ORAL ARGUMENT NOT YET SCHEDULED

No. 20-1190

(consolidated with Nos. 20-1216, 20-1272, 20-1274, 20-1281, 20-1284)

United States Court of Appeals
for the District of Columbia Circuit

AT&T SERVICES, INC.,

Petitioner,

v.

FEDERAL COMMUNICATIONS COMMISSION;
UNITED STATES OF AMERICA,

Respondents.

ON PETITIONS FROM
THE FEDERAL COMMUNICATIONS COMMISSION

BRIEF FOR *AMICI CURIAE* PUBLIC KNOWLEDGE, OPEN TECHNOLOGY INSTITUTE AT NEW AMERICA FOUNDATION, AND BENTON FOUNDATION IN SUPPORT OF RESPONDENTS

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February 23, 2021

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Fed. R. App. P. 26.1, *amici curiae* Public Knowledge and Benton Foundation state that they have no parent corporation, and that no publicly held corporation holds 10% or more of their stock.

INTEREST OF THE AMICI CURIAE

Public Knowledge is a non-profit dedicated to promoting ubiquitous, affordable universal access to the tools of communication, and to creative works. As part of this mission, Public Knowledge advocates for wireless policies that promote competition and the public interest.

Benton, a non-profit, operating foundation, believes that communication policy – rooted in the values of access, equity, and diversity - has the power to deliver new opportunities and strengthen communities to bridge our divides. Our goal is to bring open, affordable, high-capacity and competitive broadband to all people in the U.S. to ensure a thriving democracy. These comments reflect the institutional view of the Benton Institute for Broadband & Society, and, unless obvious from the text, is not intended to reflect the views of its individual officers, directors, or advisors.

The Open Technology Institute at New America Works at the intersection of technology and policy to ensure that every community has access to digital technology and its benefits.

RULE 29 STATEMENTS

This brief is filed with the consent of all parties. Pursuant to Fed. R. App. P. 29(c)(5), *amicus* states that no party or party's counsel authored this brief in whole or in part, and that no party or party's counsel contributed money that was intended to fund preparing or submitting this brief. No other entity contributed funds intended to be used in preparing this brief.

February 23, 2021

Respectfully submitted,
/s/ Harold Feld

TABLE OF AUTHORITIES

Jon Brodkin, "Broadband Power Users Explode, Making Data Caps More Profitable for ISPs," Ars Technica (November 13, 2020)

Bevin Fletcher, "Samsung VP: Wi-Fi 6e an 'Entirely New Canvas,'" Fierce Wireless (February 10, 2021)

GLOSSARY OF ABBREVIATIONS

ARGUMENT

Congress created the Federal Radio Commission in 1927, and merged it with the newly created Federal Communications Commission (FCC) in 1934. Congress intended "to maintain, through appropriate administrative control, a grip on the dynamic aspects of radio transmission." *FCC v. Pottsville Broadcasting Co.*, 309 U.S. 134, 138 (1940). Among the original and most significant responsibilities given by Congress to the FCC is "to study new uses of radio . . . and generally encourage the larger and more effective use of radio." 47 U.S.C. § 303(g). The FCC's willingness to reexamine pre-existing spectrum allocations – always over the objections of incumbents claiming that these changes would create harmful interference and wreak havoc on existing technologies – has produced innumerable innovations that have vastly improved our lives, enhanced our economy, and maintained U.S. dominance in wireless innovation.[1]

[1] *See, e.g.,* Raul Katz, "A 2017 Assessment of the Current and Future Economic Value of Unlicensed Spectrum in the United States," Telecom Advisory Services, LLC (April 2018). Available at: http://wififorward.org/wp-

One of the most important innovations by the FCC was authorization of low-power spectrum access pursuant to Part 15 of the Commission's rules. Colloquially referred to as "unlicensed" spectrum in contrast to spectrum access requiring an explicit licensed or license by rule, unlicensed spectrum has become the primary way by which consumers access the internet in their home – connecting devices through protocols such as Wi-Fi and Bluetooth.[2] Many devices no longer have ethernet jacks or other means to physically connect to modems or routers, relying entirely on unlicensed spectrum to connect. Machine-2-machine uses, also referred to as the "internet of things" (IoT), have skyrocketed within the home as consumers use devices such as Amazon's Alexa to provide an increasing range of "smart home" functions ranging from home security to energy efficiency.

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content/uploads/2018/06/WFF_Katz_Economic_Report_2018.pdf ; Kenneth R. Carter, *et al.*, *Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues*, OSP working Paper 39, FCC (2003).

[2] Wi-Fi alone carries over 50% of all internet traffic in the United States since 2017. *See* Cisco Annual Internet Report (2018-2023) (updated March 9, 2020). Available at: https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html (last access February 23, 2021).

The utility of indoor Wi-Fi, as with the utility of the internet generally, extends into all areas of life. This includes into the fields of medicine, public safety, and education.[3] Wi-Fi enables medical professionals to monitor patients wearing sensors that track temperature, heart rate and other vital signs. It enables multiple students in the home ranging from pre-schoolers to graduate students to simultaneously access their own lesson plans and classes on their separate devices. It has proven a literal life-saver during the Covid Pandemic lockdowns, permitting entire families to work and learn remotely from anywhere in their home on any device they choose.

As the FCC observed in the *Order*, the "phenomenal" growth of unlicensed spectrum has created increasing demand. [4] The current allocations of unlicensed spectrum usable for consumer devices – especially for indoor uses in the home -- have become increasingly congested. This trend has been accelerated by the Covid pandemic, which has forced

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[3] *See*, *e.g.,* Wi-Fi Forward, "Connecting You to Better Health," (2020). Available at: http://wififorward.org/wp-content/uploads/2019/09/Wi-Fi-Healthcare.pdf

[4] *Unlicensed Use of 6 GHz Band; Expanding Flexible Use in Midband Spectrum Between 3.7 GHz & 24 GHz*, 35 FCC Rcd 3852, 3854 (2020). ("Order").

significant educational and work activity to take place remotely.[5] Additionally, as homes upgrade to faster connections to handle the load, Wi-Fi must handle faster speeds. This requires the use of new Wi-Fi protocols that require larger channels than existing allocations made over the last 4 decades can support. The FCC's *Order* provides critical unlicensed spectrum access for these devices. Thanks to the FCC's carefully balanced 6 GHz *Order*, the Wi-Fi Alliance, one of the important standards bodies in the Wi-Fi ecosystem [cite], has certified a new standard specifically to take advantage of the newly available spectrum on a non-interfering basis. This standard, "Wi-Fi 6e," will allow devices to operate at gigabit speed – many times faster than previously available Wi-Fi.[6]

As discussed below, the FCC properly balanced the interests of existing licensed incumbents with its multiple mandates from

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[5] *See* Jon Brodkin, "Broadband Power Users Explode, Making Data Caps More Profitable for ISPs," Ars Technica (November 13, 2020). Available at: https://arstechnica.com/tech-policy/2020/11/broadband-power-users-explode-making-data-caps-more-profitable-for-isps/

[6] *See* Nicholas de Leon, "How to Upgrade Your Wi-Fi Network in 2021,"Consumer Reports (February 6, 2021). Available at: https://www.consumerreports.org/wireless-networking/how-to-upgrade-your-wifi-network/

Congress. These mandates include the general obligations to provide "to all people of the United States . . . a rapid, efficient Nation-wide and world-wide communication service," 47 U.S.C. § 151, and to "encourage the larger and more effective use of radio in the public interest," 47 U.S.C. § 303(g), as well as the specific Congressional mandate that the FCC identify 100 MHz of new spectrum to allocate for unlicensed use by December 31, 2022.[7] The new devices and services supported by the FCC's opening approximately 1,200 MHz of contiguous spectrum for in-door use will provide tremendous benefit to the American people – without causing harmful interference to incumbent licensed services. These benefits include sufficient bandwidth to support multiple students engaged in remote learning, multiple adults working in the home, and to relieve congestion in densely populated areas. The speed with which manufacturers are certifying and bringing Wi-Fi 6e devices

[7] RAY BAUM'S Act, Pub. L. No. 115-141 (2018) (Codified at 47 U.S.C. § 1508).

to market validates the FCC's expert judgment that the public interest is best served by the rules adopted in the *Order*.[8]

Most importantly, *Amici* emphasize that the devices and services enabled via the *Order* as much a part of public safety use as microwave links used by Petitioners APCO and other electric and telephone utilities. The additional bandwidth supported by the FCC's new allocation will continue to facilitate the dramatic growth of telemedicine. The speeds enabled by the newly supported channel sizes make it possible for wearable devices and diagnostic tools operating in the home or institutional settings to provide life-saving medical information to medical professionals in real time. Home security devices will use the newly available bandwidth to provide high-resolution video to assist first responders.

[8] *See* "How to Upgrade Your Wi-Fi," *supra* n.6. *See also* Bevin Fletcher, "Samsung VP: Wi-Fi 6e an 'Entirely New Canvas,'" Fierce Wireless (February 10, 2021).

I. THE FCC HAS A LONG HISTORY OF AUTHORIZING OPERATION OF UNLICENSED DEVICES WITHOUT CREATING HARMFUL INTERFERENCE.

Although the FCC has authorized low-power devices to operate on an unlicensed basis since the 1930s, the history of Part 15 devices as we know them today really begins with the FCC adoption in 1989 of a "comprehensive revision of Part 15."[9] As the FCC explained at the time, the rules it adopted would permit operation on "almost any frequency" – including those with licensed incumbents -- to promote the development of new devices and services to benefit consumers.[10] As the FCC predicted, the *1989 Unlicensed Order* immediately spawned a new industry in beneficial unlicensed devices. Indeed, the benefits of permitting unlicensed operations as an "underlay" (i.e., operating at low-power on a non-interfering basis in the same band as license-protected incumbents) proved so successful that the Commission expanded unlicensed underlay operations to portions of the 5 GHz band less than 10

[9] *Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without Individual Licenses*, 4 FCC Rcd 3493, 3494 (1989) ("*1989 Unlicensed Order*").
[10] *Id.*

years later.[11] This was followed approximately 5 years later by permitting unlicensed ultra-wideband – extremely low-power rapid usage across multiple licensed bands simultaneously.[12]

The FCC's 30 years history of managing unlicensed spectrum access has produced rich rewards for the American people. Studies have shown that unlicensed spectrum contributes nearly $500 billion to the economy as a whole.[13] In every case, incumbent licensed spectrum users have argued that authorizing expanding unlicensed spectrum access would result in devastating harmful interference to protected services. But these doomsday scenarios have never emerged. To the contrary, licensed services have repeatedly benefitted from the availability of unlicensed spectrum access. To take one example, the mobile wireless industry is estimated to save over $10 billion from "Wi-Fi offload" of traffic from their licensed networks.[14]

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[11] *Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII/Supernet Operations in the 5 GHz Frequency Range,* 12 FCC Rcd 1576 (1997)
[12] *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, 17 FCC Rcd 7435 (2002).
[13] *See* Katz, *supra* n. 1 at v.
[14] *Id.* at 23-24.

As the FCC noted both in the *Order* and in its brief, the FCC does not say that no incidents of interference – or even no incidents of harmful interference – will occur.[15] This has been the consistent position of the FCC since 1989. As the FCC explained when authorizing the Part 15 certification process that has formed the foundation of unlicensed spectrum access:

> The actions being taken in this Report and Order represent the Commission's best judgements as to the trade-offs between beneficial low power spectrum use and possible interference to the authorized radio services. ***We recognize that certain increased risks of interference to authorized devices may result from altering our regulations***. However, the rules we are adopting are intended to ***minimize this interference potential***.[16]

The FCC's more than 30-year history managing unlicensed spectrum under this standard strikes a proper balance among the competing goals given the agency by Congress. The tremendous success of unlicensed spectrum access has not come at the cost of compromising licensed services, as licensees have consistently argued must inevitably occur.

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[15] *Order*, 35 FCC Rcd at 3907; *Brief of Respondent* at 17.
[16] *1989 Unlicensed Order*, 4 FCC Rcd at 3519 (emphasis added).

A. The FCC's 1989 Order Permitted Underlays in Bands Allocated to Licensed Services While Relying on Similar Measures to Discourage Unauthorized Use.

The rules adopted in the *1989 Unlicensed Order* bear considerable resemblance to those adopted here and, despite the fears of licensees, proved more than adequate to prevent harmful interference. There, as here, the FCC relied chiefly on setting power levels designed to avoid interference after taking into account such relevant factors as signal attenuation.[17] The FCC adopted certification rules designed to discourage tampering with devices in ways which would make harmful interference more likely. While acknowledging that it could not prevent all possible modifications of devices, the FCC relied on its enforcement authority and ability to identify devices causing interference to protect licensed services.[18]

The 30-year history of managing unlicensed spectrum access in this manner supports the expert judgment employed by the FCC in the Order under review. During these three decades of staggering growth

[17] *Id.* at 3495, 3500.
[18] *Id.* at 3519.

of wireless services, creating exponentially increasing demand for licensed and unlicensed spectrum access, the FCC has consistently struck the necessary balance between adequately protecting licensed services with "encourag[ing] the larger and more effective use of radio in the public interest." 47 U.S.C. 303(g). As the FCC recognized here and in 1989, that does not entail protecting all licensed users from all possibilities of harmful interference at all times. Rather, it requires a suitable balance that minimizes the likelihood of harmful interference to manageable levels, coupled with the effective enforcement to require unlicensed users to cease operation when harmful interference occurs.

II. THE UNIQUE IMPORTANCE OF THE 6 GHZ ALLOCATION.

As the FCC observed in the Order, the 6 GHz band has unique characteristics that make permitting indoor use across all 1,200 MHz both valuable and timely. It is not simply that, as demand on existing Wi-Fi rises, the existing allocations become increasingly congested. It is also the case that to permit the gigabit throughput enabled by the most recent Wi-Fi protocol requires a minimum channel size of 160

MHz.[19] The most recent international standard for Wi-Fi, 802.11ax (more popularly known as "W-Fi 6") supports multiple 160 MHz channels. Each additional channel of the proper size increases the capacity of the devices connected. So that Wi-Fi 6 is theoretically capable of delivering speeds of over 1 gigabit per second reliably.[20] To further maximize efficiency and speed, these 160 MHz channels must be contiguous with each other.[21] This is why the RAY BAUMS Act requires identifying contiguous spectrum for new unlicensed allocation.

Consumers in the United States have increasingly needed high capacity broadband connections for their home use. This has become especially true during Covid lockdowns, when two-way video chat increasingly substitutes for visits to the doctor, time in the classroom, or coffee with friends. But without access to high-capacity Wi-Fi, the high

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[19] *See Order* at 3888 n. 253.

[20] *See* Ry Crist, "Wi-Fi 6 is the Fastest Standard Yet, Wi-Fi 6e Will Be Even Better," C|Net (September 11, 2020). Available at: https://www.cnet.com/how-to/wi-fi-6-is-the-fastest-yet-but-wi-fi-6e-will-be-even-better-6-ghz/

[21] *See* Harold Feld, "Auctioning a Chunk of 6 GHz Would Be Phenomenally Bad Policy," Wetmachine (March 4, 2020). Available at: https://wetmachine.com/tales-of-the-sausage-factory/auctioning-a-chunk-of-6-ghz-would-be-phenomenally-bad-policy/

capacity wire into the home is meaningless. A consumer who purchases a gigabit connection to support telemedicine or distance learning finds that speed effectively throttled by slow Wi-Fi incapable of supporting anything close to the speeds available from fiber or cable providers.

Prior to the FCC allocation in the Order under review, the United States had no spectrum allocation suitable for contiguous 160 MHz channels. The FCC allocation permits 7 160 MHz channels (which can be further divided into 14 80 MHz channels when warranted). This Thanks to the FCC's action in the Order under review, consumers now have available to them devices capable of providing Wi-Fi connections as fast as the wireline broadband to which they subscribe. Indeed, demand for this next generation Wi-Fi is so great that industry-standards body Wi-Fi Alliance approved a specific version of Wi-Fi 6 for use on the 6 GHz band: Wi-Fi 6e.[22] Within 7 months of the FCC adoption of the Order, the first Wi-Fi 6e equipment was certified. Today, many new routers and devices offer Wi-Fi 6e, with more being approved and offered every month.[23] This rate of uptake is practically unprecedented

[22] Crist *supra* n. 19.
[23] "How to Upgrade Your Wi-Fi," *supra* n.6.

in the wireless world, and speaks to the enormous consumer need for high capacity Wi-Fi made possible by the FCC's 6 GHz Order.

III. UNLICENED ACCESS IS AN INCREASINGLY IMPORTANT COMPONENT OF DELIVERING LIFE SAVING SERVICES AND PROTECTING PUBLIC SAFETY.

Petitioners stress the public safety aspect of their licensed services and argue to the court that the FCC has a responsibility to consider the impact of its decisions on public safety. As an intial matter, as Respondent FCC argues, the Commission did consider the potential impact on public safety. The FCC found that because the rules adopted provide adequate protection for these services, its decision would not have any deleterious impact on the delivery of utility services necessary for protection of life and safety. Petitioners cannot credibly claim that the FCC failed to consider the impact on public safety simply because the Petitioners disagree with the conclusion the FCC reached.

Furthermore, Petitioners ignore the important contributions opening the 6 GHz band to indoor unlicensed use makes to public safety. As an initial matter, helping Americans cope with the ongoing

Covid-induced lockdowns contributes substantially to public safety. But the contributions do not end there. Unlicensed spectrum enables home security devices and health monitoring systems. It enables tele-medicine by providing 4K video through which medical professionals can diagnose and treat patients. Certainly the FCC must consider the impact of its decision on public health and safety – but this obligation cuts both ways. Where, as here, the FCC's action promotes public health and safety without creating risk to existing services, it should weigh heavily in sustaining the FCC's Order and rejecting Petitioners' challenges.

CONCLUSION

The FCC has more than 30 years of experience managing unlicensed spectrum access, using rules and procedures similar to those adopted in the Order under review. During that time, the FCC has consistently and successfully nurtured the unlicensed ecosystem while protecting licensed services from harmful interference. This is precisely the job Congress entrusted to the FCC, and the FCC has once again struck an appropriate balance that protects licensed services while

"encourage[ing] the larger and more effective use of radio in the public interest."

WHEREFORE, the Court should reject the Petitions for Review and affirm the FCC's Order.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify, pursuant to Fed. R. App. P. 25(c) and Cir. R. 25(a), that on February 23, 2021, the foregoing was electronically filed with the Clerk of the Court using the CM/ECF system, which will send a notification to the attorneys of record in this matter who are registered with the Court's CM/ECF system.

Dated: February 23, 2021

/s/ Harold Feld
Harold Feld

CERTIFICATE OF COMPLIANCE

Pursuant to Fed. R. App. P. 32(a)(7)(C), I, Harold Feld, hereby certify that this brief complies with the type-volume limitation of Fed. R. App. P. 29(d) and 32(a)(7)(C) because it contains 2,962 words, excluding the parts exempted by Fed. R. App. P. 32(a)(7)(B)(iii) and Cir. R. 32(a)(1). I further certify that this brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because the brief was prepared in 14-point Century Schoolbook font using Microsoft Word.

Dated: February 23, 2021

/s/ *Harold Feld*
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