

January 30, 2026

VIA EMAIL AND ONLINE SUBMISSION

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Re: Automatic Frequency Coordination-assisted spectrum sharing in the 6 GHz band – Discussion Paper (November 2025)

Introduction

Federated Wireless, Inc. (Federated Wireless) is pleased to respond to the Australian Communications and Media Authority's (ACMA) discussion paper, Automatic Frequency Coordination-assisted spectrum sharing in the 6 GHz band (Discussion Paper). Federated Wireless commends ACMA for initiating a timely and comprehensive consultation on the technical and regulatory aspects necessary to enable standard power outdoor operations in the 6 GHz band while ensuring predictable protection for incumbent services.

Federated Wireless supports ACMA's goal to enhance spectrum efficiency, flexibility, and innovation in a manner that is practical, enforceable, and aligns with international best practices. AFC is a software-based, database-driven coordination system that can significantly increase the utility of the 6 GHz band beyond uncoordinated regimes, while still protecting incumbents effectively.

Background

Federated Wireless is a leader in shared spectrum management and automated spectrum coordination systems. Federated Wireless is certified by the United States Federal Communications Commission (FCC) to operate a Spectrum Access System (SAS) in the 3.5 GHz Citizens Broadband Radio Service (CBRS) band and an Automated Frequency Coordination (AFC) system in the 6 GHz band. Federated Wireless manages spectrum access for more than 370,000 commercial radio devices, supporting mobile operators, fixed wireless providers, utilities, enterprises, and other critical communications users, with a proven track record of protecting protected incumbents.

In addition to operating certified AFC and SAS systems in the United States, Federated Wireless has engaged with regulators and stakeholders internationally on AFC and dynamic spectrum access frameworks, including in Canada, the United Kingdom, Saudi Arabia, and South Africa. These engagements have highlighted several consistent themes: (i) the importance of a reliable incumbent database and standardized interfaces; (ii) access to appropriate environmental datasets for propagation modeling; (iii) clear protection methodologies and device compliance requirements; and (iv) a practical accreditation and oversight framework that enables industry-led deployment while maintaining regulator confidence.

Summary of Federated Wireless Comments

Federated Wireless offers the following overarching comments in response to the Discussion Paper:

- Federated Wireless supports the adoption of AFC to enable standard power outdoor operation in the 6 GHz band, as long as there is a clear and enforceable framework for protecting incumbents, ensuring data integrity, and device compliance.
- ACMA should leverage and align with established international AFC frameworks, particularly the FCC and ISED Canada, including clear technical requirements, certification methods, and standardized interfaces, to reduce implementation risks and accelerate device interoperability.
- Federated Wireless supports a multi-operator AFC model operated by industry under ACMA regulations. This framework improves resilience, promotes innovation, and encourages competition, while avoiding reliance on a single point of service.
- A tiered access architecture offers a practical and transparent method to manage coexistence among incumbents, AFC-coordinated standard power users, and low-power indoor / very-low-power devices.
- Successful AFC deployment depends on: (i) reliable and complete incumbent licensing information; (ii) standardized, automated interfaces to ACMA datasets; (iii) access to environmental datasets (terrain, clutter, buildings) in standardized formats; (iv) robust security requirements; and (v) a well-defined interference reporting and mitigation process.

Responses to Issues for Comment

Question 1

Do you support the adoption of an AFC framework in Australia to enable outdoor standard power operation in the 6 GHz band? What are the key benefits and concerns? In particular, who would the main beneficiaries be, and what would be the implications for consumers in the telecommunications market?

Response

Federated Wireless supports the adoption of an AFC framework in Australia to enable outdoor standard power operation in the 6 GHz band. AFC is a database-driven coordination system that utilizes device geolocation and propagation modeling to determine permissible channels and power levels, protecting incumbent services. It is especially suitable for bands like 6 GHz, where incumbents include fixed point-to-point services and other licensed systems that need predictable

interference protection.

Expected benefits include:

- a) Improved broadband outcomes in regional and remote areas: Standard power outdoor operation can materially improve link budgets and coverage for regional providers, including WISPs.
- b) Increased spectrum efficiency: AFC enables coordinated reuse of spectrum that might otherwise be restricted by conservative, static protection measures.
- c) Market certainty and scalability: AFC establishes repeatable operational rules for device manufacturers and service providers, facilitating scalable deployment and investment.
- d) Support for next-generation technologies: AFC can support Wi-Fi 6E/7 and other RLAN or 3GPP-based unlicensed/NR-U technologies under a technology-neutral framework.

Key concerns are also clear and manageable:

- a) Data integrity and availability: AFC outcomes depend on the accuracy and completeness of the incumbent database and environmental datasets used for protection calculations. ACMA's licensing data must be complete, accurate, and accessible through efficient automated interfaces.
- b) Governance and compliance: A credible accreditation and audit system is necessary to ensure AFC operators implement protection criteria consistently, securely, and transparently.
- c) Implementation complexity and cost: While AFC introduces new coordination tasks for devices and operators, international examples show that an industry-led delivery model using consistent implementation and operational requirements, such as uniform propagation models within regulator-defined rules distributes costs efficiently and accelerates deployment.

Federated Wireless believes that the benefits outweigh the risks, especially if ACMA aligns with proven international approaches and establishes a clear, phased pathway from trials to wider deployment.

Question 2

How might AFC change the way WISPs and other communications service providers operate, particularly in terms of supporting greater spectrum efficiency or service innovation?

Response

AFC can significantly influence how WISPs and other communication service providers plan, deploy, and operate networks in the 6 GHz band.

Operational predictability and planning: With AFC, a provider can design networks around verified, authorized channels and power levels instead of relying on conservative power constraints or uncertain interference conditions. This predictability improves network engineering, reduces deployment iterations, and clarifies service-level expectations.

Coverage and economics: When coordinated through AFC, standard power operation may reduce the number of sites needed to cover a given area or increase the achieved capacity, improving the

economics of rural and remote deployments. For WISPs, this means broader coverage, higher throughput, and less congestion compared to lower-band options.

Service innovation: AFC enables new deployment models, including outdoor enterprise networks (campuses, industrial sites, logistics yards), smart community networks, and expanded fixed wireless access. By offering dynamic channel and power authorization, AFC supports more flexible operational strategies as networks grow, specifically in the 6 GHz band, where large channel bandwidths are available (e.g., 160 MHz using Wi-Fi-6 and 320 MHz using Wi-Fi-7).

Operational alignment between deployment and ongoing management: AFC links planning and operations through continuous coordination and periodic revalidation. Providers can embed AFC approval and revalidation into their operational workflows, enhancing compliance and enabling quicker troubleshooting when interference occurs.

Federated Wireless recommends that ACMA evaluate AFC impacts not only as a coordination tool but also as a facilitator of more professional, scalable operating models for service providers.

Question 3

Are there any alternatives to AFC that could support dynamic and efficient frequency assignments in the 6 GHz band?

Response

Federated Wireless acknowledges that there are alternative approaches to manage coexistence and incumbent protection in the 6 GHz band; however, these alternatives generally involve trade-offs that materially reduce spectrum efficiency or incumbent protection.

- Static approaches, such as exclusion zones, fixed power limits, or conservative geographic restrictions, can reduce interference risk to the incumbents but often do so by underutilizing spectrum and failing to reflect real propagation conditions. These methods also face challenges in scaling as deployment density increases.
- Sensing-only approaches, such as listen-before-talk or other sensing mechanisms, can be helpful additional tools but are usually insufficient as the primary protection for incumbents, whose signals may not always be reliably detectable. Sensing alone is also more vulnerable to hidden-node scenarios and does not provide the same level of certainty as a database-driven method. Moreover, transmitter sensing does not ensure that 6 GHz users manage potential interference to the receiver incumbents.
- Hybrid approaches that combine AFC with device-level mechanisms (e.g., DFS/LBT and power control) can enhance coexistence performance in certain situations. However, unlike DFS, AFC does not require continuous detection by access points, reduces false positives, and supports a wide range of waveforms used by incumbents or access points. Federated Wireless endorses these combined methods when they improve robustness, provided AFC remains the primary coordination tool for protecting incumbents.

Overall, AFC remains the most advanced and scalable approach available today for enabling standard power outdoor RLAN operations while ensuring reliable protection for incumbents.

Question 4

Would established models in other jurisdictions such as the US and Canada, or aspects of these models, be appropriate for the Australian radiocommunications environment?

Response

Federated Wireless believes that established AFC models in the United States and Canada provide appropriate and valuable reference points for Australia.

Regulator-defined rules with industry-led implementation: Both the FCC and ISED Canada have adopted approaches where the regulator sets protection criteria, certification standards, and compliance requirements, while multiple independent AFC operators deploy systems commercially. This approach encourages innovation and resilience while maintaining regulatory oversight.

Alignment advantages: Using core elements of these frameworks—such as standardized interfaces, certification test procedures, propagation models, and defined protection methods—reduces device fragmentation and accelerates global interoperability. In practice, differences in national requirements can increase the workload for device manufacturers and AFC operators, delaying time-to-market.

Adapting to Australia: Australia may need to adjust certain elements to reflect domestic spectrum planning decisions, including the separation between RLAN use and broader broadband considerations, as well as the characteristics of Australian incumbents. Nonetheless, Federated Wireless recommends that ACMA adopt an approach that is as harmonized as possible with international AFC frameworks, including the concept of independent AFC operators working under common rules without requiring inter-operator coordination.

Question 5

How much spectrum should be made available under AFC, and what bandwidths should be allocated to support individual AFC service offerings? Should part or all of the 6 GHz spectrum available for RLAN use be made available for AFC-enabled access by standard power devices, or is there a case for arrangements supporting a range of power levels above VLP/LPI and below/including standard power?

Response

Federated Wireless recommends that ACMA consider making a substantial part of the 5925–6585 MHz range available for AFC-enabled standard power outdoor operation.

Spectrum availability and channelization: Maximizing usable AFC-enabled spectrum supports wider channels and higher throughput, which enhances value for both regional broadband deployments and enterprise outdoor networks. When ACMA considers segmentation, it should be designed to preserve the band's usefulness for VLP/LPI applications while allowing meaningful standard power outcomes. Additionally, such segmentation can reduce the performance of

existing or emerging Wi-Fi technologies, such as 160 MHz support by Wi-Fi-6 and 320 MHz channels by Wi-Fi-7 and future Wi-Fi versions.

Power levels: Federated Wireless supports standard power operation under AFC coordination consistent with international standards. ACMA may also consider intermediate coordinated power levels between VLP/LPI and standard power, providing additional flexibility for coexistence in certain environments.

Technology neutrality: Any AFC-enabled access should be technology-neutral so that Wi-Fi and other standardized RLAN/NR-U implementations can benefit, as long as they meet the same compliance requirements.

Federated Wireless also notes that overly narrow allocations for AFC could unintentionally limit the economic and performance benefits for WISPs and other providers; therefore, the practical value of AFC heavily relies on the amount of spectrum made available through coordinated access.

Question 6

What degrees of geographic and spectrum segmentation should be considered when planning for individual AFC system deployments? For example, would planning for localised, self-contained areas or multiple sub-bands foster competition in the market for the provision of AFC services, or would that come at too much of a cost to spectrum efficiency (through the need for guard bands/spaces)?

Response

Federated Wireless recommends that ACMA adopt a balanced approach to geographic and spectrum segmentation for AFC deployments.

Competition and resilience: Allowing multiple AFC operators under common rules can foster competition and reduce reliance on a single provider. Limited segmentation—where appropriate—may enable easier entry and differentiation.

Spectrum efficiency: Excessive segmentation might lead to spectrum efficiency problems, such as guard bands or fragmented channels, and add system complexity. These drawbacks should be weighed against possible benefits of segmentation.

Practical approach: Federated Wireless recommends that ACMA primarily focus on a national framework supporting multi-operator AFC deployment, with segmentation (if any) designed to prevent reducing channel availability for both coordinated and uncoordinated devices. If geographic segmentation is considered, ACMA should assess whether it creates “edge effects” or buffer zones that hinder practical coverage.

Ultimately, the level of segmentation should depend on the expected AFC market, the number of incumbents, and the aim of maximizing usable spectrum while maintaining clear protections.

Question 7

What are the respective roles and responsibilities for industry and government in realising an AFC regime? Should AFC be operated by industry under government-set rules or should government play a more direct role in providing AFC services?

Response

Federated Wireless supports an AFC regime where industry leads in delivering and operating AFC services within a regulatory framework established and overseen by ACMA.

ACMA's role: ACMA should set protection criteria, minimum technical rules and performance standards, security requirements, certification guidelines, accreditation guidelines, and enforcement processes.

Industry's role: Accredited AFC operators should design, implement, and manage AFC services, including coordination calculations, device authorization outputs, secure interfaces, logging, and operational support. Industry operations use the cloud-native, software-driven nature of AFC and supports rapid iteration and scalability.

Why industry-led is practical: AFC systems require ongoing operational capability such as uptime, cybersecurity, and incident response, and they benefit from commercial incentives to enhance performance and service quality. International experience shows that AFC managed solely by regulators is not necessary to protect incumbents effectively.

Federated Wireless recommends that ACMA clearly define boundaries: ACMA sets the rules and ensures compliance, while AFC operators provide services within those rules.

Question 8

What role should databases such as the ACMA's RRL or other coordination mechanisms, such as those administered by the ACMA but used by accredited assigners, play in the process?

Response

Federated Wireless believes the Register of Radiocommunications Licenses (RRL) should be the primary source of incumbent licensing information for AFC coordination.

Automated interfaces: AFC requires efficient, automated access to licensing data. ACMA should provide secure, standardized interfaces (e.g., APIs) that enable AFC systems to query and synchronize relevant incumbent data, and a certified device list with their authorized capabilities, using specified schemas and formats.

Data completeness: To ensure accurate protection calculations, the incumbent dataset and device authorization database should include all necessary parameters as specified by the protection methodology (e.g., location, antenna characteristics, heights, bandwidth/channelization), as well as all information required to help AFC determine device authorization levels. If some parameters are missing, default values or conservative assumptions should be used.

Data currency and latency: If the RRL is updated daily rather than in real time, ACMA should evaluate whether this delay poses significant risks to coordination accuracy or interference analysis. When possible, ACMA should consider methods to improve data freshness or offer incremental update options.

Governance: ACMA should clearly define data governance responsibilities—what data is authoritative, how it is validated, and how errors are corrected—so that both AFC operators and incumbents can trust the system.

Question 9

What is the need for, and potential structure of, a tiered access model for incorporating standard power RLAN devices in the 6 GHz band?

Response

Federated Wireless supports a tiered access framework that establishes clear prioritization among users of the 6 GHz band. Under such a framework:

- Tier 1 consists of incumbent licensed services that receive full protection and are not required to accept interference from other users.
- Tier 2 includes standard-power devices operating under AFC coordination, along with their clients. These devices must protect Tier 1 incumbents but are not protected from uncoordinated devices. This tier also includes high power Fixed clients.
- Tier 3 includes low power indoor (LPI) and very low power (VLP) devices operating under class-licensed rules. These devices must follow technical constraints designed to protect Tier 1 incumbents but are not obligated to protect AFC-coordinated standard-power operations.

This tiered structure aligns with international AFC implementations and preserves the simplicity and scalability of uncoordinated low-power use while enabling higher-power operations where coordinated through AFC.

Benefits: A tiered model offers transparency, clear prioritization, and predictable coexistence outcomes by establishing unambiguous priority relationships among users. It enables coordinated access when higher power is justified, while maintaining a baseline of uncoordinated access for consumer and enterprise use cases.

Operational clarity: A tiered model also clarifies enforcement and interference resolution responsibilities, including the role of AFC operators in coordinating Tier 2 standard-power devices concerning incumbent protection, and the role of ACMA in safeguarding Tier 1 incumbent services.

Federated Wireless considers that ACMA's preliminary view toward a tiered approach is appropriate and should be further developed with explicit definitions of rights, obligations, and protection thresholds, including that uncoordinated low-power devices are not required to protect AFC-coordinated standard-power operations.

Question 10

With respect to licensing, should individual AFC-coordinated devices be registered on the RRL or covered by broader system-wide licensing arrangements, or are there other authorisation models that we should consider?

Response

Federated Wireless recommends that ACMA consider authorization models that effectively scale with AFC and avoid unnecessary administrative burdens.

Authorization and licensing approach

Federated Wireless suggests that ACMA adopt an authorization framework for AFC-coordinated standard power devices that aligns with international practices, particularly those used in the United States and Canada. Under these frameworks, standard power operation in the 6 GHz band remains unlicensed, with AFC coordination serving as a required operational condition rather than a licensing mechanism.

Unlicensed operation with AFC coordination:

Federated Wireless considers that unlicensed operation, combined with mandatory AFC coordination and device certification, provides an effective and scalable means of protecting incumbent services while preserving the benefits of the unlicensed ecosystem through proven coexistence mechanisms such as Listen Before Talk (LBT). Devices are type-approved, securely registered with an accredited AFC operator, and authorized dynamically based on location and technical parameters, without requiring individual apparatus licenses or RRL registration.

Limitations of individual device licensing:

Licensing each AFC-coordinated device through apparatus licensing may provide formal oversight but would introduce significant administrative burden and substantially limit scalability, especially for enterprise and outdoor deployments with large numbers of access points. Such an approach would differ from international practice and could hinder market adoption.

Role of AFC operators in accountability:

Under a framework in which AFC operators are unlicensed but accredited, they maintain the necessary operational records for coordination, auditing, and interference investigations. This allows ACMA to monitor and enforce regulations without needing to license each device.

Targeted exceptions when appropriate:

ACMA may want to consider limited additional requirements for specific deployment types that pose higher interference risks (for example, professionally installed systems using high-gain or highly directional antennas). Any such requirements should be narrowly defined and should not undermine the overall unlicensed nature of AFC-enabled access.

Regardless of the authorization model adopted, Federated Wireless recommends that ACMA ensure: (i) clear legal authority for AFC coordination decisions; (ii) auditable records of device authorizations and operational parameters; and (iii) enforceable device compliance and revocation mechanisms.

Question 11

What processes and safeguards would need to be established to accredit, audit, and ensure ongoing compliance of industry-led AFC operators? What type of rules should be imposed on prospective AFC operators, and how should those rules be codified?

Response

Federated Wireless recommends that ACMA establish a robust accreditation, audit, and compliance framework for AFC operators.

Accreditation criteria: Prospective AFC operators should prove their technical competence, security measures, operational readiness (such as uptime and incident response), and proper implementation of protection methods.

Audit and renewal: ACMA should consider conducting regular reviews and renewals of AFC operator approvals, including the ability to audit system logs, authorization decisions, and cybersecurity measures.

Continuity obligations: If an AFC operator ceases operations, ACMA should require advance notice and ensure an orderly transition, including, if necessary, transferring relevant registration data to another operator.

Codification of rules: These requirements can be established through license conditions, operator authorization documents, and published technical rules. Federated Wireless suggests that ACMA maintain transparency, focus on outcomes, and align with international frameworks when practical.

Question 12

What technical or administrative features (e.g., real-time geolocation, exclusion zones, device registration, database accuracy and latency) will be critical to the successful implementation of AFC?

Response

Federated Wireless considers the following technical and administrative features essential for successful AFC implementation:

Geolocation accuracy (horizontal and vertical): Devices should report their location and uncertainty with a specified confidence level (e.g., 95%) for both the horizontal and vertical dimensions. If uncertainty cannot be resolved, professional installation standards may be necessary. However, the requirement for professional installation introduces considerable operational complexities for the users of the band.

Directional antenna considerations: For deployments that use directional antennas, the AFC protocol should support reporting of antenna patterns and orientation. Accurate antenna data significantly impacts interference calculations. This feature not only benefits most existing unlicensed access points that use multiple antennas but is especially vital for Fixed Wireless Access (FWA) and Point-to-Point deployments.

Environmental datasets: AFC systems need access to standardized terrain, clutter/land cover, and building datasets to perform precise propagation modeling. The regulator should define required datasets, formats, and update schedules.

Standardized communication protocols: Device-to-AFC communication should use standardized protocols with proper security measures (e.g., TLS) and clearly defined schemas, including optional vendor-specific fields when helpful.

Periodic revalidation: Devices should regularly revalidate their status with the AFC system to account for changes in the spectrum environment and ensure ongoing compliance.

Logging and auditability: AFC operators should maintain logs sufficient to support interference investigations, compliance audits, and transparency.

Question 13

How should data integrity, ownership, and update mechanisms be managed in AFC systems? Are ACMA's existing systems (such as the RRL) sufficient, or would changes or new systems be required to support real-time coordination?

Response

Federated Wireless recommends that ACMA treat data integrity and update mechanisms as foundational to AFC.

Incumbent licensing data: ACMA should ensure the RRL (or successor systems) includes complete and accurate parameters needed for protection calculations. Where the database is not real-time, ACMA should evaluate whether update latency creates material risk and, if so, consider enhancements.

Standardized default values for incomplete or erroneous incumbent data: In the RRL, if some incumbent data are incomplete or erroneous, ACMA should provide standardized mechanisms or default values for those parameters to ensure AFC has all the tools to evaluate interference from user devices to incumbents.

Standardized APIs and schemas: Automated synchronization and query mechanisms should be supported through secure APIs and standardized data formats.

Environmental datasets: ACMA should specify the environmental datasets required for modelling and ensure they are available in standardized formats. Where datasets are external or commercially sourced, ACMA should clarify acceptable sources and update requirements.

Fallback methodologies: To address temporary data unavailability or missing parameters, ACMA should define conservative default values or methodologies so AFC systems can remain operational while maintaining incumbent protections.

Ownership and responsibilities: ACMA should clarify the responsibilities of ACMA, incumbents, AFC operators, and device operators in ensuring data accuracy and timely updates.

Question 14

What is the expected market for the provision of AFC services in Australia?

Response

Federated Wireless believes that the Australian market is likely only able to support a limited number of AFC operators, especially during the initial deployment phase.

Multi-operator model: Allowing multiple operators under common rules encourages competition, resilience, and innovation. It also helps reduce systemic risk linked to dependence on a single provider.

Market sustainability: ACMA should adjust accreditation requirements to uphold high standards while preventing unnecessary barriers to entry. The expenses associated with localizing and operating AFC services, including compliance, security, and support, suggest that having a small number of operators may be most effective.

Device ecosystem considerations: A multi-operator approach can succeed without inter-operator coordination if protection relies on a single-entry interference framework, aligned with established international practices.

Question 15

What standards or other mandatory specifications should be prescribed to ensure AFC-enabled devices comply with operational rules (for example, GPS accuracy, firmware requirements, revalidation intervals)? What are the implications for manufacturers and operators?

Response

Federated Wireless recommends that ACMA prescribe device standards that ensure reliable compliance and protection outcomes while maintaining international interoperability.

Geolocation standards: Minimum geolocation accuracy requirements should be defined, including confidence levels for horizontal and vertical location and height uncertainty.

Firmware and mode control: Devices should be certified to prevent operation outside authorized modes (e.g., preventing standard power operation without AFC authorization). Firmware updates that affect compliance should be subject to an efficient re-certification process.

Security requirements: Device-to-AFC communications should be secured using standardized protocols (e.g., new revisions of TLS) and appropriate authentication. AFC systems should authenticate to devices using trusted certificates; devices may use lightweight authentication appropriate to their role.

Revalidation intervals: ACMA should define revalidation intervals to ensure devices periodically refresh authorizations.

Interoperability: Requirements to use a standardized AP-AFC interface enable alignment with international frameworks where practicable (e.g., the common, standardized interface used in the United States and Canada), avoid device fragmentation, and support economies of scale, reducing deployment costs.

Channel availability refreshment: Through the standardization and certification process, ACMA should enforce a maximum time interval between consecutive device-AFC interactions to ensure continuous protection of incumbents and efficient use of the 6 GHz spectrum, even when incumbent characteristics and environmental parameters vary frequently.

Conclusion

Federated Wireless is pleased to share these views with ACMA's consultation. Federated Wireless believes that AFC can deliver meaningful public benefits in Australia by enabling standard power outdoor operation in the 6 GHz band while ensuring predictable protection for incumbents. We support an industry-led, internationally harmonized implementation approach that includes strong accreditation, data governance, and device compliance requirements. Federated Wireless looks forward to further engagement with ACMA and stakeholders as this work advances, including on technical requirements, database interfaces, and operational processes.

Respectfully,



Kurt Schaubach
Chief Technology Officer
Federated Wireless, Inc.