” Pet. Br. 55-56. The FCC and its supporters offer no response.

#### **IV. THE FCC’S RELIANCE ON CONTENTION-BASED PROTOCOLS IS IRRATIONAL.**

The third leg of the *Order*’s three-legged stool (*see* p. 7, *supra*) is the requirement that unlicensed devices use “contention-based protocols.” This requirement, too, will be ineffective for reasons the FCC has never coherently addressed.

Contention-based protocols tell unlicensed devices not to transmit on a given channel if they “hear” another such device using that channel. Devices 1 and 2 in the diagram below transmit in all directions at once, can hear each other, and can thus avoid simultaneous use of the same channel. But Device 1 *cannot* hear the distant fixed-microwave transmitter, which sends a focused point-to-point beam to a microwave receiver. Device 1 will therefore keep transmitting on the same channel used by the microwave link. Pet. Br. 56-57. The problem is that even though Device 1 cannot hear the microwave transmitter, the microwave receiver *can* hear Device 1—and thus suffer harmful interference:



The FCC could have minimized this risk by requiring Automated Frequency Coordination. *See* Pet. Br. 56. Again, however, the FCC inexplicably declined to impose that “simple” and “easy to implement” (*Notice* ¶25 (JA\_\_)) requirement.

The FCC does not deny that unlicensed devices generally cannot “hear” fixed-microwave transmissions. Instead, it merely recites the *Order*’s rationale that contention-based protocols “will still help prevent interference by ensuring that unlicensed devices do not transmit continuously” if they operate near other unlicensed devices. Br. 57 (quoting *Order* ¶141 n.374 (JA\_\_)). That rationale is specious, as our opening brief explains: these devices will interrupt microwave links when they *do* transmit, whether or not they transmit “continuously,” and

contention-based protocols will not reduce overall transmission volumes among neighboring devices. Pet. Br. 57-58. The FCC and its supporters offer no response.

**V. THE FCC OFFERS NO PLAUSIBLE BASIS FOR SPECULATING THAT ENFORCEMENT MEASURES WILL PROTECT MICROWAVE LINKS FROM INTERFERENCE FROM THESE PORTABLE MASS-MARKET DEVICES.**

When some of these billion-odd, portable devices sporadically disrupt some of America's 100,000 microwave links, an affected link operator will not know what is causing the interference, let alone where the interfering device is located. Even the FCC does not contend that it or the operator could immediately identify the source and eliminate the interference. Indeed, the most optimistic timeframe the FCC cites for corrective action is "within a week." Br. 78 n.25. But a week without a mission-critical microwave link is a week with dropped emergency calls or systemic power outages. The damage to life and property within that timeframe can be catastrophic. In all events, even a one-week timeframe is unrealistically optimistic for the pragmatic reasons that we have discussed (Pet. Br. 74-76) and that the FCC ignores.

Instead, the FCC recites the *Order*'s unsupported assertion that "instances of harmful interference" in the two preexisting Wi-Fi bands (2.4 and 5 GHz) "have been effectively identified and addressed." Br. 77 (quoting *Order* ¶147 (JA\_\_\_)). But neither the *Order* nor the FCC's brief substantiates that bald assertion. In fact,

experience with those bands undercuts the FCC's argument, as our opening brief explains (at 70-71).

As to the 2.4 GHz band, NAB submitted, and the *Order* ignores, extensive evidence that the FCC's enforcement efforts have amounted to a futile game of whack-a-mole and that repeated interference has made the band partially unusable for licensees. *See* Pet. Br. 70; §VI.C, *infra*. And as to the 5 GHz band, the comparison is, again, apples to eggs. The potential victim receivers in that band are primarily weather-radar systems. Unlike microwave links, radar systems transmit omnidirectionally, and unlicensed devices can readily "hear" them. The FCC thus did there what it cannot do here: rely on a sensing mechanism within unlicensed devices that "detects the presence" of an incumbent licensee's signals "and dynamically guides [an unlicensed] transmitter" to avoid using the same channel.<sup>12</sup>

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<sup>12</sup> *Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, 29 FCC Rcd. 4127 ¶11 n.14 (2014). Also, because radar systems are designed to *locate objects*, their operators can more readily identify the locations of interfering devices. *See, e.g.,* Frank Sanders *et al.*, U.S. Dep't of Commerce, *Analysis and Resolution of RF Interference to Radars* 3-5 (Oct. 2012), [https://www.ntia.doc.gov/files/ntia/publications/13-490\\_1\\_.pdf](https://www.ntia.doc.gov/files/ntia/publications/13-490_1_.pdf) (identifying interfering devices along radial lines).

## VI. ARGUMENTS OF INDIVIDUAL PETITIONERS.

### A. Public-Safety Petitioner: The FCC Failed To Consider Public Safety.<sup>13</sup>

The FCC does not contest its statutory duty to consider the *Order*'s impact on public safety. Nor does the FCC dispute that the *Order* failed to conduct a separate analysis of public safety harms or address them in the *Order*'s cost-benefit analysis. *See, e.g.*, Public-Safety Comments 16 (JA \_\_\_).

Instead, the FCC contends its omissions were justified because the *Order*'s generic findings regarding interference to microwave links apply with equal force to public-safety operations. *See* Br. 62. Because the *Order* never found that public-safety entities' concerns were equivalent to those of other incumbents, nor that evaluating impacts to public-safety entities' communications systems would constitute an analysis of impacts to life and property, this constitutes an impermissible "*post hoc* rationalization." *Mozilla Corp. v. FCC*, 940 F.3d 1, 62 (D.C. Cir. 2019). Moreover, the FCC's rationalization that public-safety systems may require comparable reliability to other systems is irrelevant. Public safety is different because the *harms* are so much more acute, and the FCC has a statutory duty to *separately* consider public safety. *Id.*

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<sup>13</sup> AT&T and CenturyLink do not join Section VI.A.

The FCC claims it need not treat public-safety entities differently. Br. 62 (citing *Ass'n Public-Safety Commc'ns Officials-Int'l v. FCC*, 76 F.3d 395 (D.C. Cir. 1996)). The cited case is inapposite. There, the court concluded the FCC had adequately explained its decision to change a rule affecting public-safety licensees. It did not find that the FCC could satisfy its obligations under the Communications Act by lumping public safety with other entities.

The FCC also argues the *Order* adequately considered public safety by citing some public safety comments. Br. 63-64. Isolated references are not an analysis of the “multi-faceted public safety concerns” involved. *See Mozilla*, 940 F.3d at 63. If the FCC could discharge its statutory duty with ancillary citations, *Mozilla*'s command would be meaningless.

In fact, the FCC ignored basic public safety concerns. *See* Pet. Br. 61. The agency incorrectly suggests it adopted measures, such as geo-location capabilities for standard-power devices, “[c]onsistent with the Public Safety [Petitioner’s] comments.” *See* Br. 63. In fact, Public-Safety Petitioner warned that the geo-location requirements would not provide accurate location information necessary to protect public-safety entities. Public-Safety 4/10/2020 Letter 2 (JA\_\_). Public-Safety Petitioner only supported device-based geo-location capabilities as an *additional* source of location information to augment “professional installation,” a

more effective method of ensuring location accuracy that the *Order* rejected.

*Compare Order* ¶43 (JA \_\_) with Public-Safety Comments 14 (JA \_\_).

The FCC claims Public-Safety Petitioner desires a level of location information that “cannot be attained.” Br. 66. But in other bands that served as models for the 6 GHz Order, 100% of device locations must be reported accurately within 50 meters. *See* 47 C.F.R. §§96.39(a), 15.711(b)(1). Here, the Order allows standard-power devices to be any distance from the reported location if the device reports a potential error radius that is correct 95% of the time. The other 5% of the time, devices could be in an off-limits location that threatens public-safety systems, and Automated Frequency Coordination systems would not know to deny those devices access to the public-safety link’s radio frequency. The *Order* failed to consider the impacts of these interference scenarios.

The FCC disputes that the *Order* strips public-safety entities of protection when operating microwave links with emergency authorization, arguing that protection will occur “shortly” after authorization is granted because entities must file information after receiving telephonic approval. Br. 66. This is another *post hoc* rationalization and an example of the *Order*’s failure to consider public safety. *See* Pet. Br. 65. During disasters, public-safety entities may operate new microwave links for ten days without filing information. 47 C.F.R. §§1.915(b)(1), 1.931(b)(5). Now, for the first time, the FCC acknowledges that the *Order* will



create gaps in which public safety links operating with emergency authority will be entitled to zero protection.

Similarly unpersuasive is the FCC's claim (at 77) that the Enforcement Bureau is capable of policing harmful interference based on experience in the 2.4 and 5 GHz bands. Even if the Enforcement Bureau had a track record of success, *but see* §V, *supra*, those bands do not have public-safety operations. With public safety at stake, FCC staff would need to immediately identify and eliminate interference sources, which is infeasible even if the device is under control of an Automated Frequency Coordination system.

The *Order* fails to consider factors such as how much time will pass while agents investigate and eliminate interference. The FCC attempts to minimize these concerns—another *post hoc* rationalization—with an example where interference was resolved within a week.<sup>14</sup> Even if that case was exemplary, an hour of downtime, let alone a week, is unacceptable for public-safety systems. The FCC's failure to consider the harms that might result constitutes reversible error.

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<sup>14</sup> Br. n.25 (citing *Buzzer Net LLC*, 35 FCC Rcd. 3693 (Enf. Bur. 2020)). There, FCC staff had cautioned the offending party on two prior occasions. Also, the victim of the interference was a large federal agency's system that, unlike public-safety systems, was able to identify the direction interference was coming from. Finally, the device was roof-mounted and therefore more easily identifiable than the numerous 6 GHz consumer devices that will be located inside of homes and businesses.

**B. Edison *et al.*: The FCC Unlawfully Ignored Studies Submitted By Electric Utilities.**

The FCC's *Draft Order* mischaracterized two technical studies that electric utilities had submitted to substantiate interference risks to the power grid. The FCC elicited public comment on the *Draft Order*, and Edison explained why the *Draft Order*'s discussion of these studies was flawed, identifying specific record citations and technical details. *See* Edison *et al.* 4/15/2020 Letter (JA\_\_ - \_\_); Pet. Br. 67-68 (discussing submission).

But in the final *Order*, the FCC, instead of responding, inexplicably replicated the identified flaws from the *Draft Order*. It made no material alterations to the final text as it related to these studies and failed even to acknowledge Edison's objections and rebuttals or explain why they were deemed insufficient.

This is a classic APA violation. The FCC must "respond meaningfully to objections raised by a party" to an agency's proposed course of action. *PPL Wallingford Energy*, 419 F.3d at 1198. By issuing the *Draft Order*, the FCC afforded interested parties the opportunity to comment. We did. But instead of engaging with our objections, the FCC repeated the *Draft Order*'s cursory dismissals and garbled analysis of these studies. This was arbitrary and unlawful.

**C. NAB: The FCC Unreasonably Dismissed Concerns About Interference With Mobile Microwave Links.**

Our opening brief explained (at 69-73) that unlicensed 6 GHz devices will interfere with mobile microwave links. Both in the *Order* and now in its brief, the FCC responds only that a contention-based protocol will adequately address that concern. Br. 71-72. But NAB stressed below that such protocols have failed to protect mobile links in a different spectrum band (2.4 GHz). Pet. Br. 70 (citing submissions). The *Order* arbitrarily ignores that objection.

The FCC does not deny that fact; instead, it tries without success to trivialize NAB's unaddressed objection. First, the FCC asserts (at 73) that NAB merely filed "letters" regarding interference in the 2.4 GHz. But these "letters" were both substantial and indisputably part of the record; indeed, the *Order* relies extensively on such "ex parte" submissions, including the CableLabs study itself. *E.g.*, *Order* ¶113 & n.275 (JA\_\_). In all events, NAB's opening comments themselves explained that, in the 2.4 GHz band, "[t]he ubiquitous and uncoordinated use of [certain] channels by unlicensed Wi-Fi devices, mostly used indoors, has rendered licensed operations [in those channels] practically impossible." NAB Comments 11 (JA\_\_).

The FCC is also wrong to assert (at 73) that the Broadcast Engineers' evidence of widespread interference problems, on which NAB relied in part, was limited to outdoor receivers in Phoenix. In fact, the Broadcast Engineers'

comments (at 8) cited the Phoenix experience as an “example” but more broadly observed that the interference problem is “so well known to the broadcast industry” that “itinerant broadcasters regularly request” to use channels not degraded by Wi-Fi transmissions. (JA \_\_). With respect to the Phoenix market in particular, the Engineers submitted detailed information documenting the problem, which the *Order* entirely ignored. And the FCC flatly mischaracterizes the record when it claims (at 72-73) that the Broadcast Engineers conceded the efficacy of post-hoc enforcement. In fact, the Engineers explained (Comments 8) that the enforcement actions touted by the FCC “are like turning on the light in a cockroach-infested room: The 2.4 GHz Part 15 ‘cockroaches’ scurry to get out of the light. But they inevitably come back, over time, and the process has to be repeated.” (JA\_\_).

In short, the record included substantial and specific evidence that contention-based protocols have failed to protect licensed operations. It was thus arbitrary and capricious for the FCC to ignore that evidence while relying again on a contention-based protocol for the same purpose.

### **CONCLUSION**

The *Order* should be vacated and remanded.

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Jeffrey S. Cohen  
Mark Reddish  
APCO INTERNATIONAL  
1426 Prince Street  
Alexandria, VA 22314  
(571) 312-4400  
cohenj@apcointl.org  
reddishm@apcointl.org

*Counsel for APCO International*

Rick Kaplan  
Jerianne Timmerman  
NATIONAL ASSOCIATION OF  
BROADCASTERS  
1 M Street, S.E.  
Washington, D.C. 20003  
(202) 429-5430  
rkaplan@nab.org  
jtimmerman@nab.org

*Counsel for National Association of  
Broadcasters*

Craig A. Gilley  
Mitchell Y. Mirviss  
Elizabeth C. Rinehart  
VENABLE LLP  
600 Massachusetts Avenue, N.W.  
Washington, D.C. 20001  
(202) 344-4703  
cagilley@venable.com  
mymirviss@venable.com  
lcrinehart@venable.com

*Counsel for Edison Electric Institute, the*

Respectfully submitted,

/s/ Jonathan E. Nuechterlein  
Jonathan E. Nuechterlein  
C. Frederick Beckner III  
SIDLEY AUSTIN LLP  
1501 K Street, N.W.  
Washington, D.C. 20005  
(202) 736-8927  
jnuechterlein@sidley.com  
rbeckner@sidley.com

*Counsel for AT&T Services, Inc.*

Russell P. Hanser  
Ethan D. Jeans  
WILKINSON BARKER KNAUER LLP  
1800 M Street, N.W.  
Suite 800N  
Washington, D.C. 20036  
(202) 383-3408  
rhanser@wbklaw.com  
ejeans@wbklaw.com

Jeffrey S. Lanning  
CENTURYLINK, INC.  
1099 New York Avenue, N.W.  
Suite 250  
Washington, D.C. 20001  
(202) 429-3113  
jeffrey.s.lanning@centurylink.com

*Counsel for CenturyLink, Inc.*

*Utilities Technology Council, the National  
Rural Electric Cooperative Association,  
and the American Public Power  
Association*

**CIRCUIT RULE 32(a)(2) ATTESTATION**

In accordance with D.C. Circuit Rule 32(a)(2), I hereby attest that all other parties on whose behalf this joint brief is submitted concur in its filing.

/s/ Jonathan E. Nuechterlein  
Jonathan E. Nuechterlein

## CERTIFICATE OF COMPLIANCE

This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and type-style requirements of Fed. R. App. P. 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in 14-point Times New Roman font.

This brief complies with the word-count limitation of Fed. R. App. P. 32(e) and this Court's November 23, 2020 scheduling order. This brief contains 8,405 words, not counting the parts excluded by Fed. R. App. P. 32(f) and Circuit Rule 32(e)(1).

/s/ Jonathan E. Nuechterlein  
Jonathan E. Nuechterlein



**CERTIFICATE OF SERVICE**

I hereby certify that, on April 2, 2021, I will cause the foregoing to be electronically filed through this Court's CM/ECF system, which will send a notice of filing to all registered users.

/s/ Jonathan E. Nuechterlein  
Jonathan E. Nuechterlein