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June 10, 2019

**VIA ELECTRONIC FILING**

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
Office of the Secretary  
445 12th Street, SW  
Washington, DC 20554

Re: *Notice of Ex Parte Meeting*, GN Docket No. 18-122

Dear Ms. Dortch:

Per FCC Rule 1.1206, this letter provides notice that on June 6, 2019, Bill Tolpegin, Chief Executive Officer of the C-Band Alliance (“CBA”), Peter Pitsch, Executive Vice President, Advocacy & Government Relations of the CBA, Gary Epstein, Paul Milgrom (via phone), and Ilya Segal of Auctionomics Inc., and Henry Gola of Wiley Rein LLP, counsel to the CBA, met with the Commission personnel listed in Exhibit A.

At the meeting, the CBA Parties reiterated that the CBA proposal to clear 200 MHz (inclusive of a 20 MHz guard band) of C-band spectrum within 18-36 months of a final FCC order remains the fastest, most efficient way to transition a substantial amount of mid-band spectrum to terrestrial 5G mobile service, while providing uninterrupted service to existing customers. The CBA Parties discussed their recent proposed band plan filing to transition spectrum to terrestrial mobile operators as part of a voluntary market-based process.<sup>1</sup> Under the proposed band plan, the repurposed C-band spectrum would be divided into nine license blocks, each 20 MHz in size, in each partial economic area in the Continental United States that would be available for bidding by interested parties in a private auction process, followed by an FCC licensing process to approve the winning bidders and award them flexible use licenses.

Auctionomics, whose team members have worked with the FCC and its expert staff for more than 20 years, then provided details of its Flexible Use and Efficient Licensing (“FUEL”) for 5G auction design that the CBA proposes to use for the market-based process. As provided in more detail in Exhibit B, the FUEL process will be quick, efficient, simple, and fair for all participants. The FUEL combinatorial auction design represents the next evolution in auction design and will provide bidders with unprecedented flexibility, allowing them to easily express many specific package bids for different combinations of licenses and accommodating bidders large and small, national and rural.

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<sup>1</sup> See Letter from Bill Tolpegin, Chief Executive Officer, C-Band Alliance, *Written Ex Parte Communication*, GN Docket No. 18-122 (May 21, 2019).

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The CBA and Auctionomics look forward to continued dialogue with industry stakeholders and the Commission regarding its proposal.

Please contact the undersigned with any questions regarding this letter.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Henry Gola', with a stylized flourish at the end.

Henry Gola  
*Counsel for the C-Band Alliance*

Attachments

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## **EXHIBIT A**

### **FCC Attendees:**

Don Stockdale  
Giulia McHenry  
Evan Kwerel  
Nicholas Copeland  
Eliot Maenner  
Patrick DeGraba  
Rachel Kazan  
Becky Schwartz  
Lauren Early  
Dana Shaffer  
Margaret Wiener  
Martha Stancill

## **EXHIBIT B**

# C-Band Alliance Filing on Proposed Commercial Auction Process



*On June 6-7, 2019, the C-Band Alliance (CBA) met with the FCC to describe its proposed design for a C-Band spectrum auction plan and platform. The auction, dubbed FUEL (Flexible Use and Efficient Licensing):*

- *Is fast, efficient, flexible, fair, effective, and transparent*
- *Provides unprecedented flexibility to bidders*
- *Features appropriate FCC oversight at critical junctures in the process*
- *Represents the next evolution in auction design, based on technology and principles used by the FCC in its own auctions*

*A white paper providing full details of the auction proposal will be filed on the record later this week.*

## The Auction

The proposed CBA auction design is based on the FCC's extremely successful secondary market policies and draws from the most effective auction policies employed by the FCC and other countries. The auction process is a sealed-bid, second-price auction that allows participants to bid on packages of spectrum that best suit their needs.

The model, which is designed to accommodate the specifics and complexities of the C-band in the continental U.S., was created by Professor Paul Milgrom and his firm, Auctionomics. Together, they have worked with the FCC on auctions for more than two decades. Prof. Milgrom is highly regarded by auction experts and his expertise is sought not only by the FCC, but also by regulators around the globe. Using protocols established over 20 years of designing auctions, the CBA model translates best practices from various models into a smart auction design to best manage the complexity and time pressure of this auction, creating opportunities for all sizes of bidders and all kinds of combinations.

The CBA's auction process is designed to address important FCC objectives:

- **Fast** – The auction process will allow the CBA to announce winning bidders within 2-4 weeks.
- **Efficient** – The CBA auction puts spectrum to use at the earliest possible date, reduces bid preparation time, minimizes bidding errors, and allows values rather than strategic calculations to determine the outcome.
- **Flexible** – The CBA auction is designed to allow successful participation by entities of every size, from large national bidders to mid-sized regional bidders to small rural bidders. The design also allows bidders flexibility in the packages they want to bid on and the prices they are willing to pay, while promoting head-to-head competition over individual licenses in specific economic areas. Yet the design also protects each bidder against winning either too little spectrum or too few areas to support its business plan.
- **Fair** – The proposed auction is purposefully simple to encourage the greatest range of participants. The simplicity of the auction, combined with a training period, will ensure that all participants understand the process and are ready to bid. The auction will be transparent and subject to FCC oversight, thus increasing the fairness and effectiveness of the market process.
- **Effective** – At the close of the auction process, winners can begin the 5G build-out process within 18 months of a final FCC order in key economic areas of the U.S., with a roll-out of the repurposing throughout continental U.S. within 36 months of the final FCC order.

## Background on the C-Band Alliance Proposal to the FCC to Voluntarily Clear C-band Spectrum for 5G Services, While Protecting Incumbent Services

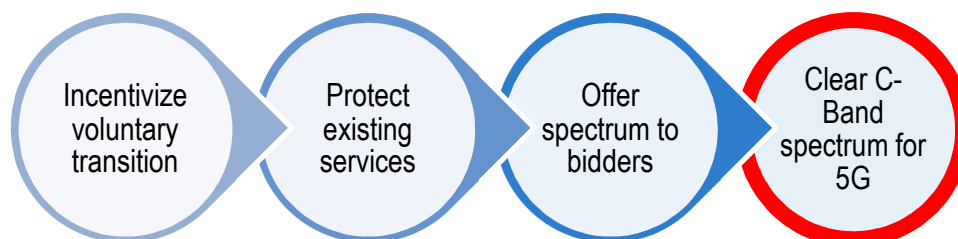
In order to rapidly unlock the significant economic benefits of 5G in the U.S., it is essential to clear spectrum for terrestrial mobile operations, particularly in the mid-band, which includes the 3.7-4.2 GHz range known as the C-Band.

The ability to quickly open this spectrum for 5G is complicated by the non-exclusive and long-standing use of the spectrum by satellite companies that provide service over the C-Band to television and radio content providers, which in turn serve 120 million households in the U.S. To encourage and enable an efficient transition of spectrum to 5G, there must be a voluntary agreement among these satellite operators, a process to incentivize them to manage the transition, and safeguards for existing C-Band users.

CBA – comprising the four satellite companies providing C-Band services in the U.S. today – proposes to clear a 200-MHz portion for terrestrial 5G and to concentrate incumbent C-Band services in the remaining 300 MHz. This spectrum reduction and clearance requires significant investments into new satellites, filter technology, and filter installation in thirty to forty thousand earth station antennas across the U.S.

To ensure a speedy transition, the CBA proposes a commercial auction using globally recognized concepts and procedures to allow bidders to acquire access to cleared segments of the C-Band. This auction design will ensure that 5G bidders can access spectrum within 18 to 36 months of a final FCC order, making it by far the fastest way to enable the rollout of 5G in urban and rural areas.

### The C-Band Alliance's Objectives



### Conclusion

To respond to the FCC's desire to clear C-Band spectrum quickly, the CBA is proposing a market-based solution using established auction design and best practice, combined with appropriate FCC oversight. This is the quickest way to free up the spectrum that is key to realizing the promise of 5G and its expected \$500B in GDP growth for the U.S. while protecting essential television services enjoyed by U.S. consumers.



*The C-Band Alliance (CBA) was formed in October 2018 by the four leading global satellite operators – Intelsat (NYSE: I), SES (Euronext Paris: SESG), Eutelsat (Euronext Paris: ETL) and Telesat. The role of the CBA is to implement the safe and efficient clearing and repurposing of mid-band spectrum in the U.S., accelerating the deployment of 5G services and innovation, serving all Americans. The CBA is designed to act as a facilitator as described in the companies' breakthrough, market-based proposal to clear a portion of C-band spectrum under a U.S. Federal Communications Commission (FCC) proceeding. Follow our mission...visit [www.c-bandalliance.com](http://www.c-bandalliance.com). Follow us on Twitter at [@cbandalliance](https://twitter.com/cbandalliance) and on LinkedIn at [C-Band Alliance](https://www.linkedin.com/company/c-band-alliance).*

# THE C-BAND ALLIANCE

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Flexible Use and Efficient Licensing (FUEL) for 5G

June 2019

# INTRODUCTION

## ➤ The C-Band Alliance's Goals

- To repurpose significant C-Band spectrum for flexible use
- Spectrum is critical to secure U.S. leadership in 5G
- CBA plan allows repurposing with a rapid, private, market-based process

## ➤ CBA's Progress

- Discussions with the FCC and all interested parties for consensus
- Multiple filings on the record on all aspects of the plan
- CBA will continue to supplement the record

## ➤ Today's Auctionomics Presentation and Auction Design

- Flexible Use and Efficient Licensing ("FUEL") for 5G design
- Overview presentation and detailed White Paper filing

## ➤ Request That the FCC Act Expeditiously to Approve the CBA Plan

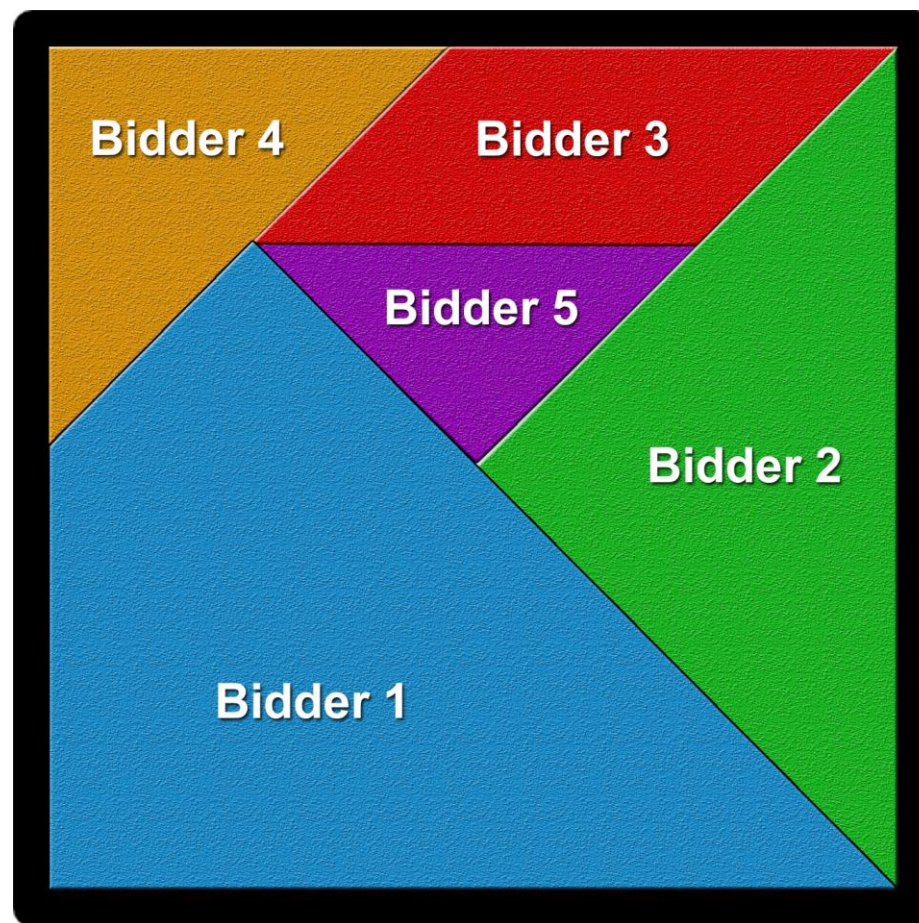


# AUCTIONING THE C-BAND

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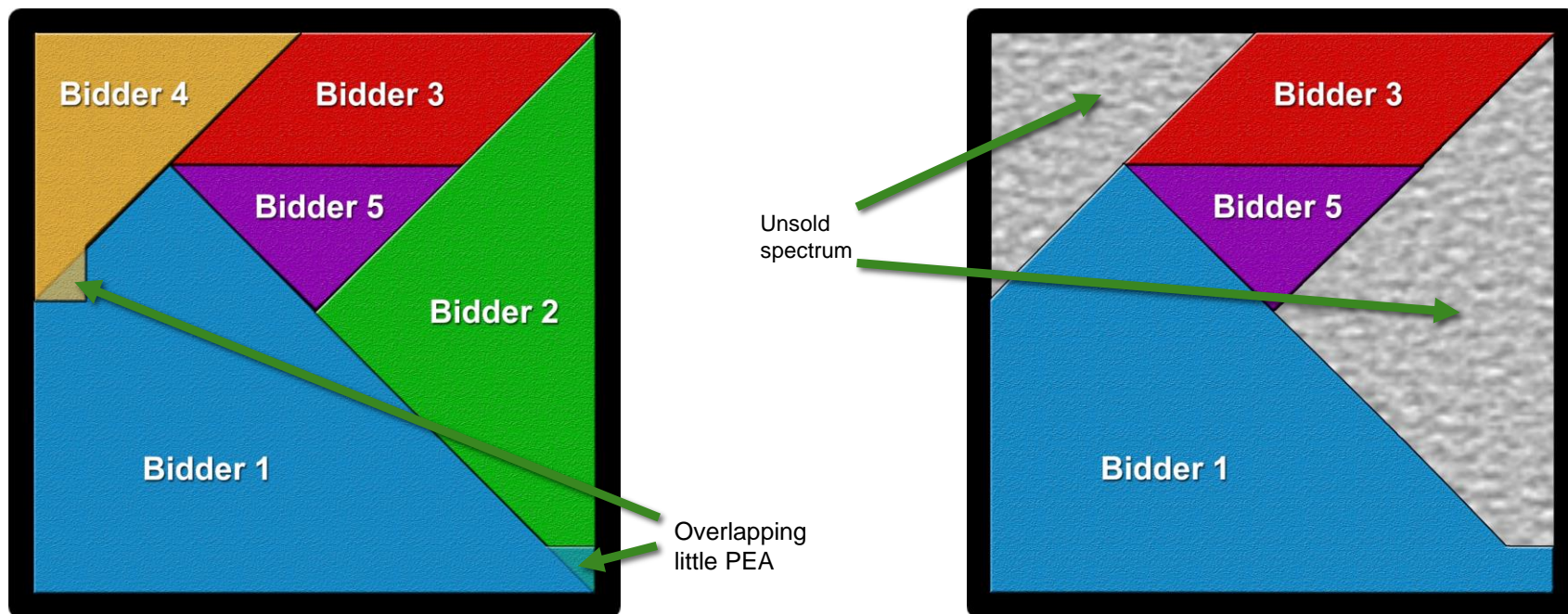
Designing a practical package auction

# 5G for Everyone: Efficient Outcome

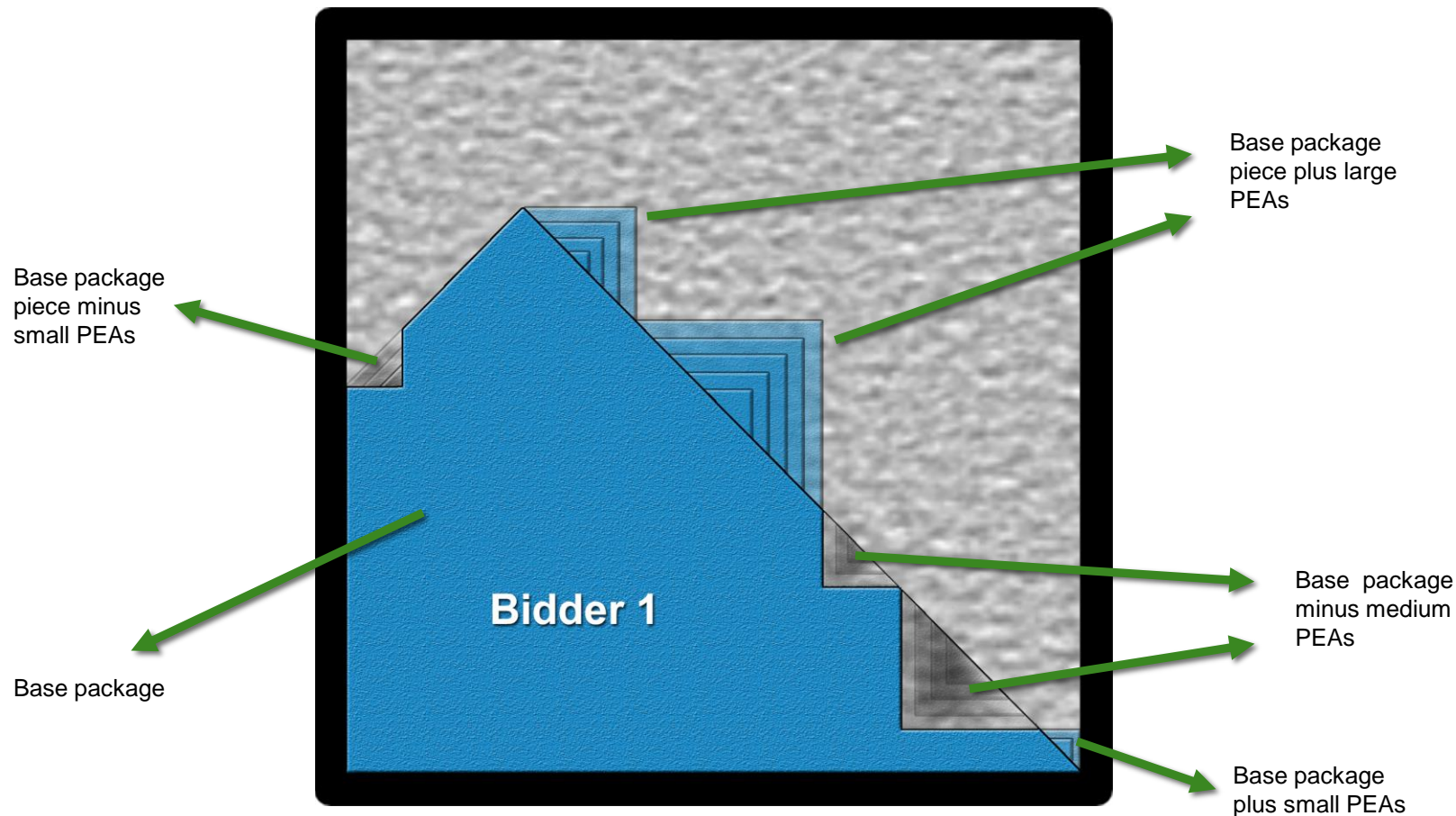


# The Challenge: Fitting the Pieces Together

- If bidders bid on the mis-fitting packages, some spectrum may remain unsold.

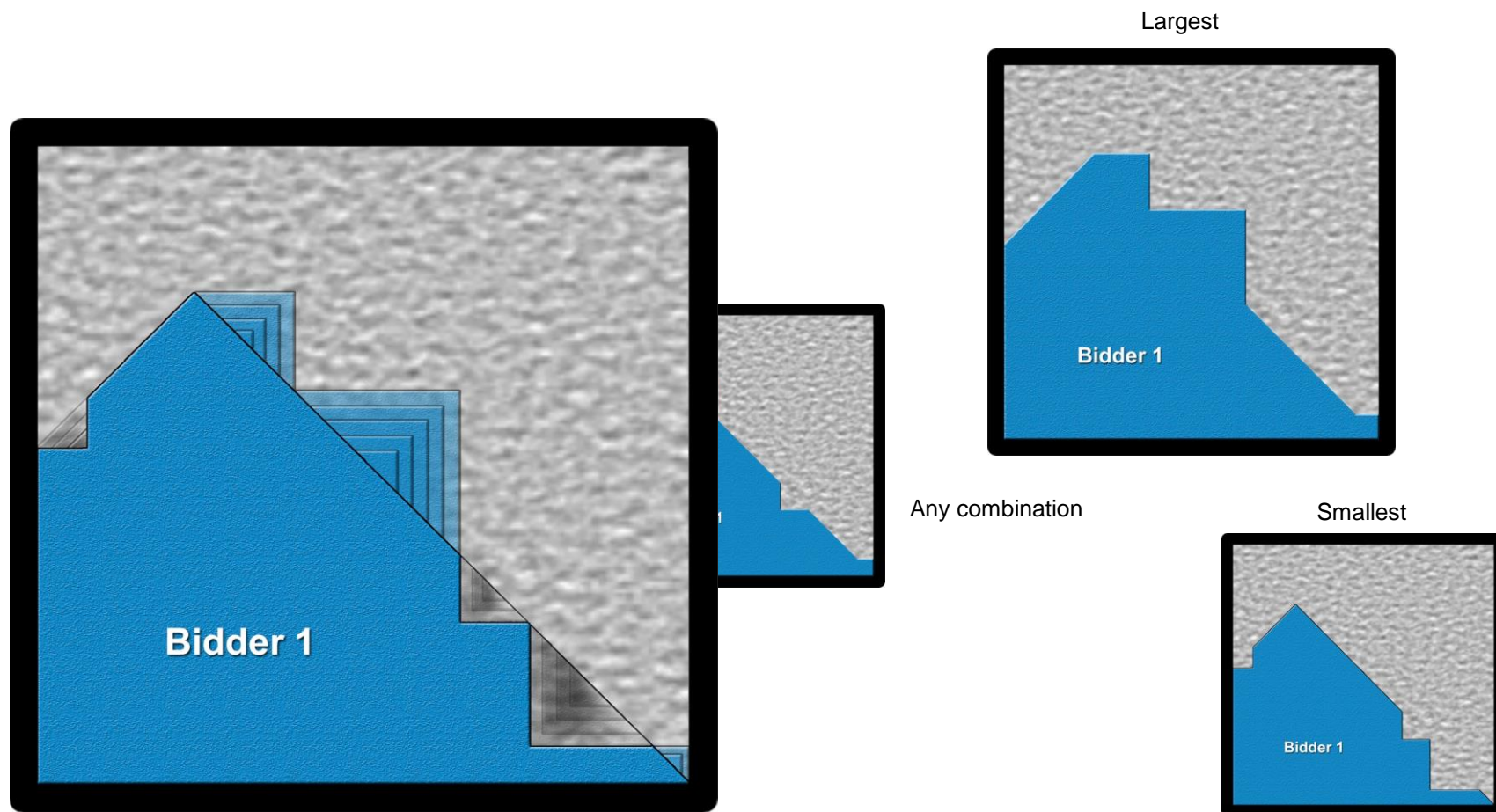


# The FUEL Package Auction Resolves this Problem by Allowing Many More Shapes to be Bid





# A “Bid Group” Can Describe Thousands of Packages Related to the Base Package



# WHITE PAPER OVERVIEW

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The FUEL Auction Design

# Agenda

1. Auction Design Objectives for C-Band
2. Proposed Band Plan
3. FUEL Auction Design
4. The FUEL Design Satisfies the Objectives
5. Traditional Auction Designs Do *Not* Satisfy the Objectives

# Auction Design Objectives for C-Band

A successful private C-Band auction design should:

➤ **Make bidding simple for all participants**

- Enable effective bidding by both small and large bidders
- Make participation straightforward

➤ **Encourage efficient license assignments**

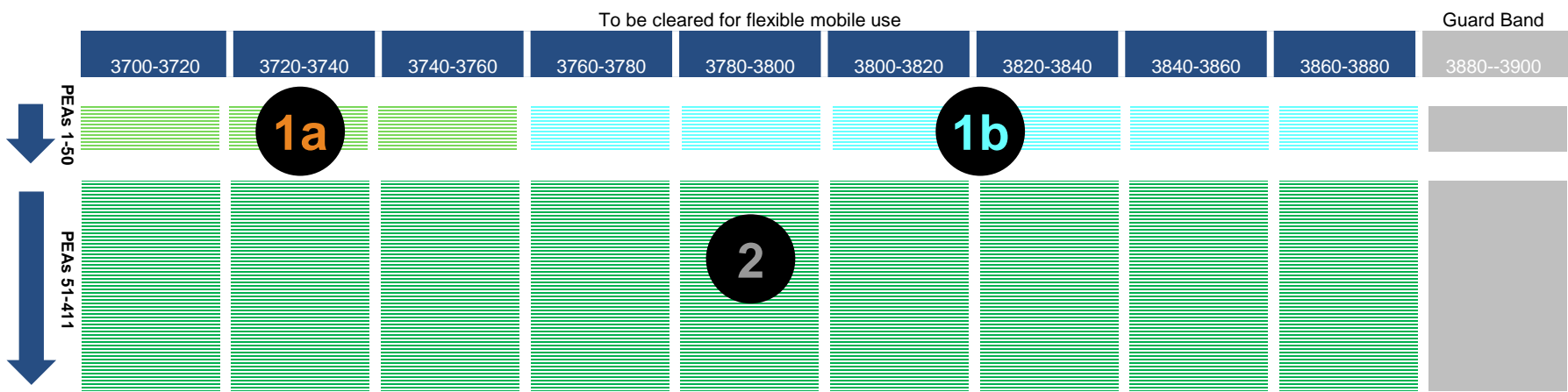
- Encourage the right bidders to express the right values for the right combinations of licenses

➤ **Run soon and quickly and minimize chances of error**

- Run faster than traditional processes (clearing takes many years; bidding takes weeks or months)
- Reduce the amount of data entry to reduce the chance of error



# Proposed Band Plan



**1a + 1b** 3x20 MHz in 46 of the top 50 PEAs <sup>(\*)</sup> available within 18 months (“Early Tranche”);  
9x20 MHz in 49 of the top 50 PEAs <sup>(\*\*)</sup> available after 36 months

**2** 9 x 20 MHz in PEAs 51 to 411 <sup>(\*\*\*)</sup> available after 36 months

All tranches, satellite TT&C related exclusions, and related logistics are described in the CBA’s Transition Implementation Filing posted April 9<sup>th</sup> 2019 <https://www.fcc.gov/ecfs/filing/10409183088602>

(\*) Excluding the Baltimore-Washington, Atlanta, Denver and Honolulu PEAs (numbers 5, 11, 20 and 42).  
(\*\*) Excluding the Honolulu PEA (number 42)  
(\*\*\*) CONUS-wide, excluding the Honolulu, Anchorage, Kodiak, Fairbanks and Juneau PEAs (numbers 42, 212, 264, 298 and 360)

# FUEL Auction Design: Allocation Stage

## Two-Round Structure

1. **Coordination round**, optional for bidders, in which bidders may submit bids for packages of licenses at prices prescribed in advance. The packages bid in the coordination round are revealed to all bidders before the main bidding round.
  2. **Main Bidding round**, in which bidders submit *bid groups* according to the FUEL design. Each bid group consists of a base bid and adjustments, at prices the bidders themselves select.
- Bids in both rounds are used in winner and price determination

# FUEL Auction Design

## Bid Groups

- As described in the introduction, the FUEL auction uses bid groups. These consist of
  - A base package and corresponding base price
  - Adjustments (increments or decrements) in each PEA with associated prices.

# A Sample FUEL Bid Group

## A bid group for PEAs A, B and C

	Number of Licenses					
PEA	0	1	2	3	4	5
A			Base	\$10	\$25	
B			Base	\$20		
C	\$-15		Base	\$5		
Base price:	\$200	LATER BID GROUP				

- The **base package** consists of 2 (later) licenses in each of the three PEAs, color coded with **green**.
- The adjustments are shown in **blue** and **red**. This bidder offers to pay an additional
  - \$10 or \$25 for one or two additional licenses in A
  - \$20 or \$5 for an additional license in B and/or C
  - NEGATIVE \$15 **decrement** if the C licenses are excluded from the package.
- The adjustments are additive across PEAs, so this FUEL bid group expresses bids for  $18 = 3 \times 2 \times 3$  packages.

# FUEL Bid Group Details

- In FUEL, all bid groups are described by a table, similar to the one shown on the previous slide.
- The White Paper provides details about the possible bid groups, including:
  1. Limits on the allowable base packages (to promote computational feasibility)
  2. How a base bid can mix early spectrum, in PEAs where such is available, with later spectrum in the same and other PEAs.
  3. How increments and decrements may be combined for the 46 PEAs with early and later spectrum.

# FUEL Auction Design

## Reserve Bids

- FUEL auction will use “reserve bids” by the auctioneer to be included in both the winner determination and pricing computations
  - The reserve bids will take the same form and be used in the same way as bids by other bidders.
  - Licenses that are “won” by reserve bids will remain unsold.
- Reserve bids will be set in advance of the auction, for example based on international \$/MHz-Pop benchmarks

# FUEL Auction Design

## Winner and Payment Determination

- Winners are determined by maximizing total bid price
  - Bids from both Coordination and Main Bidding rounds (and reserve bids) are used in winner determination
- Payments are determined using a second-price (“Vickrey-nearest core-selecting price”) rule
  - Standard second-price rule in package auctions for spectrum
  - Bids from both Coordination and Main Bidding rounds (and reserve bids) are used in payment determination

# FUEL Auction Design

## Assignment Stage

- The “Allocation Stage” determines how many generic licenses in each PEA are awarded to each bidder and the amounts paid for that.
- Bidders can bid for specific frequencies in subsequent “**Assignment Stage**,” following best practice in spectrum auctions



# The FUEL Design Satisfies the Objectives

## Simple for All Participants

- FUEL bid groups aligned with common bidder value structure for spectrum: **intuitive for bidders**
- Package bidding **solves exposure problem**
  - No risk that bidders win only a useless subset of targeted licenses.
- Second-pricing reduces strategic complexity, making it easier for any bidder to bid effectively.

# The FUEL Design Satisfies the Objectives

## Efficient

- The ease of bidding (low data entry) reduces inefficiencies associated with non-participation.
- The exposure problem is eliminated entirely because this is a package auction.
- The risk of mis-fitting packages is minimized by the Coordination Round and the FUEL bid groups, which enable bidders to bid for all relevant packages around a business plan.
- The risk of inefficiency through strategic bidding is minimized by the second-price rule, which encourages bidders to submit **true values** as bids.

# The FUEL Design Satisfies the Objectives

## Quick

- Sealed bids require much less time for bidder training
- Second-price sealed-bids require less bid preparation time
- FUEL reduces data entry, making bidding easier and reducing the chance of bidder error
- Auction takes only 2–4 weeks (or less) to run
- 5G spectrum available within 18 months of final order

# Alternative Designs are Not Suitable

## ► Why not SMRA or clock auction?

- **Exposure problem:** bidders could acquire uneconomic package (too little bandwidth in some PEAs or missing key PEAs)
- **Market-splitting problem:** In spectrum auctions around the world, SMRAs and clock auctions have often lead to collusive-seeming market-splitting and restrained competition among leading bidders.

## ► Why not multi-round combinatorial format (such as CCA)?

- General combinatorial bidding is not computable at  $406 \times 10$  scale
- Even in smaller auctions (e.g. Canada) limits on packages needed

# What About Copying the Incentive Auction?

- The 600 MHz incentive auction was designed to rely on the competition among individual TV stations making independent decisions to sell their rights.
- In the C-Band, spectrum is shared and must be cleared in a coordinated way by all the satellite companies.
- The template of the 600 MHz incentive auction cannot be applied to the C-Band auction problem.

END

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