

Could Acceleration Payments Increase Funding for Broadband? A Review of the FCC's C-Band Plan

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Consumer and industrial demand for mobile wireless services seems insatiable. The amount of data carried by mobile wireless networks is growing exponentially, with nearly a four-fold increase in data between 2014 and 2017.¹ All this data is carried over radio spectrum, the presently-allocated capacity of which is nearing exhaustion. More spectrum is needed for commercial wireless services, especially in the low- and mid-bands.

A promising source of additional mid-band commercial spectrum is the C-Band, a 500 MHz swath of spectrum (3.7-4.2 GHz band) presently allocated for the provision of satellite communications. Satellite service providers have indicated that a large portion of this band could be repurposed by repacking existing users and uses to a portion of the band, though doing so requires billions in investments in network improvements and modifications.

After conducting an extensive fact finding proceeding and evaluating its legal options, the Federal Communications Commission ("FCC") recently released a draft *White Copy Order* which, if adopted at its February 28, 2020 Open Meeting, would commit the agency to conducting a public auction of a whopping 280 MHz of this C-Band spectrum² worth billions auction.³ The Commission is not reinventing the wheel with its *C-Band White Copy Order*. Relying on its *Emerging Technologies* framework, the Agency will require overlay

licensees to pay for the reasonable relocation costs of incumbent space station and incumbent earth station operators to clear the lower 300 MHz of the C-Band spectrum in the contiguous United States over a five-year period.⁴

[T]he Commission's plan for the C-Band will not reduce the funds available for the Treasury to fund social programs. In fact, the Commission's proposal is designed purposely not to do so. Based on best estimates, the Agency's C-Band White Copy Order, if adopted, is expected to increase the net revenues available for these social programs by nearly \$1 billion.

The Commission's C-Band Plan also recognizes that in delay there is no plenty. Chairman Ajit Pai—balancing an array of varied and conflicting interests—successfully negotiated an arrangement whereby incumbent satellite providers will voluntarily clear the spectrum on an expedited basis in return for \$9.7 billion in acceleration payments provided certain targets are met.⁵ Potential bidders, anxious to get their hands on this much-needed resource, have embraced the plan.⁶

With both buyers and sellers on board, the Chairman's carefully-crafted C-Band Plan appears to have set the stage for a successful spectrum auction. Or has it? Some legislators on Capitol Hill are now resisting Chairman Pai's C-Band Plan, fearing that the acceleration payments would reduce net auction proceeds that might otherwise be used for a range of social programs including rural broadband expansion.⁷

In this PERSPECTIVE, I consider this concern but conclude that the Commission's plan for the C-Band will not reduce the funds available for the Treasury to fund social programs. In fact, the Commission's proposal is designed purposely not to do so. Based on best estimates, the Agency's *C-Band White Copy Order*, if adopted, is expected to increase the net revenues available for these social programs by nearly \$1 billion.

Background

Repurposing spectrum is hard work.⁸ Since most radio spectrum is already in use, one of the more difficult challenges is what to do with incumbent users. Incumbent users encumber their spectrum; that is, they use it. As such, repurposing requires that incumbent users vacate the spectrum or else be accommodated by new users. Even when incumbents agree or are forced to vacate the spectrum, doing so takes time. Unencumbered spectrum is more valuable than encumbered spectrum; spectrum that is clear today is more valuable than spectrum set to be cleared in the future.

It is the timing of the C-Band's clearing that the Chairman's plan attends to. Under normal conditions, the clearing of spectrum by incumbent users can take years. For instance, the Commission's 2016 Voluntary Incentive Auction—which repurposed television spectrum for mobile broadband use—included a 39-month transition period. Incumbents in that band were awarded \$10 billion to surrender portions of their spectrum.⁹ Relocating

incumbents in the 800 MHz band has taken over fourteen years.¹⁰

Clearing the lower portion of the C-Band requires launching new satellites, modifying earth stations, and other accommodations. These things take time. Based on record evidence and prior experience with relocations, the relocation of incumbents from the to-be auctioned portion of the C-Band is five years (ending September 30, 2025).¹¹ On this schedule, the C-Band is expected to be worth billions at auction. But, if the clearing of some or all of the spectrum could be done sooner so that it could be put to use by the new licensees, then it could be worth even more.

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With that in mind, the Chairman negotiated an expedited clearing schedule with the satellite operators in the band, rewarding them with \$9.7 billion in "acceleration payments" to clear 100 MHz by 2021 and the remaining 180 MHz by 2023.¹² In each case, two years was shaved off the expected transition period.

Despite the FCC's long history of using acceleration payments to clear spectrum, some in Congress have expressed concern that these acceleration payments constitute unjust enrichment to incumbents (an argument perhaps enflamed by the fact that several of the satellite operators are based in Luxembourg, even though they are public companies held in large part by U.S. institutional investors).¹³ For example, Congressman Mike Doyle (D-PA) fears

“this auction will not fund critical public safety infrastructure or bridge the digital divide.”¹⁴ And Senator John Kennedy (R-LA) isn’t thrilled about paying satellite companies anything when “there are towns in Louisiana and across the country without access to broadband service.”¹⁵

Behind such concerns is the fear that acceleration payments will reduce the net auction revenues and, in doing so, reduce the amount of revenues available for broadband expansion (or other programs). Such concerns cannot be dismissed outright, but, as I demonstrate now, the Commission appears to have sized the acceleration payments so that they do not attenuate net auction revenues. Instead, the Chairman’s negotiated C-Band Plan will increase net auction revenues through expedited clearing of the band.

Analysis

To clear the C-Band, incumbent satellite users have a lot of work to do—new satellites have to be launched, earth stations have to be modified, existing customers have to adjust their equipment, new filters must be installed, and all of these activities must be coordinated for a seamless transition. These things take time, so the Commission’s *C-Band White Copy Order* sets a final clearing date of September-2025.

The Commission estimates the cost to satellite operators of clearing the band in five-years to be between \$3.3 and \$5.2 billion.¹⁶ Speeding up the clearing of the C-Band will add to those costs but, at the same time, create value by bringing profits forward in time. By increasing expected profits, accelerated clearing should raise auction proceeds. As the Commission’s *C-Band White Copy Order* states, there are “significant public interest benefits of clearing terrestrial, mid-band spectrum more quickly, which would bring next-generation services like 5G to the American public years earlier and help assure American leadership in the 5G ecosystem...”¹⁷

An accelerated clearing is beneficial to the auction winners and their customers; it is costly to incumbents. Obtaining the benefits of a faster transition requires that the incentives of all the parties be made compatible. To motivate incumbents to speed up the transition, the Commission proposes to use acceleration payments that compensate incumbents for clearing the spectrum faster than it would be absent such payments. Instead of clearing the spectrum by September-2025, satellite providers will receive acceleration payments for clearing 100 MHz in most top-50 markets by September-2021 and the rest of the band by September-2023.¹⁸ This is not a novel approach; acceleration payments have been a feature of many spectrum auctions.¹⁹

Chairman Pai’s negotiation with the C-Band incumbents resulted in a \$9.7 billion acceleration payment. Since this acceleration payment is less than the increase in auction proceeds, the Commission’s acceleration payment plan is expected to provide an additional \$800 million in net proceeds to the U.S. Treasury.

These acceleration payments are not without controversy. Why should the government pay anything to the satellite incumbents to speed up the transition? Won’t these acceleration payments reduce the amount of net auction proceeds available for social programs like broadband expansion? Answering these questions requires little more than recognizing that \$10 today is worth more than \$10 a year from now. That is, there is a time value to money.²⁰ So, should the government be willing to pay something for expedited clearing? *Yes.* Do these payments necessarily reduce net auction proceeds? *No.*

To grasp the value of expedited clearing, let's employ a simple model with only two time periods, 0 and 1 (i.e., the present and some future period). An auction is to be held in period 0 for spectrum that is set to be cleared in period 1. Auction revenue is R_1 . Note that auction revenues equal the expected flow of profits realized by the firm from the licenses acquired. Let's say, arbitrarily and unrealistically small to avoid confusion regarding the actual auction values, that auction revenues are expected to be \$90 and this is the amount the government will have to spend on its social programs.²¹

A review of the Commission's C-Band White Copy Order reveals that the Commission has ensured, to the extent possible, that the acceleration payments would, if anything, increase net auction proceeds.

Now, consider an alternative where the spectrum is clear in period 0. Auction revenues in this situation are R_0 . Given the time value of money, bidders will pay more at auction in this scenario ($R_0 > R_1$) since the stream of profits is larger when the spectrum is available sooner. If R_0 is \$100, then the delayed clearing reduces the expected flow of profits and thus auction revenues by \$10 [= \$100 - \$90].

Expedited clearing increases auction revenues by \$10. (This \$10 is auction revenues alone and does not include the added value of consumers receiving new services sooner.) As such, the government, as the auctioneer, should be willing to spend up to \$10 as an incentive to incumbents to clear the spectrum more quickly—it is worth \$10 to do so. If the additional resources required by incumbents to clear the band are \$10 or less, then an opportunity exists to craft a

mutually-beneficial agreement for expedited clearing.

In fact, it may be possible for the federal government to increase its net auction revenues through such a compensation program. Say, for instance, that incumbents are willing to expedite the clearing of the spectrum for a payment of \$9. With auction revenues of \$100 and acceleration payments of \$9, the net auction revenues available for government programs is \$91. Using acceleration payments, the government obtains an extra \$1 in funds for its social programs (since $R_1 = 90$). Rather than reducing the amount of income available for social programs, the acceleration payments increase such funds.

If the acceleration payments were \$11, then the auction proceeds of the cleared spectrum are only \$89, and there are less funds for social programs relative to delayed use. So, it is also possible that the acceleration payments to reduce net auction proceeds, as some legislators fear. But, in this example, we know that the accelerated clearing is worth only \$10, so we wouldn't pay \$11 for it.

Chairman Pai, perhaps guided by his economists, recognized how acceleration payments could positively or negatively influence net auction proceeds. As just demonstrated, to avoid negatively affecting the net funds available for social programs the acceleration payment must be less than $(R_0 - R_1)$, or \$10 in this example. A review of the Commission's *C-Band White Copy Order* reveals that the Commission has ensured, to the extent possible when predicting the future, that the acceleration payments would, if anything, increase net auction proceeds.

As just described, to keep the acceleration payments from reducing net auction revenues the acceleration payments must be less than the increase in auction revenues from the expedited clearing. Thus, the Commission estimated that value $(R_0 - R_1)$. Using record evidence on the

expected auction proceeds, the difference in auction revenues between the two scenarios was estimated to be \$10.52 billion.²² This value serves as an upper bound on the acceleration payments—any payment less than \$10.52 billion are expected to *increase* the government’s net proceeds. Alternately, any payment more than \$10.52 billion will *reduce* net proceeds.

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Critically, this additional revenue is not available absent the acceleration payments, since

the additional value (of \$10.52 billion) is a direct result of the expedited clearing. Adopting the accelerated payment, as the Commission observed, “is reasonable and will serve the public interest,”²⁴ but only because the payment for expedited clearing is less than the value of the expedited clearing. The Commission’s reasoning is economically sound.

Conclusion

As demonstrated in this PERSPECTIVE, acceleration payments for the C-Band are expected to increase—not decrease—the amount of net auction proceeds available for broadband expansion by nearly \$1 billion. This billion-dollar bump is the result of the Commission applying economic reasoning to limit the size of the acceleration payments to a level below the revenue effect of the accelerated clearing. The Commission’s plan ensures a beneficial outcome for all parties involved: the potential bidders are pleased, the incumbent satellite operators agreed, and the U.S. Treasury is expected to obtain more revenue with than without these payments. Chairman Pai negotiated a good deal for the American public in his C-Band Plan. While those in Congress skeptical of the C-Band Plan can rest easy, their skepticism surely encouraged a more thoughtful application of economic reasoning by the Commission.

NOTES:

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¹ <https://www.ctia.org/the-wireless-industry/infographics-library>.

² *In the Matter of Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, REPORT AND ORDER AND ORDER OF PROPOSED MODIFICATION, FCC-CIRC2002-01 (White Copy posted February 7, 2020) (hereinafter “C-Band White Copy Order”) (available at: <https://docs.fcc.gov/public/attachments/DOC-362358A1.pdf>).

³ *Cf.*, D. Collier and T. Schatz, *The Race to 5G: Protecting Taxpayers through Spectrum Auctions*, Citizens Against Government Waste (2019) (available at: <https://www.cagw.org/sites/default/files/pdf/The%20Race%20to%205G-Protecting%20Taxpayers%20Through%20Spectrum%20Auctions.pdf>).

⁴ *C-Band White Copy Order*, *supra* n. 2 at ¶ 111 (the 300 MHz includes a 20 MHz guard band).

⁵ *Id.* at ¶ 217.

⁶ *See, e.g.*, M. Allevan, *Verizon, AT&T, T-Mobile Support Pai’s C-band Plan as Backlash Commences*, FIRECEWIRELESS (February 7, 2020) (available at: <https://www.fiercewireless.com/regulatory/verizon-at-t-t-mobile-support-pai-s-c-band-plan-as-backlash-commences>).

⁷ *See, e.g.*, C. Henry, *FCC C-band Plan Draws Mixed Reaction from Congress*, SPACENEWS (February 7, 2020) (available at: <https://spacenews.com/fcc-c-band-plan-draws-mixed-reaction-from-congress>); *see also* Allevan, *id.*

⁸ *See, e.g.*, G.S. Ford and M. Stern, PHOENIX CENTER POLICY PERSPECTIVE NO. 18-10: *Addressing Holdouts in the Repurposing of Spectrum for Broadband Services* (December 19, 2018) (available at: <https://www.phoenix-center.org/perspectives/Perspective18-10Final.pdf>); T.R. Beard and G.S. Ford, PHOENIX CENTER POLICY PERSPECTIVE NO. 18-08: *Expediting Spectrum Repurposing Through Market Transactions* (October 12, 2018) (available at: <https://www.phoenix-center.org/perspectives/Perspective18-08Final.pdf>); T.R. Beard, G.S. Ford & M.L. Stern, *Interference, Sunk Investment, and the Repurposing of Radio Spectrum*, INFORMATION & COMMUNICATIONS TECHNOLOGY LAW (2020) (available at: <https://doi.org/10.1080/13600834.2020.1726020>).

⁹ S. Wang, *The FCC Spectrum Auction is Sending \$10 Billion to Broadcasters. Where Will That Money Go?* NIEMANLAB (April 14, 2017) (available at: <https://www.niemanlab.org/2017/04/the-fcc-spectrum-auction-is-sending-10-billion-to-broadcasters-where-will-that-money-go>).

¹⁰ *C-Band White Copy Order*, *supra* n. 2 at ¶ 164.

¹¹ *Id.* at ¶ 161.

¹² *Id.* at ¶ 169.

¹³ *See, e.g.*, Editorial Board, *Ajit Pai’s Satellite Mission*, WALL STREET JOURNAL (February 6, 2020) (available at: <https://www.wsj.com/articles/ajit-pais-satellite-mission-11581034547?mod=searchresults&page=1&pos=16>); On institutional ownership, *see, e.g.*, <https://www.nasdaq.com/market-activity/stocks/i/institutional-holdings>.

¹⁴ M. Allevan, *supra* n. 6.

¹⁵ *Id.*

¹⁶ *C-Band White Copy Order*, *supra* n. 2 at ¶ 208.

¹⁷ *Id.* at ¶ 184.

¹⁸ *Id.* at ¶ 169.

¹⁹ *See id.* at ¶ 183 and citations therein.

²⁰ <https://www.investopedia.com/terms/t/timevalueofmoney.asp>.

²¹ I assume there are no relocation costs since they apply to any auction scenario.

NOTES CONTINUED:

²² *C-Band White Copy Order*, *supra* n. 2 at ¶ 216.

²³ *Id.* at ¶ 217.

²⁴ *Id.*