

# *2022 Spectrum Developments*

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# Overview

- The Main Players
- Recent Spectrum Developments
- Upcoming Spectrum Developments

# The Current FCC

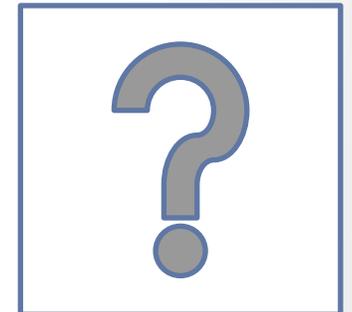
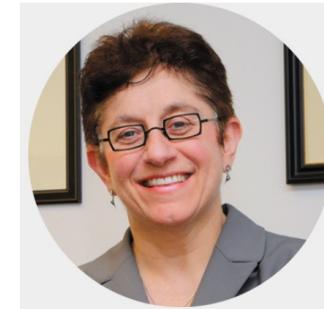


- **Chairwoman**

- Jessica Rosenworcel (D) (Term expires June 2025)

- **Commissioners**

- Geoffrey Starks (D) (Term expires June 2022)
- Brendan Carr (R) (Term expires June 2023)
- Nathan Simington (R) (Term expires June 2024)
- *Vacant – 16 months*



Gigi Sohn (D) – Nominated

# The Current NTIA



- **Administrator**
  - Alan Davidson (January 2022 – )
- **Associate Administrator, Office of Spectrum Management**
  - Charles Cooper (July 2019 – )

# Other Major Federal Players



- **Congress**

- Has power to dictate spectrum policy



- **The White House**

- Influential spectrum policy role when it wants
- OSTP/CTO plays a coordinating role



- **Department of Transportation**

- Safety-critical systems



- **Department of Defense**

- Mission-critical systems



- **Other Agencies**

- Other incumbent systems

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# Recent Spectrum Developments

## Two Major Themes

- Efforts to Spur More Intensive Use of Spectrum
  - More Spectrum for 5G

# 6 GHz Report and Order: Background

- Adopted April 2020
- Opened 1,200 MHz to unlicensed use, while adopting safeguards to protect incumbent operators in the band (fixed microwave operations, Broadcast Auxiliary Service (BAS), Fixed Satellite Service)
  - Standard-power operations coordinated by an automated frequency coordination (AFC) system permitted in U-NII-5 (5.925-6.425 GHz) and U-NI-7 (6.525-6.875 GHz)
  - Low power indoor operations permitted throughout the band from 5.925-7.125 GHz
- Opportunities for 320-megahertz channels

# 6 GHz Report and Order: Incumbent Concerns

- Wireless, broadcast, public safety, and electric utility stakeholders sought (1) review by the D.C. Circuit and (2) reconsideration from the FCC of the 6 GHz Order
  - Among other concerns, argued that low-power indoor operations would cause harmful interference to fixed links and BAS operations
  - Disagreed with the FCC that the protections adopted were adequate
  - Disagreed with the modeling and studies used to analyze the risk of harmful interference
- These stakeholders also have continued to submit studies to the FCC showing 6 GHz low-power indoor access points will cause harmful interference to fixed service links; Wi-Fi companies and stakeholders continue to submit filings rebutting those findings

# 6 GHz Report and Order: D.C. Circuit Opinion

- D.C. Circuit denied the petitions for review in all respects except for one
  - Agreed with the FCC that the Order never claimed that it would reduce the risk of harmful interference to zero—rather the goal was to “make the risk of harmful interference ‘*insignificant*’ not impossible”
  - Relied in part on the FCC’s assertion that the Enforcement Bureau would investigate instances of harmful interference, and noted that if the Enforcement Bureau is not up to the task, petitioners can return to the FCC for relief
  - Provided significant deference to the FCC’s technical arguments
- DC Circuit remanded decision on one issue: NAB’s challenge that the FCC failed to adequately respond to its request for reserving a sliver of the 6 GHz band exclusively for mobile licenses such as BAS
  - FCC is currently seeking comment on this issue: Comments are due May 25 and reply comments are due June 9

# 6 GHz Report and Order: AFC Implementation

- September 2021 FCC kicked off process to authorize AFC systems for standard-power operations
  - Proposals were due Nov. 30, 2021
  - Applicants continue to provide FCC with additional information to supplement initial proposals
  - Incumbent stakeholders continue to file *ex parte* letters expressing concerns with the proposals—in particular, concerns that certain parameters are not being uniformly implemented, which will lead to varying levels of protection for incumbents

# 6 GHz Further Notice and Client-to-Client Public Notice

- Further Notice of Proposed Rulemaking Adopted April 2020
  - Proposes to permit very low power unlicensed devices to operate both indoors and outdoors across the entire 6 GHz band
  - Seeks comment on increasing the transmit power of indoor access points that operate without an AFC
  - Seeks comment on whether standard-power access points should be permitted in mobile applications
  - Seeks comment on whether higher powers should be permitted for standard-power access points when configured as point-to-point links
- Client-to-Client Public Notice Released January 2021
  - Seeks additional comment on whether the FCC should permit direct communications between client devices
- Stakeholders continue to file *ex parte* letters on these outstanding issues

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# 5.9 GHz Band R&O & FNPRM

- November 2020 Report & Order adopted new band plan to encourage more intensive use:

5.850

5.895

5.925



- DC Circuit Litigation: State transportation and amateur interests sought court review of reallocation of lower 45 MHz to indoor unlicensed
- Petitions for Reconsideration: Automobile interests sought reconsideration from FCC on out-of-band emission limits for indoor unlicensed operations; R&O granted greater flexibility than even Wi-Fi industry requested
- Waiver Requests: Leading automakers and state DOTs have requested to deploy C-V2X now under waiver authority; FCC yet to seek public comment
- FNPRM: Tees up a host of issue, including finals rules for C-V2X, additional spectrum for 5G-based C-V2X, and expanding unlicensed operations to outdoor areas.

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# 4.9 GHz Order on Reconsideration & Eighth FNPRM

- Background:
  - 4.940-4.990 GHz band designated for public safety two decades ago
  - Band underused outside of major metro areas: of 90,000 eligible public safety entities, only 2,090 hold licenses
  - In 2020 FCC adopted rules allowing for non-public safety operations through a state-by-state leasing framework
- Order on Reconsideration: Resets the 4.9 GHz band rules, vacating leasing
- Further Notice of Proposed Rulemaking:
  - Explores ways to foster greater public safety use of band (frequency coordination, nationwide band manager, promoting 5G)
  - Seeks comment on ways to facilitate non-public safety access that is compatible with public safety
- Chairwoman referenced 4.9 GHz in remarks at Mobile World Congress:
  - “[W]e are taking a close look at the 4.9 GHz band and considering how it can be used for 5G services for public safety.”

# 57-64 GHz Waivers and Notice of Proposed Rulemaking

- Background:
  - Band allocated for unlicensed device operations
  - Current rules limit field disturbance sensors (FDS) (e.g., radar devices) to 30 dB below that of unlicensed devices and restrict many mobile operations
  - Recent technological advancements in FDS devices has led to increased demand for unlicensed mobile operations at higher powers
- Waivers: FCC granted waivers to Google in 2018 and to a number of parties in early 2021 to operate mobile radars at higher power than permitted in rules, but only in specific situations
- Further Notice of Proposed Rulemaking: Proposed to allow unlicensed FDS operations at higher power limits and in mobile devices

# Recent 5G Auction: 3.7-3.98 GHz (C-Band)

- Auction concluded in Feb. 2021; raised more than \$81 billion
- Incumbent satellite operators committed to “accelerated clearing” schedule (received \$9.7 billion in acceleration payments from winning bidders)
  - 3.7-3.8 GHz cleared by Dec. 5, 2021
  - 3.8-3.98 GHz cleared by Dec. 5, 2023
- FCC evaluated the technical record and found that a 220-megahertz guard band between the new wireless operations and the radio altimeters in the 4.2-4.4 GHz band, coupled with other technical rules, would protect aeronautical services
  - Wireless industry submitted filings demonstrating flaws in the aeronautical industries technical arguments
- A month before 3.7-3.8 GHz was set to launch, the Federal Aviation Administration issued a Special Airworthiness Information Bulletin on the risk of 5G resulting in potential adverse effects on radio altimeters, which play a role in landing airplanes safely
  - The FAA, aeronautical stakeholders, and wireless industry are working to resolve concerns
- Congress held a hearing to express concern about the lack of coordination between the FCC, NTIA, and the FAA
- Deployments are underway in the band

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# Recent 5G Auction: 3.45 GHz (3.45-3.55 GHz)

- Auctioned in 2021
- Raised \$22 billion
- Licenses granted May 4, 2022
- Federal incumbents and winning bidders are working to implement Cooperative Planning Area and Periodic Use Areas where federal and commercial users share the band

# Upcoming Spectrum Developments

## Same Major Themes

- Efforts to Spur More Intensive Use of Spectrum
  - More Spectrum for 5G

# Receiver Performance Notice of Inquiry

- April 2022 FCC unanimously adopted a Notice of Inquiry (NOI) taking a fresh look at role of receiver performance in spectrum management
- Recognizes that more intensive use of spectrum necessitates FCC policies that consider efficiencies across all aspects of wireless systems, not just transmitters, but receivers too
- Seeks broad comments on ways to promote improvements in receiver immunity performance.
- Considers a variety of forms to accomplish this, including industry-led voluntary measures, FCC policies and guidance, and regulatory requirements
- Recognizes that different approaches may be appropriate for different bands or services
- Comments due June 27; Reply Comments due July 27

# Upcoming Auction: 2.5 GHz (2496–2690 MHz)

- Scheduled to commence July 29
- Will make approximately 8,000 new flexible-use geographic overlay licenses available on a county-based area
  - Licensees obtain the rights to geographic area licenses “overlaid” on top of the existing incumbent licenses
  - There are about 2,000 existing Educational Broadband Service licenses in the band, the majority of which are subject to active spectrum leases
  - Winning bidders may operate in existing “white spaces” and if incumbent licensees cease operating, new licensees may operate in those locations as well

# FCC Auction Authority

- FCC's general auction authority is set to expire on September 30, 2022
  - Under Section 309(j)(11) of the Communication Act, the FCC cannot grant licenses assigned at auction after its auction authority lapses
- Since the FCC first obtained that authority in 1993, Congress has never let it expire
  - If expired, FCC would retain limited authority to auction certain bands specified in the 2015 Spectrum Pipeline Act (30 megahertz—to be identified—below 3 GHz) and the Infrastructure Investment and Jobs Act of 2021 (IIJA) (spectrum in the 3.1-3.45 GHz band)
- Congress is currently evaluating options to extend the FCC's auction authority
  - Wireless industry want Congress to identify specific bands for auction in the reauthorization of auction authority

# Spectrum Pipeline

- Chairwoman Rosenworcel and wireless industry support a spectrum pipeline
- Wireless stakeholders have expressed particular interest in freeing up additional mid-band spectrum for 5G
  - Lower 3 GHz (3.1-3.45 GHz) – The IIJA requires DoD to study the band, and if NTIA and DoD determine that spectrum can be made available for shared use with commercial operators without impacting federal operations, the FCC is required to conduct an auction
    - Wireless stakeholders support the Spectrum Innovation Act, which, if enacted, would require NTIA/DoD to identify 200 megahertz for auction
  - 7/8 GHz (7.125–8.4 GHz) – This band is of interest both to wireless stakeholders and unlicensed stakeholders given that it is adjacent to the 6 GHz band
  - The mid-to-upper frequencies in the 4 GHz band have also been identified by wireless providers as a possible candidate for 5G

# Spectrum Pipeline (cont.)

- The wireless industry has also expressed interest in additional low- and high-bands, including
  - 1.3-1.35 GHz, the 1.124-1.164 GHz, and 1.78-1.83 GHz
  - 26 GHz, 42 GHz, and 50 GHz bands
- Currently an open rulemaking to consider whether to add mobile wireless to the 12 GHz band
- Chairwoman Rosenworcel announced earlier this year that she wants to focus on 7-15 GHz for 6G

# Spectrum Coordination Initiative

- Earlier this year, FCC and NTIA announced a new Spectrum Coordination Initiative
- The FCC Chair and NTIA Assistant Secretary now hold monthly meetings to conduct joint spectrum planning
- Commitment to:
  - Update the 20-year-old Memorandum of Understanding between the agencies
  - Renew efforts to develop a national spectrum strategy
  - Work cooperatively to develop processes for spectrum engineering analysis
  - Foster proactive technical exchange and engagement with industry and federal agencies

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# Questions?

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