NO SAFE HARBOR

Why the FCC's upper C-Band auction demands early action from broadcasters

THE HIVE GROUP

Introduction

The US Federal Communications Commission (FCC) is advancing the auction of between 100 and 180 megahertz (MHz) of upper C-band spectrum (the 3.98–4.2 GHz range) for 5G and future 6G services. The auction must be completed by July 2027 under the One Big Beautiful Bill Act (July 2025).

For broadcasters, this is a structural disruption to the satellite-based distribution infrastructure that has underpinned contribution and delivery across the United States for many years. This is the second major C-band reallocation in less than a decade, following the 2020 Auction 107 that cleared the lower C-band spectrum (3.7–3.98 GHz). Then, broadcasters adapted by migrating precisely into the spectrum now under threat.

This time, however, the disruption is structurally different: the upper C-band is the last viable C-band range, and no comparable fallback exists within it. The scale of the challenge is therefore larger than in the previous auction.

The storm is coming. The question is whether broadcasters are technically, commercially and strategically prepared to face it.

This report examines the challenges posed by the upcoming C-band auction as well as strategies that broadcasters can adopt to navigate it. It is structured as follows:

- **Background:** what is C-band, why it matters, and the previous auction
- **The upcoming auction:** regulatory timeline and spectrum at stake
- **Implications:** operational and commercial impact for broadcasters
- **Technology models:** the alternatives available to replace C-band
- **Key recommendations:** recommendations for broadcast leadership teams

The background

WHAT IS C-BAND

Radio spectrum is the invisible resource that carries wireless signals, everything from mobile phone calls to satellite television. Like a road network, it has lanes (frequency bands) that can only carry one kind of traffic at a time. Governments allocate these lanes to different users: mobile operators, broadcasters, satellite companies, aviation, and so on.

The C-band (broadly 3.7–4.2 GHz) sits in the highly valuable "mid-band" range. It is prized because it offers a practical balance: it travels far enough to cover large areas (unlike very high frequencies), and it can carry large amounts of data (unlike lower frequencies). This makes it ideal for mobile networks. It also happens to be the backbone of satellite television and broadcast contribution links.

WHY C-BAND MATTERS FOR BROADCAST

For broadcasters, C-band satellite delivery offers three properties that are difficult to replicate with other models:

- **Reliability:** C-band signals are largely immune to rain fade, the attenuation caused by heavy rainfall that affects higher frequency bands like Ku-band. This matters enormously for live events, breaking news, and emergency broadcasting.
- **Reach:** A single satellite footprint covers the entire continental United States. Every affiliate, cable headend, and pay TV distributor within that footprint receives the signal simultaneously, regardless of their terrestrial infrastructure.
- **Cost predictability:** Transponder lease costs are fixed. Whether you are delivering to 10 or 10,000 receive locations, the satellite cost does not change. This is a commercially significant property for national network distribution.

No single alternative model matches all three properties simultaneously. That is precisely what makes the forced transition structurally hard, and why the choice of replacement technology involves trade-offs, as we shall see later in this report.

THE PREVIOUS AUCTION

In 2020, the FCC conducted Auction 107, which cleared 280 MHz of the lower C-band spectrum (3.7–3.98 GHz) for 5G use. This was, at the time, the largest spectrum auction in US history, generating over $81.2 billion in bids.

Incumbent satellite users (including broadcasters) were relocated from the cleared portion into the upper 200 MHz (4.0–4.2 GHz). The relocation costs were borne by winning bidders through a clearinghouse mechanism.

Industry associations have argued that, after Auction 107, the FCC gave explicit assurances that the upper C-band would remain protected for broadcast and satellite use. Many broadcasters invested significantly in new equipment and capacity in that band. Those investments are now potentially stranded due to the upcoming auction.

> **“C-band is hands down the preferred transport for live events, due to its reliability and signal quality.”**
>
> Rebecca Hanson
> Director-General, NABA

The auction

THE TIMELINE

On November 20, 2025, the FCC unanimously adopted a Notice of Proposed Rulemaking (NPRM) to examine the reallocation of the upper C-band (3.98–4.2 GHz).

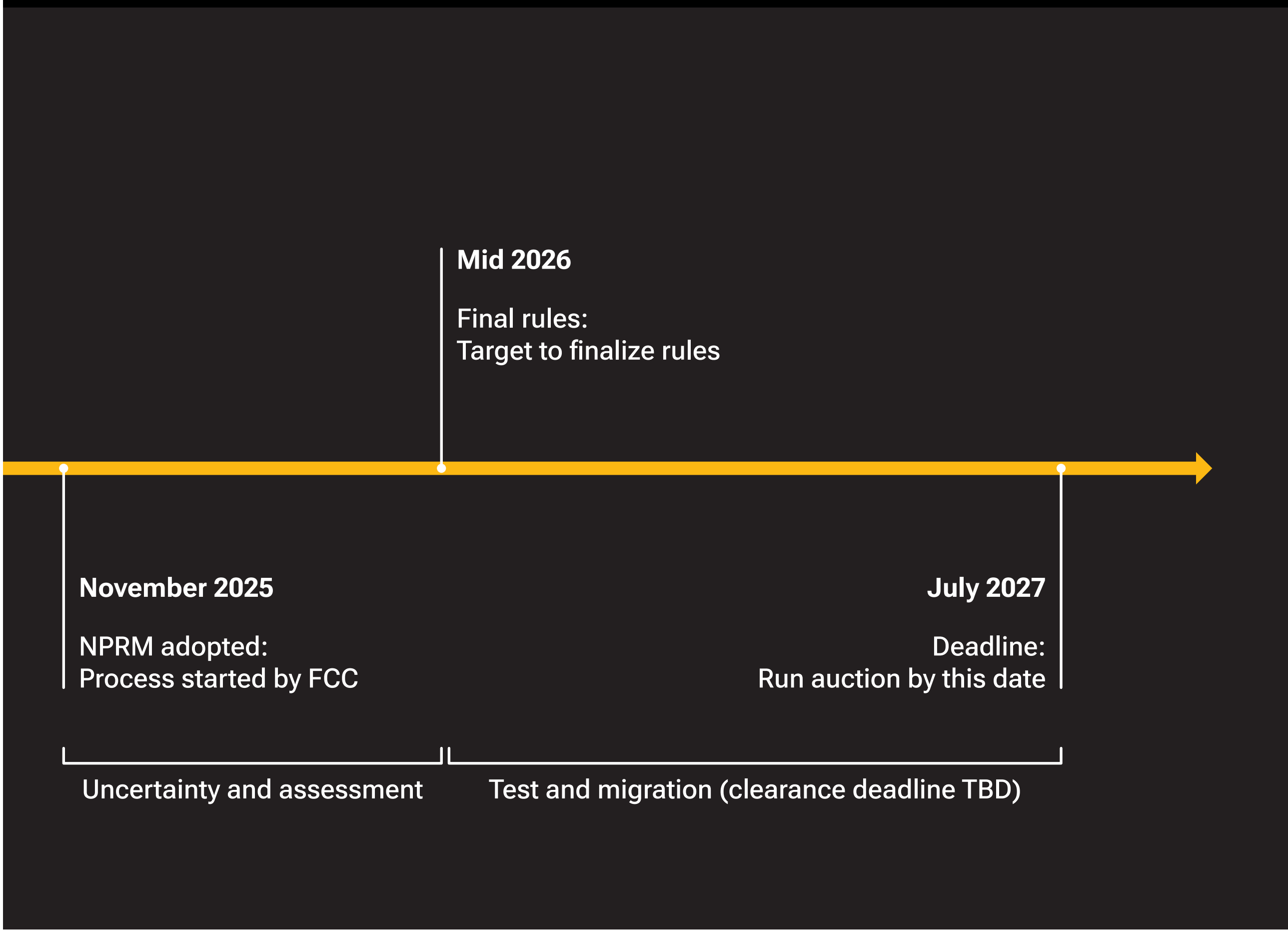
As mentioned earlier, the mandate comes from the One Big Beautiful Bill Act, passed by the US Congress in July 2025, which restored the FCC's auction authority and directed it to complete competitive bidding for at least 100 MHz of upper C-band no later than July 4, 2027. That deadline is statutory; hence it cannot be moved without new legislation.

Figure 1 illustrates a simplified timeline for the upcoming auction.

What remains unresolved is almost everything else. The FCC has yet to finalize the rules governing the auction and the clearance deadline by which broadcasters must vacate the spectrum.

Final rules have no officially published FCC target date, but the statutory July 4, 2027, auction deadline implies a rulemaking conclusion no later than mid-2026 if there is to be any meaningful window between regulatory certainty and auction completion — a window that is already compressed for broadcasters.

FIGURE 1: THE AUCTION TIMELINE



THE SPECTRUM AT STAKE

The scale of the spectrum at stake adds a further layer of uncertainty. The FCC is proposing to auction up to 180 MHz (the maximum usable range) rather than the 100 MHz minimum mandated by Congress.

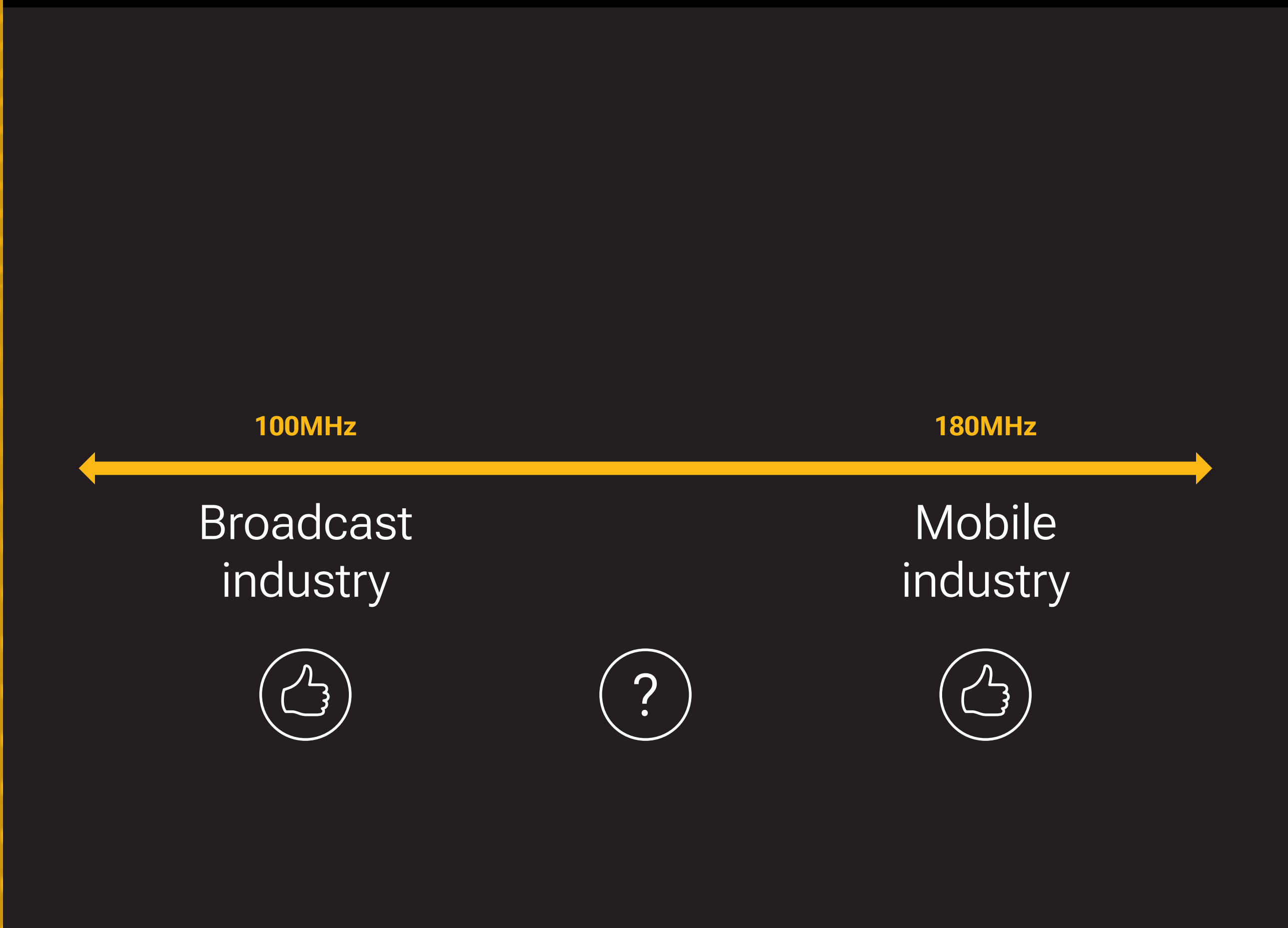
The difference is crucial one for broadcasters:

- At 100 MHz, some broadcasters may be able to remain in the band with compression and repacking.
- At 180 MHz, viable C-band broadcasting in the United States effectively ends.

Figure 2 illustrates the tension between different stakeholder groups. Broadcasters are lobbying to limit the auction to 100 MHz, while mobile carriers are pushing for the maximum 180 MHz. The aviation industry is another constraint, given the risk of interference with radio altimeters operating in the 4.2–4.4 GHz band.

The FCC's decision between these two positions will determine whether C-band remains viable as a broadcast medium at all.

FIGURE 2: THE MAIN STAKES IN THE SPECTRUM AUCTION



The implications

SCALE AND UNCERTAINTY

The operational impact depends heavily on two variables: how much spectrum is cleared (100 vs. 180 MHz), and how quickly broadcasters must vacate. Both remain unresolved, which creates an enormous level of uncertainty for broadcasters. What is resolved is that some degree of disruption is coming, and that the infrastructure at risk is critical for the industry.

NO FALLBACK

The defining operational difference between this auction and Auction 107 is the absence of a safe harbor. In 2020, broadcasters were repacked into the upper C-band. There is no equivalent remaining C-band space this time. Every broadcaster displaced from the upper C-band must migrate to a different distribution technology.

LIVE PROGRAMMING

The most important near-term operational risk for the sector is live event coverage. Sports broadcasters, news networks, and public media businesses with time-sensitive live obligations face heightened exposure if they have not secured alternative transport by the time the auction clears spectrum.

AFFILIATE NETWORK

National networks are not the only affected parties. The receive end of the C-band distribution chain (local affiliates, cable headends, satellite dish installations at broadcast facilities) would also need to be upgraded or replaced. For a network with hundreds of affiliate sites, the aggregate cost exposure is significant.

REIMBURSEMENT FRAMEWORK

Broadcasters that invested in upper C-band infrastructure following Auction 107 are now facing potential stranded costs. Industry associations are pressing the FCC to adopt a reimbursement framework that covers not only direct transition costs (equipment, installation, integration), but also the stranded value of post-2020 C-band investments.

The FCC has proposed following the Auction 107 clearinghouse model, but that model was designed for a frequency repack, not a technology migration.

COMPETITIVE DYNAMICS

The transition may not affect all broadcasters equally. Larger national networks with technical resources, established vendor relationships, and capital capacity are better positioned to absorb the costs and complexity of migration. Smaller broadcasters, local stations, and public media organizations face a disproportionate burden relative to their financial capacity.

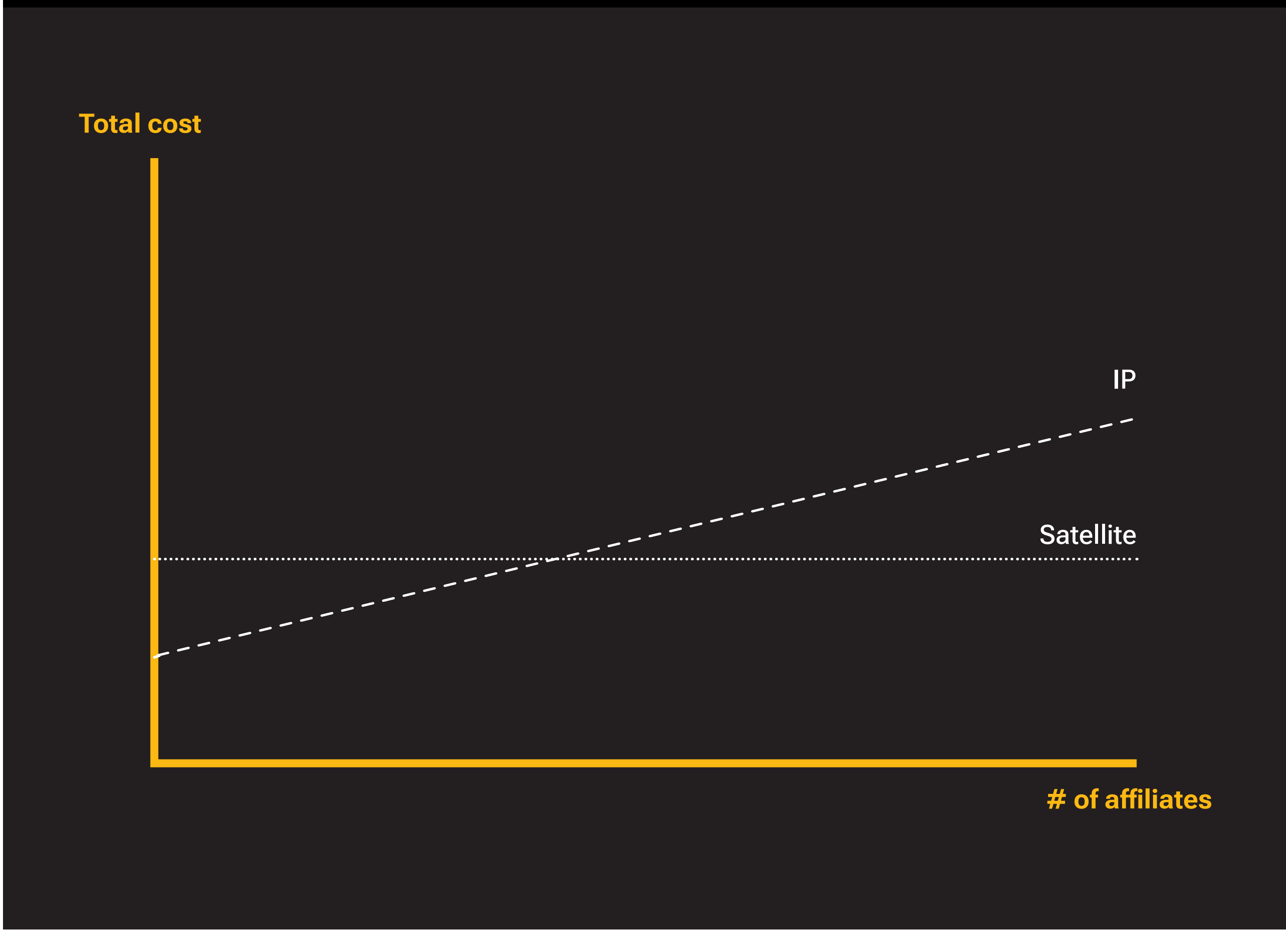
COST MODEL

Finally, one of C-band's most appreciated commercial virtues is its pricing model. Transponder costs are fixed regardless of the number of receive sites. Alternative distribution models break this cost structure. IP-based delivery (whether over fiber, managed networks, the internet, 5G or LEO) is typically priced per site, per bandwidth pipe (Mbps), or by data volume (gigabytes consumed).

For broadcasters with large affiliate footprints and multiple linear channels running 24 hours a day, the commercial modeling is complex, and the results are not always favorable. Figure 3 shows an illustrative comparison between IP and satellite economic models.

Note: Figure 3 is illustrative of the structural difference between satellite and IP cost models - specifically, that satellite costs are largely fixed regardless of the number of receive sites, while IP costs scale with distribution footprint. It is not intended to represent a precise crossover point. In practice, the point at which IP becomes cost-competitive with satellite varies significantly by distribution model, affiliate count, pricing structure, and whether managed or public internet delivery is used.

FIGURE 3: SATELLITE VS. IP ECONOMIC MODELS COMPARED



The technology alternatives

KU-BAND SATELLITE

Ku-band (roughly 11-13 GHz for downlinks) is the most obvious like-for-like satellite alternative. It operates on the same fundamental model (geostationary satellite, wide footprint, fixed transponder costs) and is already widely used for broadcast contribution and distribution globally.

Ku-band's key limitation is rain fade: heavy rainfall can attenuate signals enough to cause service interruptions, which is unacceptable for live, time-sensitive broadcast. Mitigation models exist, including a RIST-based recovery method that uses internet or other IP network connectivity to selectively recover lost packets. This hybrid Ku/IP model may achieve broadcast-grade reliability, but it introduces latency and a dependency on last-mile connectivity (exactly the kind of variables a satellite-based model is designed to eliminate).

Ku-band may represent a credible interim option for broadcasters that cannot move quickly to IP, but its weather vulnerability means it should not be treated as a long-term replacement for C-band.

MANAGED IP DISTRIBUTION (IP-TS)

Transport Stream over Internet Protocol (IP-TS) is already in use by some broadcasters and pay TV operators. The model uses managed, purpose-built IP networks (not public internet) to deliver broadcast-grade video with an SLA (Service Level Agreement).

IP distribution enables capabilities satellite cannot easily match, including regional feed variants, dynamic ad insertion, HDR/UHD variants, multilingual versions, and localization. Its key limitation is last-mile connectivity: rural affiliate sites may lack fiber with sufficient capacity and resilience. Moreover, the variable commercial model does not yet map cleanly onto the broadcast cost structure.

Managed IP is a credible and increasingly mature option, particularly for broadcasters with well-connected affiliate footprints. It is less straightforward for those with significant rural exposure. In either case, the commercial and technical modeling must be done against the specific affiliate topology.

PUBLIC INTERNET WITH VIDEO TRANSPORT PROTOCOL

A variant of IP-TS delivery increasingly used by broadcasters is distribution over public internet rather than managed networks, combined with a reliable transport protocol to recover packets lost over contended connections. Where managed IP-TS relies on purpose-built networks with guaranteed service levels, this model trades some quality assurance for significantly lower cost and greater flexibility.

The appeal of this model comes down to economics and accessibility. Public internet connectivity is widely available, continues to fall in cost, and uses the same underlying fiber infrastructure as managed IP services.

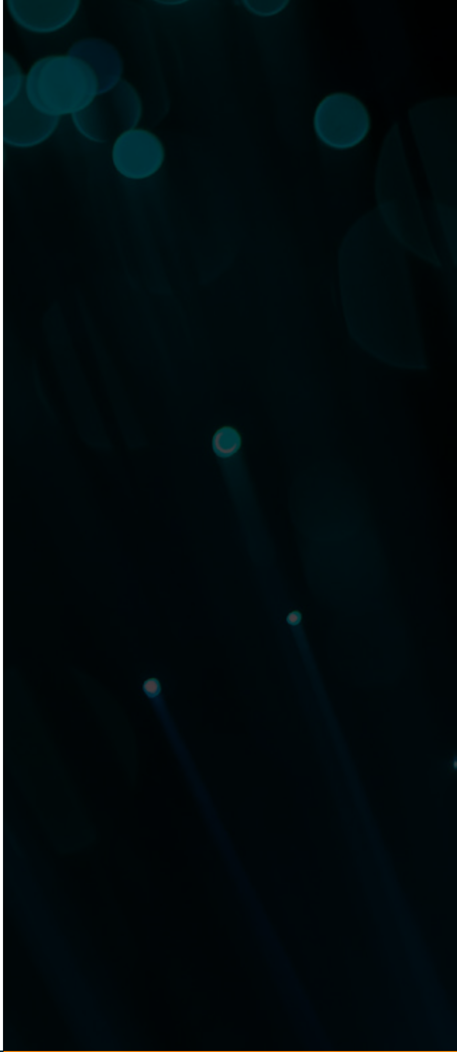
For non-live or near-live content, and for affiliates in well-connected urban markets, it can be a viable and cost-efficient distribution method. For live, time-sensitive broadcast where packet loss is unacceptable, the reliability characteristics of public internet can remain a limiting factor.

HYBRID IP (FIBER + 5G/LEO)

A hybrid model combines two physically diverse network paths. This typically entails using fiber (either managed or the internet) as the primary distribution route and 5G or LEO satellite as a backup. IP packet-level switching allows the system to maintain service continuity if one path fails, addressing the single-point-of-failure risk inherent in terrestrial IP delivery where there is a single physical entry point into the building. The approach also unlocks the full capability set of IP distribution: regional feed variants, dynamic ad insertion, and multi-platform reach, with resilience built in.

Hybrid IP's key limitations are coverage gaps and integration complexity. In rural markets, 5G coverage remains uneven, and a single fiber provider serving an area undermines the path diversity the model depends on. LEO services, led by Starlink, are improving rapidly but have not been demonstrated at broadcast-grade scale for 24/7 linear delivery. They also operate in Ku-band frequencies, meaning they carry some of the same rain fade vulnerability. Beyond coverage, assembling multiple technologies into a coherent distribution architecture requires engineering resource, ongoing management, and commercial arrangements across vendors that are not yet standardized.

Hybrid IP is the right long-term architecture for many broadcasters, but it is not a plug-and-play solution. It demands more integration effort, more sophisticated vendor management, and more time to deploy than any single-technology approach.



COMPARING MODELS

The table in Figure 4 summarizes the key strengths and limitations of each technology alternative to C-band.

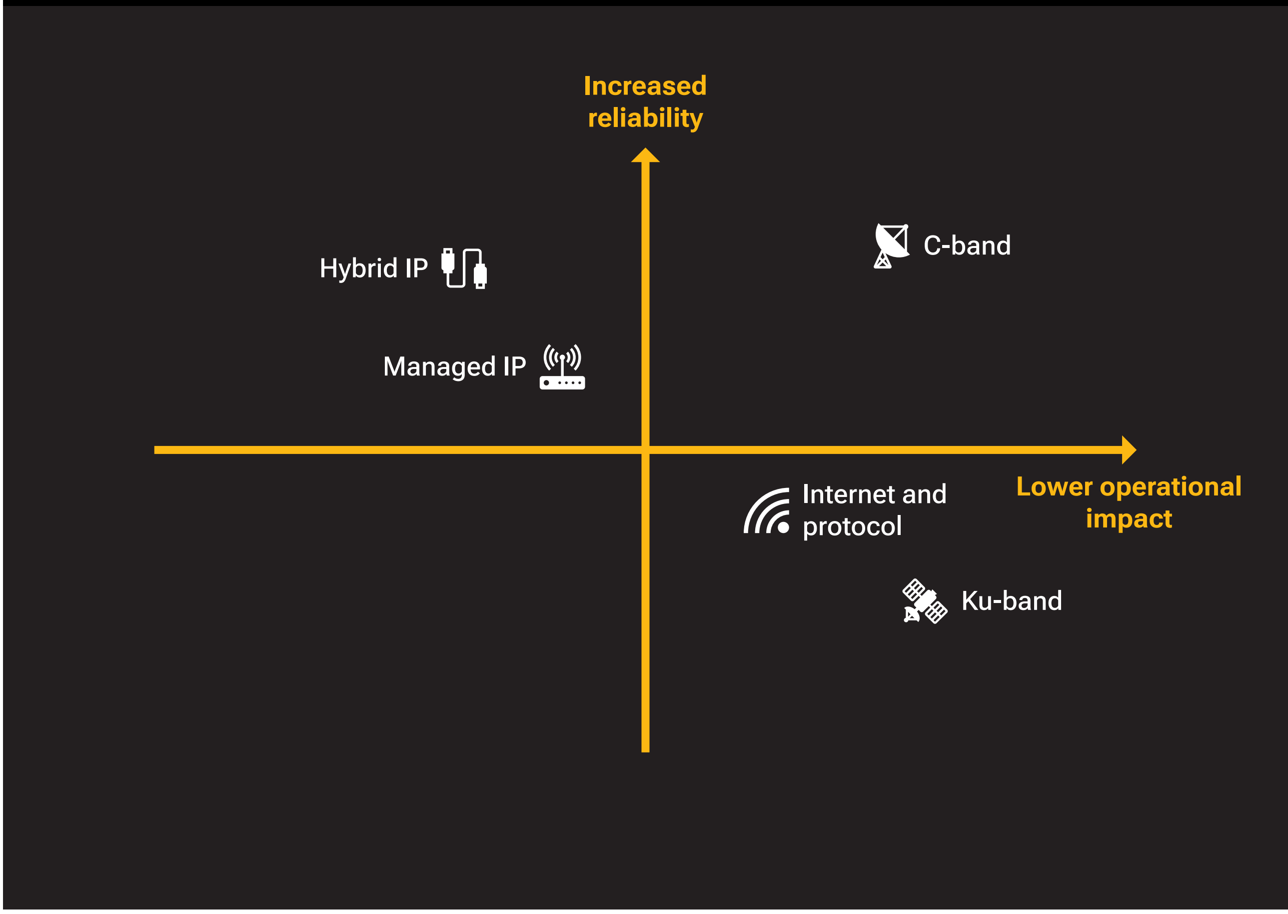
Figure 5 plots each technology against two dimensions: reliability (vertical axis) and operational impact of transition (horizontal axis, where moving right represents lower disruption to existing workflows and infrastructure).

The positioning makes the strategic argument of this report visually: no single technology replicates C-band's combination of reliability and operational familiarity. Hybrid IP comes closest on reliability but requires the most integration effort to deploy. Ku-band is the least disruptive to implement but carries the weather vulnerability that disqualifies it as a permanent solution for live broadcast.

FIGURE 4: KEY PROS AND CONS OF TECHNOLOGY ALTERNATIVES TO C-BAND

MODEL	KEY STRENGTH	KEY LIMITATION
Ku-Band	Familiar operational and cost model	Rain fade issues make it a partial replacement, not a like-for-like
Managed IP (IP-TS)	Unlocks new capabilities: DAI, regional feed variants, etc.	Rural last-mile gap is real and unevenly distributed
Public internet and video transport protocol	Lower cost and widely available infrastructure	Less reliable for live, time-sensitive broadcasts
Hybrid IP (Fiber + 5G/LEO)	Only option that approaches C-band resilience by design	Not deployable at speed due to integration complexity

FIGURE 5: RELIABILITY AND OPERATIONAL IMPACT OF DIFFERENT TECHNOLOGY MODELS



The recommendations

START THE ASSESSMENT NOW

Waiting for regulatory certainty before beginning the assessment is a strategic error. The assessment itself (understanding your affiliate footprint, your connectivity landscape, your contractual exposure, and your technology options) takes time. Organizations that begin now will be able to make informed decisions quickly when the rules are finalized.

MAP YOUR AFFILIATE DELIVERY LANDSCAPE

The single most important operational exercise is a site-by-site audit of your affiliate receive infrastructure. For each site, understand the following: current C-band receive capability, available fiber connectivity (provider, capacity, resilience, diversity, ISP/Managed), 5G coverage and performance, whether Ku-band is technically feasible given local weather patterns, and the cost of upgrade to IP-readiness. This data is the foundation of every subsequent technology and commercial decision.

MODEL MULTIPLE SCENARIOS

Do not plan for a single outcome. Model the 100 MHz scenario (partial displacement, possible repacking), the 180 MHz scenario (full displacement, complete technology migration), and the timeline scenarios (July 2027 clearance vs. extended timelines). The cost and operational implications differ substantially across these scenarios, and the right distribution strategy may differ too.

PRESSURE-TEST VENDOR COMMITMENTS

Engage vendors in detailed commercial and technical discussions. Specifically: examine contractual SLAs for ability to deliver uptime, latency, and fault response times required; ask for case studies from affiliate footprints comparable to your own; model the total cost of ownership; and test hybrid configurations rather than committing to a single-technology approach before your connectivity landscape is fully mapped.

CONSIDER A PHASED, HYBRID APPROACH

The evidence from early adopters suggests that a phased transition (beginning with a subset of channels or a subset of well-connected affiliates) reduces risk and builds organizational capability before the regulatory deadline forces a full migration. Dual illumination (running satellite and IP simultaneously for a period) is both technically feasible and operationally prudent.

Conclusion

The upper C-band auction is not a repetition of Auction 107. In 2020, broadcasters had somewhere to go. This time they likely do not.

That structural difference cascades into everything else. Alternatives exist, but none match C-band's unique balance of reliability, coverage, and cost efficiency on their own. The closest substitutes rely on hybrid architectures that demand significant integration effort and timelines incompatible with last-minute planning. At the same time, key regulatory variables (how much spectrum is cleared, on what schedule, and under which terms) remain unsettled, amplifying uncertainty across every layer of planning.

The period before rules are finalized is not a waiting room. It is perhaps the most important window in the entire transition. Technical assessments begun now will be complete when decisions become urgent. Vendor negotiations opened early carry more commercial weight than those opened under statutory pressure.

Broadcasters that treat regulatory uncertainty as a reason to defer will find themselves making consequential technology decisions in compressed timeframes, with less data, less leverage, and less room for error.

The transition is coming. The organizations that begin now will define the terms of it.

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With over a decade of experience in the broadcast and media industry, he has worked with media companies, membership organisations, and technology businesses to identify emerging trends and anticipate change. His work focuses on research, data analytics, and content strategy, helping organisations turn insight into action.

Lorenzo is also the author of Sense the Frame, a Substack newsletter that uses data to explore developments in media, technology, and storytelling.

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