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March 8, 2019

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ***Ex Parte Notification***

GN Docket No. 18-122, *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band*

Dear Ms. Dortch:

On March 6, 2019, John Hunter of T-Mobile USA, Inc. ("T-Mobile"),[1/] Russell Fox of Mintz, and I met separately with Nicholas Degani, Senior Counsel to Chairman Pai; Rachael Bender, Wireless and International Advisor to Chairman Pai; Will Adams, Legal Advisor to Commissioner Carr; and William Davenport, Chief of Staff and Senior Legal Advisor for Wireless and International to Commissioner Starks regarding the above-referenced proceeding. We distributed the attached presentation to Mr. Davenport, which summarizes the *ex parte* letter T-Mobile submitted in this proceeding on February 15, 2019 (which was also distributed to Mr. Davenport and is attached).[2/]

In each meeting, we stressed that the 180 megahertz of spectrum that would be made available under the C-Band Alliance proposal in this proceeding is insufficient because, among other reasons, it would be unable to support the mid-band spectrum requirements of multiple providers. We reiterated that the private process by which the C-Band Alliance would select licensees of the 3.7-4.2 GHz band (the "C-band") spectrum is contrary to the Communications Act and the public interest.

Instead, we urged that the Commission conduct a C-band incentive auction, the structure of which was described in the *February Ex Parte*. In particular, the auction structure would include not only satellite operators but also earth station registrants, which would foster competition and lead to a more efficient reallocation of the spectrum. Moreover, an incentive auction conducted

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1/ T-Mobile USA, Inc. is a wholly owned subsidiary of T-Mobile US, Inc., a publicly-traded company.

2/ *See* Letter from Steve B. Sharkey, Vice President, Government Affairs, Technology and Engineering Policy, T-Mobile, to Ms. Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Feb. 15, 2019) ("*February Ex Parte*").

for different geographic areas provides a market-based mechanism to determine the most appropriate balance of terrestrial versus satellite use of the C-band and provides flexibility for that use to vary geographically. In contrast to the C-Band Alliance proposal, an incentive auction would be open, transparent, and market-based and could deliver a portion of the purchase price to U.S. taxpayers, consistent with the Communications Act.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed in the above-referenced docket and a copy is being provided to the staff with whom we met. Please direct any questions regarding this filing to me.

Respectfully submitted,

/s/ Steve B. Sharkey

Steve B. Sharkey
Vice President, Government Affairs
Technology and Engineering Policy

Attachments

cc: (each by e-mail, with attachments)
Nicholas Degani
Rachael Bender
Will Adams
William Davenport

C-Band Incentive Auction

March 2019

C-Band Incentive Auction Best Serves the Public Interest

C-band is critical mid-band spectrum for 5G deployment

- Record is clear that 180 megahertz is insufficient
- Goal should be to maximize terrestrial use while providing satellite capacity in the markets that need it

Open and transparent market-based process with all interested parties is the best way to reach that result

- Everybody – except CBA – loses with a behind-the-scenes deal

Including ***all*** stakeholders will produce the best result

- Including earth station registrants fosters competition, leads to a more efficient reallocation of spectrum, and will help fund the expansion of fiber
- Everybody should come out a winner in the process, including U.S. taxpayers

Auction is required by the Communications Act

C-Band Incentive Auction Overview

Three-Step Process:

1. Conduct a forward auction for all 500 megahertz in each market (PEA) to discover the MHz-pop value for each license = “purchase price”
2. Offer the purchase price in each market to incumbents, both satellite operators and earth station registrants
3. Award the purchase price in the market to the group that is willing to clear the band for the least amount of money, subject to whatever the FCC retains for the benefit of U.S. taxpayers

If an offer is not accepted, reduce the clearing target in the market and repeat

An Improved Incentive Auction Structure

Open, Transparent, and Inclusive

- All interested parties would be invited to participate, including earth station registrants

More Spectrum

- C-band Incentive Auction can provide the incentives and means to make up to 500 megahertz of spectrum available in a market

Spectrum Available on a PEA-by-PEA Basis

- C-band Incentive Auction recognizes that satellite operators and earth station registrants may be willing to relinquish more spectrum in some areas than others, making the maximum efficient amount of spectrum available in each market

Speed

- Clearing process can occur more quickly with the inclusion of earth station registrants and only a few rounds will be needed for the reverse auction

An Improved Incentive Auction Structure (Cont'd)

Win-Win-Win

- Satellite operators, earth station registrants, and taxpayers all can receive part of auction proceeds

Consistent with the Communications Act

- C-band Incentive Auction would allow the Commission to fulfill its statutory mandate to conduct an auction for mutually exclusive applications and would be consistent with the Commission's authority to conduct incentive auctions

Closing the Digital Divide

- By providing funds and incentives to use and deploy fiber more broadly, C-band Incentive Auction presents an opportunity for greater fiber connectivity in areas where it is not currently deployed

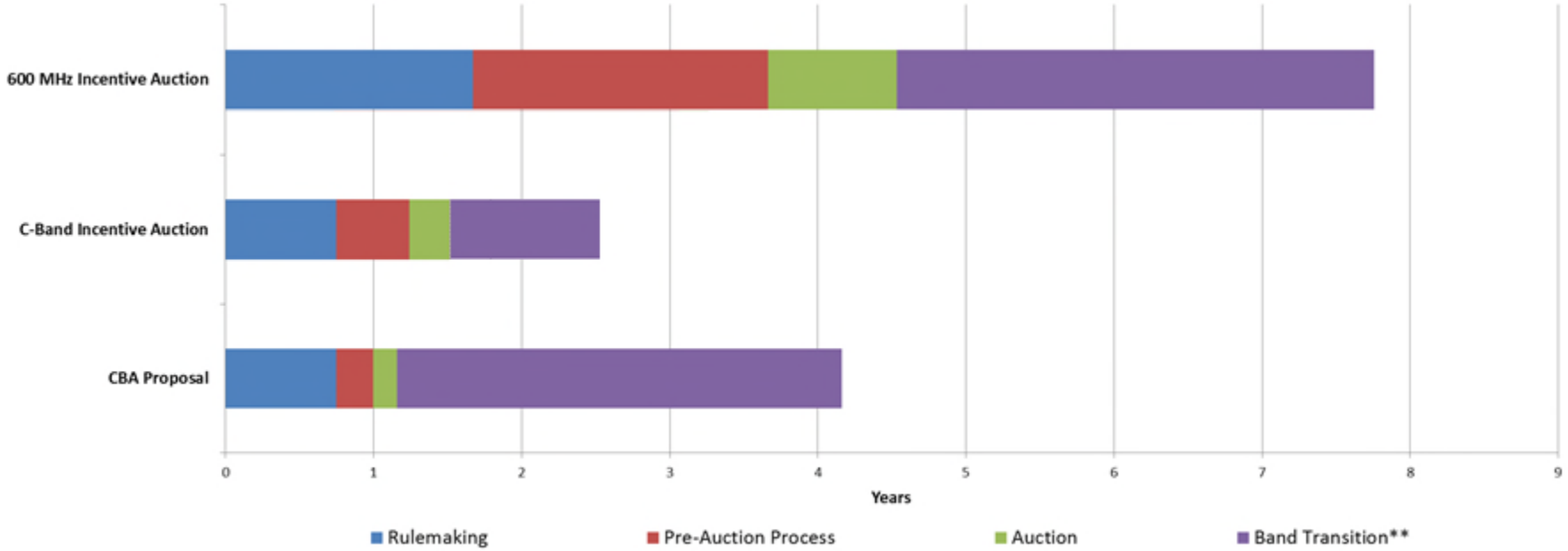
Simpler Than Broadcast Incentive Auction

	C-Band Incentive Auction	Broadcast Incentive Auction
Spectrum and Band Plan	Market-by-market clearing	Required nationwide coordinated band plan and complex optimization between
Price Offers	Simple -- offer based on MHz-pops cleared	Complex -- with impaired licenses and relocation price options
Reverse Auction Structure	Few rounds, especially if spectrum reduced at large intervals	Required at least 50 rounds per stage and supercomputer
Repacking and Reimbursement	Limited retuning costs because of lack of earth station interdependence and earth station frequency agility. No resource availability limitations.	Extensive multibillion dollar repacking process with limited personnel and other resources

Vastly Superior to C-Band Alliance Proposal

	C-Band Incentive Auction	C-Band Alliance Proposal
Spectrum	Up to 500 megahertz for 5G	Maximum of 180 megahertz for 5G
Amount of Spectrum Per Area	PEA by PEA	Nationwide basis
Pricing	Market driven competition	C-Band Alliance only
Auction Proceeds	Revenue for taxpayers	No government revenue
Market Process	Transparent	Closed and opaque
Earth Station Licensees	Earth stations and satellite operators can both benefit	Only satellite operators get money
Stakeholders' Choice	Completely voluntary for all parties	Earth stations get no say

C-Band Incentive Auction Provides Usable Spectrum Faster



- **Rulemaking time**: Both C-Band proposals will require a rulemaking that will take approximately the same length of time
- **Pre-Auction Process**: CBA's will require less up-front preparation than an incentive auction. But the pre-auction process for the C-Band will likely take significantly less time than the first-ever-of-its-kind Broadcast Incentive Auction
- **Auction:** CBA closed-door bidding process for a maximum of 180 megahertz can be quicker; a transparent auction for up to 500 megahertz will take longer
- **Relocation**: Largest variable. CBA's relocation process is considerably longer than the C Band incentive auction relocation process because CBA will need to accommodate many more earth station licensees in the condensed band. CBA has also said it will need to design, build, launch and operate eight new geostationary earth-orbit satellites to support the same number of earth station licensees in 300 MHz instead of 500 MHz of spectrum

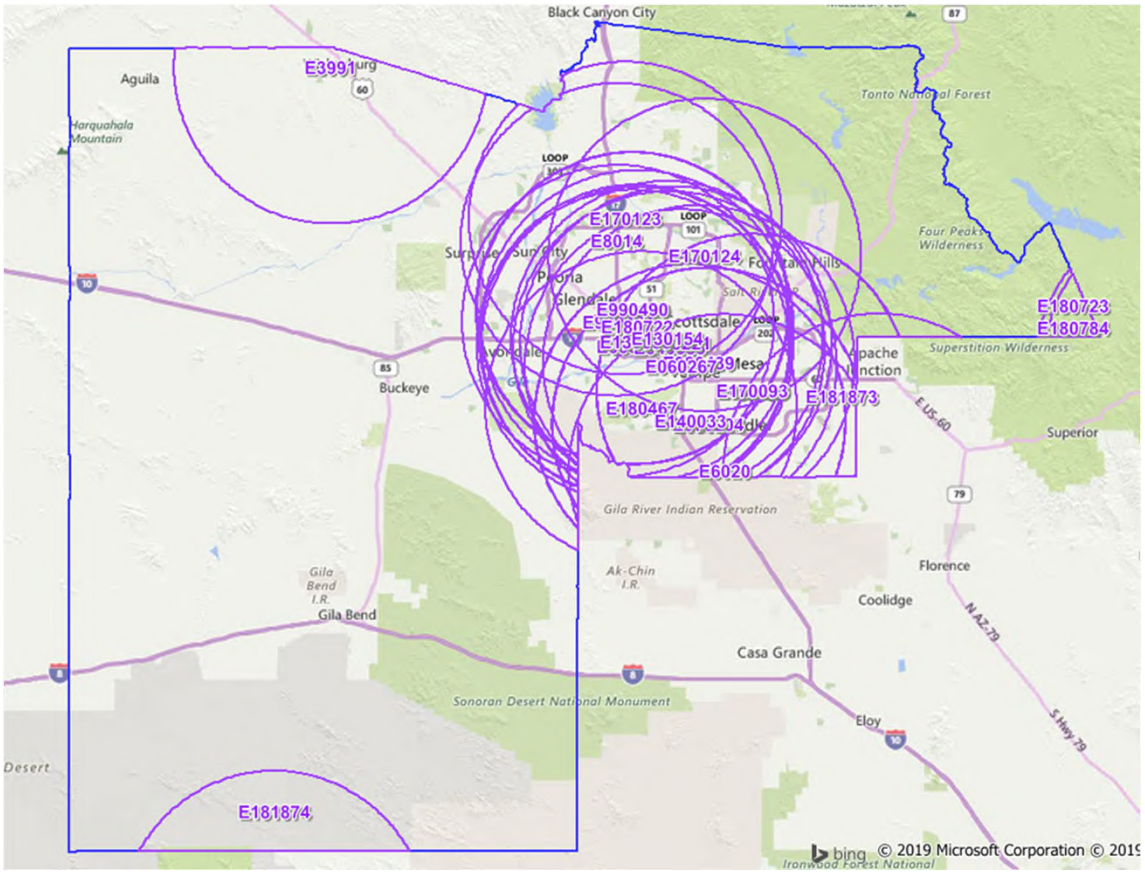
Phoenix Example – 20 Mile Protection Zones

C Band earth stations in Phoenix are shown here with a 20-mile protection zone

To calculate the POPs, nation is divided into a grid and Census block level population data is distributed proportionally to each grid cell

If the centroid of a grid cell is within an earth station's protection zone, then that grid cell is considered "covered" by that earth station

If *X* earth stations cover a grid cell, then each of the *X* earth stations gets attributed the POPs in that grid cell divided by *X*



Sum of the attributed POPs in all grid cells covered by an earth station gives that earth station's covered POPs

T-Mobile

Phoenix Example – 20-Mile Protection Zones

$/MHz-POP	$ 0.35
Spectrum	500 MHz
PEA POPs	3,817,117
Total Revenue	$ 667,995,475

- Assume the wireless market can provide $48 billion for the auction
- This is roughly a nationwide average of $0.30 per MHz-POP for 500 MHz
- In the Broadcast Incentive Auction, the price in Phoenix exceeded the national average by about 18%
- Thus it is reasonable to expect about $0.35 per MHz-POP in Phoenix
- At that price point, most earth station operators can expect to receive $15 to $36 million to clear all 500 MHz

Call Sign	Total Covered POPs	Share of Forward Auction Revenue
E8014	2,459,826	$ 36,236,720
E170123	2,186,153	$ 30,915,690
E990464	2,872,824	$ 30,816,979
E950195	2,919,462	$ 28,654,221
E990490	2,917,093	$ 28,584,109
E000529	2,916,230	$ 28,551,352
E180722	2,981,929	$ 27,651,379
E000528	2,949,170	$ 26,983,304
E130055	2,958,434	$ 26,613,465
E880093	2,958,973	$ 26,421,828
E130154	3,030,206	$ 26,012,871
E050221	2,999,729	$ 25,280,835
E040085	2,993,910	$ 25,238,467
E170124	2,470,446	$ 25,033,821
E060267	2,908,841	$ 23,969,629
E980439	2,839,742	$ 23,535,198
E180467	2,365,400	$ 18,464,196
E010254	2,148,533	$ 15,867,106
E010255	2,148,533	$ 15,867,106
E140033	2,148,533	$ 15,867,106
E040294	2,143,550	$ 15,803,993
E970396	1,976,080	$ 15,605,507
E020233	1,976,080	$ 15,605,502
E170093	1,976,080	$ 15,605,502
E060399	1,975,918	$ 15,604,379
E970204	2,013,077	$ 15,326,972
E181807	2,012,577	$ 15,316,481
E181816	2,012,577	$ 15,316,481
E6020	1,482,791	$ 11,394,788
E181873	675,645	$ 6,773,317
E3991	14,169	$ 2,479,510
E180784	0.5	$ 50
E180723	0.4	$ 33
TOTAL		$ 651,397,895

T··Mobile·

601 Pennsylvania Ave., NW
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February 15, 2019

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ***Written Ex Parte Communication***

GN Docket No. 18-122, *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band*

Dear Ms. Dortch:

An incentive auction remains the most efficient, market-based means of licensing terrestrial wireless operations in the 3.7-4.2 GHz band ("C-band"). An incentive auction of the C-band spectrum, which is explained in greater detail below, would have three simple steps. *First*, the Commission would hold a forward auction in which terrestrial operators bid to establish a purchase price for the C-band spectrum in every Partial Economic Area ("PEA"). *Second*, that purchase price would be offered to satellite operators and earth station registrants. *Third*, the Commission would award the purchase price in the PEA to whichever group that is willing to clear the band for the least amount of money. The auction and associated clearing process can significantly reduce the time to make spectrum available and launch competitive Fifth Generation ("5G") services compared to the C-Band Alliance ("CBA") proposal.[1/]

This incentive auction process would provide an open and transparent process to allow the market to decide the maximum efficient amount of spectrum that should be reallocated for mobile broadband deployment. Moreover, an incentive auction of the C-band would – unlike the CBA proposal – comply with the Communications Act, allow participation by all stakeholders, and benefit U.S. taxpayers by returning a portion of the proceeds to the U.S. Treasury.

[1/] The CBA proposal would repurpose a maximum of 180 megahertz of spectrum in the C-band, by allowing the CBA to enter into private negotiations with one or more wireless mobile operators to clear and repack incumbent downlink operations in that spectrum.

A Refined Incentive Auction Proposal

T-Mobile USA, Inc. ("T-Mobile")[2/] proposed a C-band incentive auction as the most efficient, truly market-based approach for making spectrum available and licensing it though a transparent process that complies with statutory requirements and promotes the public interest.[3/] Based on discussions with interested parties, T-Mobile outlines below an incentive auction approach that even better incorporates all stakeholder interests – not just the interests of the satellite operators – and unlocks more C-band capacity for terrestrial use. This incentive auction proposal includes a mechanism through which satellite earth station registrants can participate in the auction. Including earth station registrants will provide competition in the reverse auction and the opportunity for those entities to directly obtain auction proceeds, leading to a more efficient reallocation of spectrum.[4/] Including earth station registrants in the incentive auction will also encourage them to use alternative delivery mechanisms, such as fiber, to deliver content and help fund the expansion of fiber to previously unserved areas.[5/]

The Three-Step Incentive Auction Process. The refined C-band incentive auction proposal features three simple steps –

- *First*, the Commission would conduct a forward auction among potential wireless broadband licensees for all 500 megahertz of C-band spectrum in each PEA (the

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[2/] T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

[3/] *See* Reply Comments of T-Mobile USA, Inc., GN Docket No. 18-122, *et al.*, at 5-13 (filed Dec. 11, 2018) ("T-Mobile Reply Comments").

[4/] Under T-Mobile's earlier incentive auction proposal, earth station registrants would have been compensated indirectly by satellite operators. *See* T-Mobile Reply Comments at 3, 18.

[5/] As noted below, because winning satellite operators would be responsible for accommodating remaining earth station registrants, the satellite operators could be required, using auction proceeds, to reimburse earth station registrants for the costs incurred during the transition, including any costs associated with transitioning operations to alternative media such as fiber. And as other commenters have pointed out, fiber may even be preferable over the C-band for some operations because it offers lower latency than C-band connectivity, greater capacity, and greater security from radio frequency interference. *See, e.g.*, Comments of CTIA, GN Docket No. 18-122, *et al.*, at 17-18 (filed Oct. 29, 2018) ("Fiber can substantially replace some services provided by FSS without significant disruption to customers. Delivering data traffic through fiber cables has advantages in terms of lower latency, greater capacity, enhanced security, and lower cost. Compared to satellites in particular, fiber offers security from radiofrequency interference; much greater capacity; significantly lower latency; and improved economics compared to the cost of deploying and maintaining satellites. Further, fiber is heavily deployed throughout the United States, and is becoming more and more available in rural areas"); Comments of Verizon, GN Docket No. 18-122, at 14 (filed Oct. 29, 2018) ("Much C-band traffic can be transitioned to fiber where fiber is readily available, particularly in urban or suburban areas. Fiber offers lower latency than C-band connectivity, greater capacity, and greater security from radio frequency (RF) interference. And fiber is increasingly available.").

geographic area through which T-Mobile proposes that C-band spectrum be licensed) to determine a MHz-pop purchase price for each license.

- *Second*, the purchase price for each market would be offered to the incumbents, both satellite operators and earth station registrants. Offering the purchase price will result in one of four possible outcomes –

  - If the satellite operators agree to clear the band at the purchase price, but the earth station registrants do not, the auction ends. The satellite operators receive the purchase price and clear the band for terrestrial use.

  - If the earth station registrants agree to clear the band at the purchase price, but the satellite operators do not, the auction ends. The earth station registrants receive the purchase price and clear the band for terrestrial use.

  - If neither the satellite operators nor the earth station registrants agree to clear the band at the purchase price, the forward auction resumes at a lower clearing target, such as 400 megahertz instead of 500 megahertz (or some other appropriate decrement), and the two categories of incumbents bid on the resulting forward auction purchase price for the reduced clearing target as before.[6/]

  - If both the satellite operators and the earth station registrants agree to clear the band at the purchase price, the purchase price is reduced until only one group of operators – satellite or terrestrial – accept the price.

- *Third*, the purchase price would be provided to the winning bidders, subject to whatever portion of the proceeds the Commission retains for the benefit of American taxpayers. If they are the winning bidders, the satellite operators can divide the proceeds consistent with their consortium agreement or, in case they do not form an agreement, according to a default sharing rule established by the Commission. If they are the winning bidders, the earth station registrants would likewise divide the proceeds, but do so based on the population covered by each station's protected contour.[7/] Similar to satellite operators, earth station registrants could form a consortium consistent with the Commission's rules, but would not be required to do so.[8/]

6/ In addition to these steps, the incentive auction would have two other important features. *First*, the Commission will set a minimum level of spectrum – T-Mobile has suggested 300 megahertz – for which it will conduct only a forward auction. *Second*, after the auction is complete, the Commission would conduct an assignment round, similar to the Broadcast Incentive Auction or the upcoming millimeter wave auction.

7/ The size of each earth station registrant's share of the forward-auction proceeds would be a direct result of the population covered by that station's protected contour because all earth station registrants are assumed to occupy the full amount of the spectrum offered in the forward auction. The more population an earth station registrant can clear, the more money that earth station registrant will receive.

8/ While T-Mobile initially proposed that satellite operators participate in an incentive auction through a consortium, the Commission may wish to consider mechanisms that would permit them to

A real-world illustration of how this refined incentive auction proposal would operate is included in Attachment 1 to this letter.

Including Earth Station Registrants Improves the Incentive Auction. Under the refined C-band incentive auction proposal, both earth station registrants and satellite operators may participate in an incentive auction for a particular area, and the amount that earth station registrants can be paid as a result of the reverse auction can be significant. As shown in Attachment 1 to this letter, which includes an example for the Phoenix PEA (PEA 15), most earth station registrants in that PEA could receive between $15 million and $36 million per earth station to clear all 500 megahertz based on $0.35 per MHz-pop in the Phoenix PEA.[9/]

Including earth station registrants in the process is critical for several reasons. *First*, it recognizes the rights of earth station registrants – rights and interests completely ignored by the CBA. *Second*, it acknowledges that the ability to use spectrum in an area for terrestrial operations is directly related to the continuing presence of earth stations. Indeed, the protection of earth station operations is what limits potential terrestrial C-band use in an area. *Third*, including earth station registrants better represents a market-based approach by making that stakeholder group a part of the auction process. By providing earth station registrants economic incentives to vacate the band, the Commission can repurpose more of the C-band efficiently – the fundamental premise of an incentive auction.

A C-Band Incentive Auction is Superior to the CBA Approach and Simpler than the Broadcast Incentive Auction

In addition to the benefits that would result from including earth station registrants, the refined incentive auction approach offers many other advantages over the CBA proposal.

An Open, Transparent, and Inclusive Process. The CBA would conduct a private sale of spectrum rights (that it does not hold) with the parties that it chooses – a closed-door transaction that would allow it to have sole control of the relicensing process. Whatever limited assurances it has attempted to provide to the Commission about how its process "produces a 'win-win' outcome for all interested parties,"[10/] those assurances are not meaningful and are unenforceable.

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participate individually. For example, they could be required to divide the purchase price according to a default rule determined by the Commission, but, in any case, would have the option to contract among themselves to come to a different revenue-sharing formula.

9/ The MHz-pop value for the Phoenix PEA is based on a nationwide spectrum value for the C-band of $0.30 per MHz-pop, which is consistent with estimates provided by several analysts. T-Mobile Reply Comments at 21, n.71. In the Broadcast Incentive Auction, the value of spectrum in Phoenix exceeded the national average by approximately 18 percent, translating in this case to approximately $0.35 per MHz-pop. *See Incentive Auction: Forward Auction – Results*, FCC Public Reporting System, https://auctiondata.fcc.gov/public/projects/1000/reports/forward-results. These values are used as an example based on analyst estimates and not a price commitment by T-Mobile.

10/ Reply Comments of the C-Band Alliance, GN Docket No. 18-122, *et al.*, at 5 (filed Dec. 11, 2018) ("CBA Reply Comments").

In contrast, as Congress envisioned, a C-band incentive auction would invite *all* interested parties to participate, including, importantly, earth station registrants. No party would be foreclosed based on the non-public decisions of a subset of current licensees.

More Spectrum. Under the CBA proposal, a maximum of 180 megahertz of spectrum would be made available for terrestrial wireless operations, including 5G wireless use.[11/] Based on the wider bandwidths that 5G will require to support applications like video streaming, that amount of spectrum, as many parties agree, is simply insufficient to meet the needs of multiple competitive providers.[12/] A C-band incentive auction, however, can provide the incentives and means to make up to 500 megahertz of spectrum available in a market. Combining competitive forward and reverse auctions would greatly increase the potential to clear the full 500 megahertz in many markets and eliminate the ability of a satellite consortium to manipulate prices by limiting supply.

Spectrum Available on a PEA-by-PEA Basis. Under the CBA proposal, only 180 megahertz would be made available on a nationwide basis.[13/] In addition to unnecessarily limiting the amount of overall spectrum that will be made available, this approach fails to recognize that satellite operators or earth station registrants may be willing to relinquish more spectrum in some areas than in others. A C-band incentive auction, however, would account for the differential value of the spectrum in terrestrial and satellite use in different areas by making spectrum available on a PEA-by-PEA basis. Many markets have ample alternative transmission media, such as fiber,[14/] which can make more spectrum available for terrestrial use in those markets. Providing incentive auction funds to those directly involved with content distribution would also provide a means to fund the deployment and reach of fiber in new areas.

Not only would this approach make the maximum efficient amount of spectrum available in each market, but it also would be easier to administer than the Broadcast Incentive Auction. The Broadcast Incentive Auction required a nationwide coordinated band plan with a complex

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11/ *See* Comments of the C-Band Alliance, GN Docket No. 18-122, at 5 (filed Oct. 29, 2018) ("CBA Comments").

12/ *See, e.g.*, Comments of CTIA, GN Docket No. 18-122, *et al.*, at 9 (filed Oct. 29, 2018) ("For an effective mid-band 5G initiative, a substantial amount of 3.7-4.2 GHz spectrum, in the range of hundreds of megahertz, needs to be transitioned nationwide."); Comments of Ericsson, GN Docket No. 18-122, at 10 (filed Oct. 29, 2018) ("[T]he Commission should make sure that hundreds of megahertz of usable spectrum is transitioned for 5G and other next generation services as quickly as possible."); Comments of Nokia, GN Docket No. 18-122, *et al.*, at 7 (filed Oct. 29, 2018) ("The public interest demands that the Commission require a plan and path forward for clearing additional spectrum in the band over and above the recently proposed 200 MHz.").

13/ *See* CBA Comments at 5.

14/ As T-Mobile previously explained, long-haul fiber infrastructure in the U.S. is robust and can replace satellite use in many locations at a relatively low-cost. *See* Comments of T-Mobile USA, Inc., GN Docket No. 18-122, *et al.*, at 8 (filed Oct. 29, 2018) ("T-Mobile Comments").

optimization process that required the use of a supercomputer.[15/] And each time the clearing target was reduced, another complicated optimization process was required between stages.[16/] A C-band incentive auction, in contrast, would only need to determine the population cleared in a market and establish a buying price for clearing that population. If an offer is not accepted, the buying price would be adjusted or the amount of spectrum would be reduced for that market, providing a clear and simple path to clearing spectrum without the need for a coordinated nationwide plan.

Speed. The CBA argues that its proposal would bring the C-band spectrum to market for wireless use quickly. But the CBA's claims of superior speed are unfounded, and the approach comes at the expense of an inferior amount of spectrum and deep legal flaws. A C-band incentive auction can potentially make the spectrum available significantly more quickly than the CBA proposal. Even if there is a relatively small difference in the time required to develop the rules for a C-band incentive auction and run the auction, with significant earth station participation, the clearing process can occur much more quickly than the CBA approach because moving content to fiber could occur much faster than launching new satellites and would eliminate years from the clearing process. This would reduce the time for actually launching 5G services by one to two years compared to the CBA proposal.

The actual C-band incentive auction process would proceed much more quickly than the Broadcast Incentive Auction. In the Broadcast Incentive Auction, the reverse auction of each stage required at least 50 rounds of bidding, regardless of the amount of spectrum targeted for clearing in that stage.[17/] A C-band incentive auction, on the other hand, would require only a few rounds of bidding in the reverse auction. This is especially true if spectrum levels in the incentive auction are reduced at relatively large intervals such as, for example, 100-megahertz intervals, which would result in only two spectrum levels (*i.e.*, 500 megahertz and 400 megahertz) before the Commission conducts only a forward auction.

Revenues for Taxpayers. Under the CBA proposal, the satellite operators would retain all funds from the sale of the C-band spectrum.[18/] The CBA proposal would allow the satellite operators – who did not initially pay for the spectrum and do not have the terrestrial rights they propose to sell – to receive a windfall without any return to the public. Allowing satellite operators to receive a windfall for rights they do not hold is inconsistent with Congressional directive.[19/] Under a C-band incentive auction, not only would satellite operators and earth station registrants

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15/ *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, ¶¶ 44-48, 113, 330 (2014) ("*Broadcast Incentive Auction Report and Order*").

16/ *See, e.g.*, *Clearing Target of 114 Megahertz Set for Stage 2 of the Broadcast Television Spectrum Incentive Auction; Stage 2 Bidding in the Reverse Auction Will Start on September 13, 2016*, Public Notice, 31 FCC Rcd 9628, ¶ 5 (2016).

17/ *See Broadcast Incentive Auction Report and Order* ¶¶ 457-58.

18/ *See* Letter from Jennifer D. Hindin, Counsel for the C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, Attachment (filed Dec. 19, 2018).

19/ *See* T-Mobile Reply Comments at 26-28.

receive a financial benefit, but revenues could also be earmarked for the U.S. Treasury for the benefit for U.S. taxpayers. In fact, a C-band incentive auction could represent a significant return for U.S. taxpayers because there would be little need to set aside repacking costs. Earth station registrants that choose to remain in operation would have limited retuning costs because they would be allowed to continue to receive satellite signals, modified appropriately so that they are protected for only the spectrum in the PEA that remains designated for satellite operation.

Consistent with the Communications Act. The CBA proposal would contravene Congressional intent. Section 309(j)(1) of the Act requires the Commission to use a "system of competitive bidding" when it receives "mutually exclusive applications" for "any initial license."[20/] While the CBA seeks to circumvent this mandate by requiring terrestrial service providers to negotiate private agreements with the CBA, the Commission cannot avoid its obligations under Section 309(j)(1) by simply outsourcing the process of assigning initial applications. In contrast, a C-band incentive auction would be consistent with the Communications Act. Because the Commission would certainly receive mutually exclusive applications for this spectrum, triggering its obligation to conduct a system of competitive bidding, the C-band incentive auction would allow the Commission to fulfill its mandate under Section 309(j)(1) of the Act.

In addition to fulfilling the Commission's obligation under Section 309(j)(1), a C-band incentive auction would be consistent with Section 309(j)(8)(G)(ii) of the Communications Act. That section authorizes the Commission to encourage a licensee to voluntarily relinquish some or all of its spectrum in an incentive auction so long as: (1) the Commission conducts a reverse auction; and (2) there are multiple bidders.[21/] Because the satellite operators could elect not to bid and permit earth station registrants to win the reverse auction, and earth station registrants could likewise elect not to bid and permit the satellite operators to win the reverse auction, a C-band incentive auction would clearly be voluntary. To the extent the authorizations of satellite earth station registrants would potentially be modified to operate on less than the 500 megahertz for which they are now authorized or satellite operators would be required to provide alternative transmission media, a C-band incentive auction would still be voluntary, similar to the Broadcast Incentive Auction. Indeed, the Commission relocated many broadcasters after the Broadcast Incentive Auction even if the broadcaster decided not to participate.[22/]

In addition, the incentive auction plan described above would satisfy Section 309(j)(8)(G)(ii) of the Act. *First*, the Commission would conduct a reverse auction after it conducts a forward auction (the Act does not require the Commission to conduct the reverse and forward auctions in a particular order).[23/] *Second*, there would be multiple bidders in a C-band incentive auction –

20/ 47 U.S.C. § 309(j)(1).

21/ *Id.* § 309(j)(8)(G)(ii).

22/ *See Broadcast Incentive Auction Report and Order* ¶¶ 168, 297.

23/ Indeed, in the 39 GHz proceeding, the Commission plans to combine the reverse auction with the forward auction. *See Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Fourth Report and Order, GN Docket No. 14-177, FCC 18-180, ¶ 9 (rel. Dec. 12, 2018) (stating that "the clock phase of the incentive auction format we plan to use serves as both a reverse auction that will determine the amount of incentive payments as well as a forward auction to assign new flexible use licenses").

both satellite operators *and* earth station registrants. Satellite operators and earth station registrants could each form separate consortia, but would not be required to do so. The previously expressed incentive auction proposal assumed the satellite operators would bid as a single consortium. But in the absence of a consortium, the Commission can direct that the proceeds be apportioned by the number of satellite operators, or by the number of in-orbit satellites each operator has, or by some other objective measure – just as the earth station registrants' proceeds are divided by populations their protected contours cover as a default in the event no consortium exists.

Closing the Digital Divide Through Fiber Deployment and More Spectrum. Because the CBA contends that fiber is not a workable alternative to C-band spectrum,[24/] its proposal does not take into account its potential benefits or does anything to support fiber deployment. In a C-band incentive auction, winning satellite operators would be responsible for accommodating remaining earth station registrants, including potentially by relocating those operations to remote areas, as T-Mobile has suggested, using fiber.[25/] While most areas of the country are already served with fiber, any additional fiber-builds, particularly to rural areas either to facilitate the relocation of earth stations to rural areas, or to replace an earth station in a rural area as an alternative transmission mechanism, can have broader benefits. In particular, this additional fiber can be shared with others to provide connectivity where little may exist today. A C-band incentive auction could therefore help close the digital divide. By providing funds and incentives to use and deploy fiber more broadly, a C-band incentive auction presents an opportunity for greater fiber connectivity even in areas where it is not currently deployed.

A C-Band Incentive Auction Would be Simpler and Faster than the Broadcast Incentive Auction

Auctionomics' recent *ex parte* letter in this proceeding criticizes the T-Mobile proposal for not being the same as the Broadcast Incentive Auction.[26/] But incentive auctions can take many forms consistent with the Communications Act and need not be patterned on the Broadcast Incentive Auction.

As the Commission itself has recognized, it is not hamstrung to simply repeat the processes that constituted the Broadcast Incentive Auction.[27/] T-Mobile's refined proposal meets the fundamental criteria for incentive auctions as specified in the Act and satisfies the four principles Auctionomics set forth in its letter: (1) voluntary; (2) opportunity for separate bidding; (3) efficient quantity of spectrum to be reassigned; and (4) positive incentives.

24/ CBA Reply Comments at 11.

25/ T-Mobile Comments at 8-10.

26/ Letter from Paul Milgrom, Chairman, Auctionomics Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Jan. 21, 2019) ("Auctionomics Letter").

27/ *See Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Fourth Further Notice of Proposed Rulemaking, 33 FCC Rcd 1660 ¶ 44 (2018) ("Congress expressly authorized the Commission to conduct incentive auctions beyond the broadcast television spectrum incentive auction.").

The CBA's private transaction approach is precisely the opposite of an efficient market mechanism. It would result in the sale of spectrum through non-transparent, behind-the-scenes transactions that would fail to include all stakeholders and deprive taxpayers of any benefit. The public interest requires an open and transparent process such as the C-band incentive auction described in this letter.

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Parties in this proceeding have recognized the advantages of a C-band incentive auction,[28/] and the Commission should move quickly to adopt rules for a C-band incentive auction that will produce market-driven results quickly and free up the maximum amount of spectrum for wireless mobile broadband.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed in the above-referenced docket. Please direct any questions regarding this filing to the undersigned.

Respectfully submitted,

/s/ Steve B. Sharkey

Steve B. Sharkey
Vice President, Government Affairs
Technology and Engineering Policy

Attachments

28/ *See, e.g.*, Reply Comments of United States Cellular Corporation, GN Docket No. 18-122, at 4-5 (filed Dec. 11, 2018) ("Only an incentive auction-based reallocation mechanism would ensure that a socially efficient amount of spectrum in the 3.7-4.2 GHz band is repurposed for terrestrial broadband services and assigned under a fair and transparent process that supports the public interest."); Reply Comments of the Dynamic Spectrum Alliance, GN Docket No. 18-122, at 17 (filed Dec. 11, 2018) ("The DSA continues to believe that the Commission should conduct a public auction – a time-tested and reliable method of protecting the interests of all stakeholders and ensuring a market-based result – instead of allowing for private sale."); Comments of the Public Interest Spectrum Coalition, GN Docket No. 18-122, at 26 (filed Oct. 29, 2018) ("The incentive auction authority under Section 309(j) that Congress bestowed on the Commission in the 2012 Spectrum Act is the *legitimate* 'market-based approach' that can and should be designed to work for this band."); Comments of the American Cable Association, GN Docket No. 18-122, *et al.*, at 15 (filed Oct. 29, 2018) ("If the Commission decides to reallocate the lower end of the spectrum, it should consider doing so through the mechanism of incentive auctions.").

ATTACHMENT 1

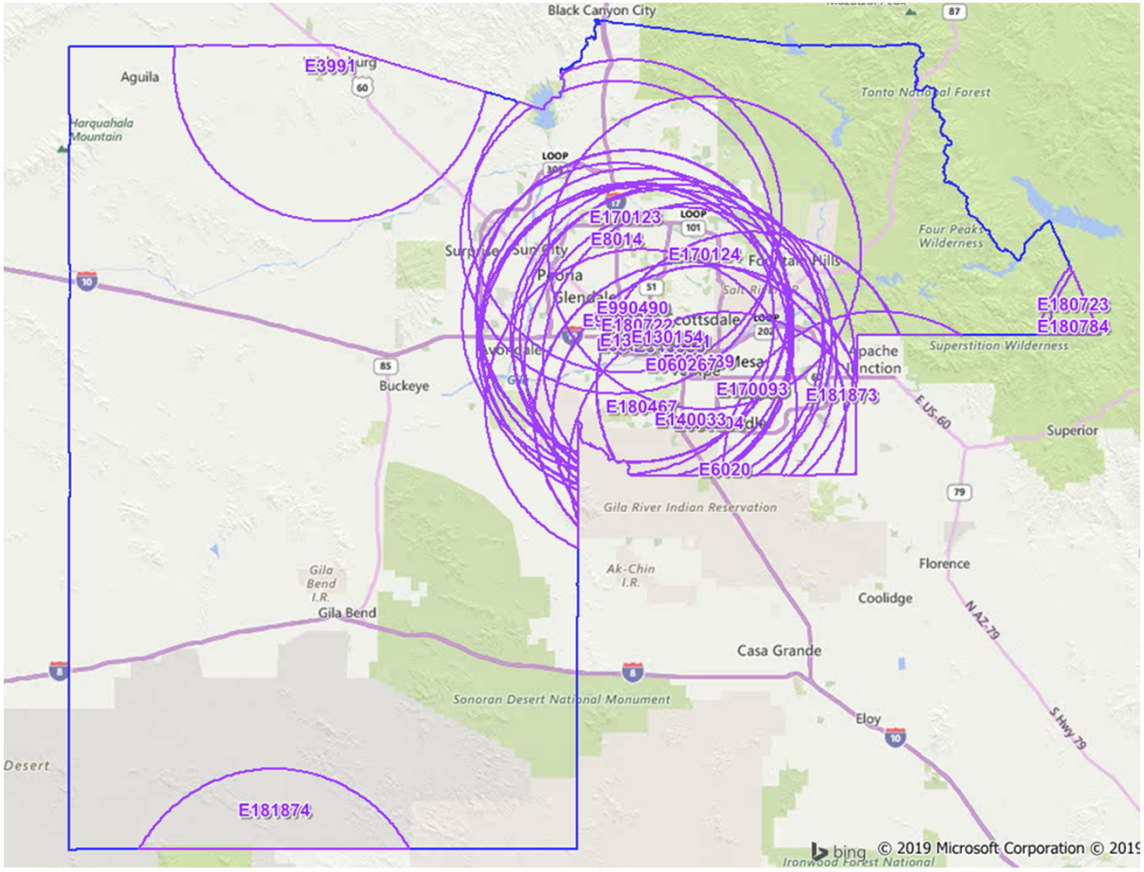
Phoenix Example – 20 mile Protection Zones

The C Band earth stations in Phoenix are shown here with a 20-mile protection zone.

To calculate the POPs, the nation is divided into a grid and Census block level population data is distributed proportionally to each grid cell

If the centroid of a grid cell is within an earth station's protection zone, then that grid cell is considered "covered" by that earth station

If *X* earth stations cover a grid cell, then each of the *X* earth stations gets attributed the POPs in that grid cell divided by *X*



The sum of the attributed POPs in all grid cells covered by an earth station gives that earth station's covered POPs

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Phoenix Example – 20 mile Protection Zones

$/MHz-POP	$ 0.35
Spectrum	500 MHz
PEA POPs	3,817,117
Total Revenue	$ 667,995,475

- Assume the wireless market can provide $48 billion for the auction
- This is roughly a nationwide average of $0.30 per MHz-POP for 500 MHz
- In the Broadcast Incentive Auction, the price in Phoenix exceeded the national average by about 18%
- Thus it is reasonable to expect about $0.35 per MHz-POP in Phoenix
- At that price point, most earth station operators can expect to receive $15 to $36 million to clear all 500 MHz

Call Sign	Total Covered POPs	Share of Forward Auction Revenue
E8014	2,459,826	$ 36,236,720
E170123	2,186,153	$ 30,915,690
E990464	2,872,824	$ 30,816,979
E950195	2,919,462	$ 28,654,221
E990490	2,917,093	$ 28,584,109
E000529	2,916,230	$ 28,551,352
E180722	2,981,929	$ 27,651,379
E000528	2,949,170	$ 26,983,304
E130055	2,958,434	$ 26,613,465
E880093	2,958,973	$ 26,421,828
E130154	3,030,206	$ 26,012,871
E050221	2,999,729	$ 25,280,835
E040085	2,993,910	$ 25,238,467
E170124	2,470,446	$ 25,033,821
E060267	2,908,841	$ 23,969,629
E980439	2,839,742	$ 23,535,198
E180467	2,365,400	$ 18,464,196
E010254	2,148,533	$ 15,867,106
E010255	2,148,533	$ 15,867,106
E140033	2,148,533	$ 15,867,106
E040294	2,143,550	$ 15,803,993
E970396	1,976,080	$ 15,605,507
E020233	1,976,080	$ 15,605,502
E170093	1,976,080	$ 15,605,502
E060399	1,975,918	$ 15,604,379
E970204	2,013,077	$ 15,326,972
E181807	2,012,577	$ 15,316,481
E181816	2,012,577	$ 15,316,481
E6020	1,482,791	$ 11,394,788
E181873	675,645	$ 6,773,317
E3991	14,169	$ 2,479,510
E180784	0.5	$ 50
E180723	0.4	$ 33
TOTAL		$ 651,397,895

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