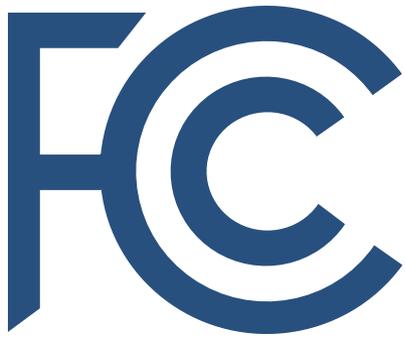


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Integrating the Forward and Reverse Auctions

January 23, 2015

Ex Parte Information

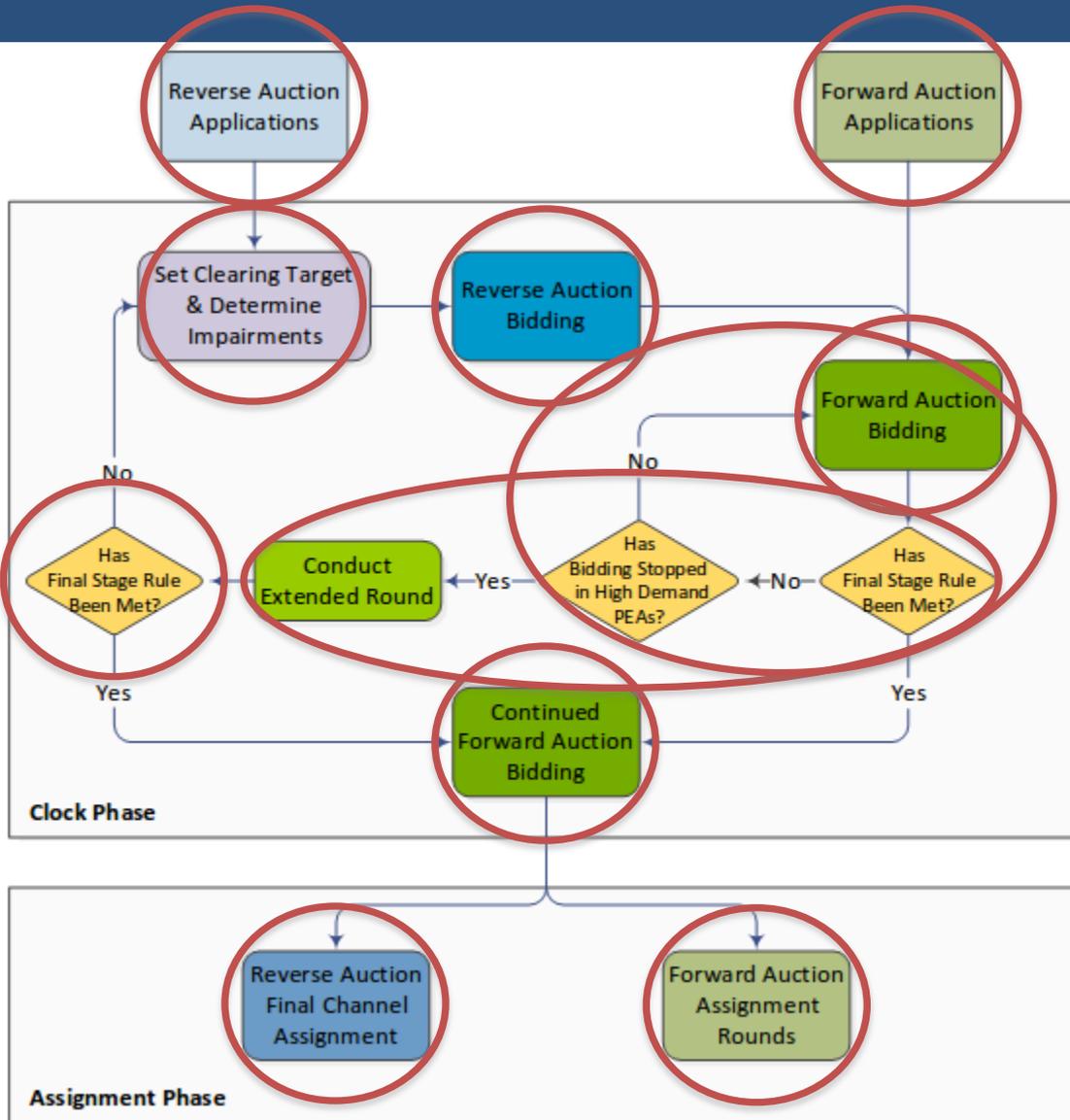
- With a limited exception, attending and/or participating in this webinar on proposed procedures to conduct the broadcast incentive auction made by the Commission in the recent *Comment Public Notice*¹ will not require a filing under the Commission's rules governing *ex parte* communications.²
- Presentations to Commission personnel directed to the merits or the outcome of the matters raised in the Comment Public Notice or other pending proceedings will require the filing of an *ex parte* notice.³

¹ *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, GN Docket No. 12-268, Public Notice, FCC 14-191 (rel. Dec. 17, 2014). ² See 47 C.F.R. § 1.1200 *et seq.* ³ See *Media Bureau Issues Limited Modification To Ex Parte Requirements For Broadcasters Filing Notices In The Expanding The Economic And Innovation Opportunities Of Spectrum Through Incentive Auctions Proceeding*, GN Docket No. 12-268, Public Notice, 29 FCC Rcd 2002 (2014). If a broadcaster attends a meeting without counsel or is otherwise unable to make a filing without disclosing its identity, Commission staff will file the *ex parte* notice in order to preserve the broadcaster's anonymity.

Agenda

1. Auction Flow
2. Setting an Initial Clearing Target
3. DRP and Impairments
4. Final Stage Rule
5. Transitioning to Another Stage
6. Final Channel Assignment

Flow



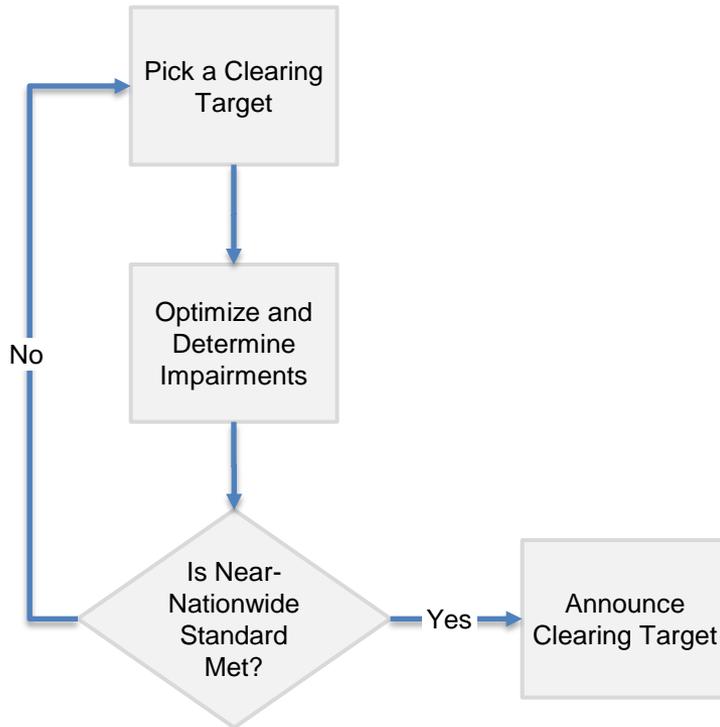
- Collect applications for the forward and the reverse auctions
- Determine initial clearing target
 - Announce target to forward auction applicants for upfront payments
- Conduct reverse auction bidding
- Conduct forward auction bidding
 - Continue bidding rounds as long as the Final Stage Rule (FSR) has not been met and bidding has not stopped in high demand PEAs.
 - Move to an extended round if the FSR has not been met but bidding has stopped in high demand PEAs.
 - If the FSR is not met after an extended round, then reduce the clearing target move to a new stage.
 - As soon as the FSR has been met, either in a regular bidding round or after an extended round, create reserved blocks and continue bidding until no excess demand in any category in any PEA.
- Conduct the final channel assignment and forward auction assignment rounds

Setting an Initial Clearing Target

The Comment PN proposes a process for setting an initial clearing target after the reverse auction applications have been accepted and bidders have committed to an initial relinquishment option

- In setting an initial clearing target, the auction system will use optimization techniques to determine:
 - The highest channel in the UHF band designated for TV broadcasting
 - The targeted 600 MHz Band Plan for flexible use
 - An initial assignment of participating stations to relinquishment options
 - A feasible assignment of non-participating stations to channels in their pre-auction bands

Setting an Initial Clearing Target



- Pick a clearing target and associated band plan
 - Start at highest clearing target we believe is possible based on participating stations
- Optimize and determine impairments
- Evaluate whether to keep the clearing target using near-nationwide standard
 - Proposed standard: less than 20% of total weighted-pops impaired nationwide
- If standard is not met, move to a lower clearing target and repeat
- If standard is met, announce the clearing target and proceed

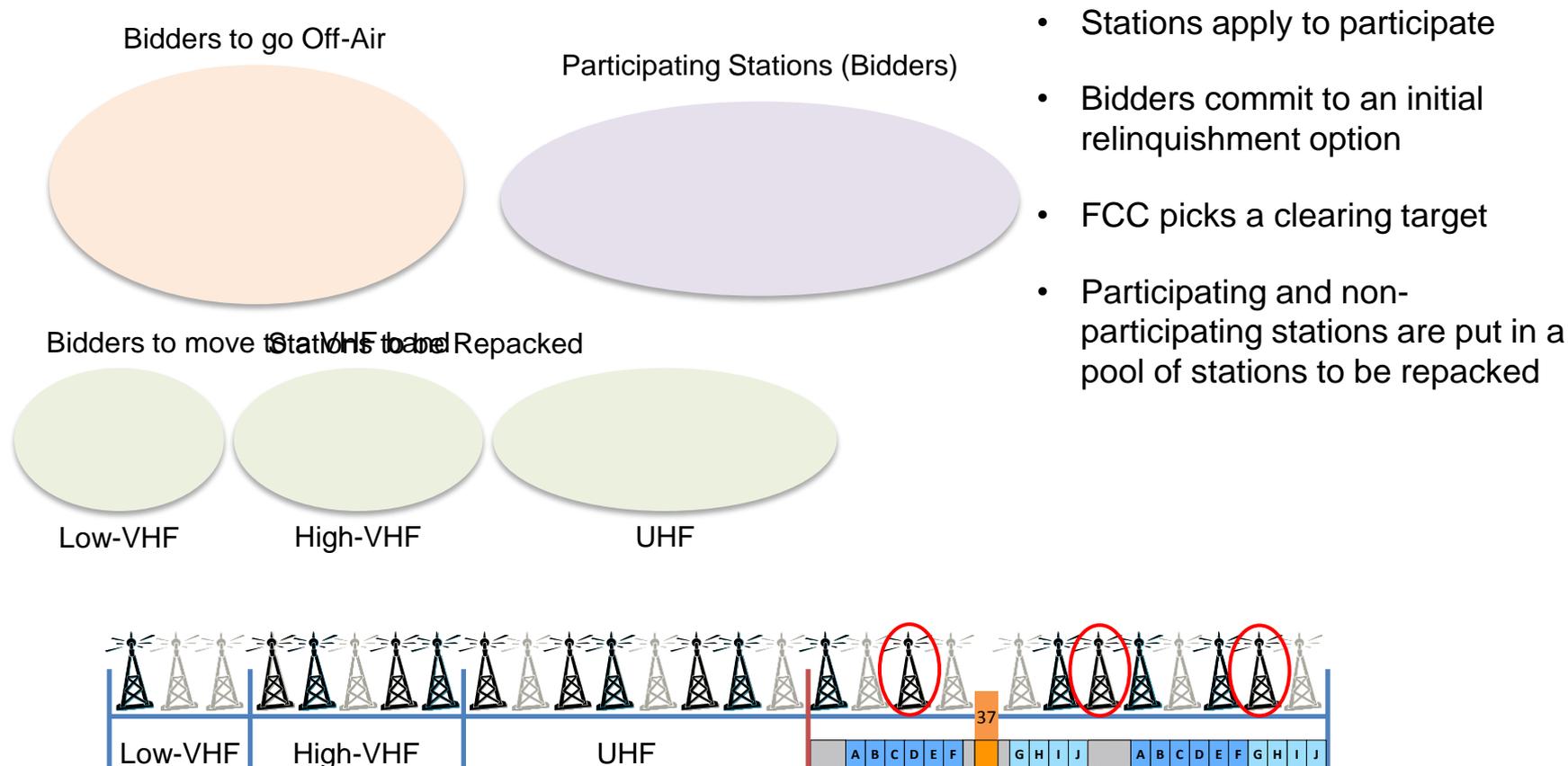
Impairments

- Impairments to wireless licenses can occur when a TV station is assigned to a channel in new 600 MHz Band
 - Inter-service interference (ISIX) protection prevents wireless services from interfering with TV broadcast services
- ISIX data is used to predict impairments for a given clearing target and assignment of TV stations
- Proposal measures impairments in terms of the percent of population in the license area with predicted interference or restricted service

Goal of the Clearing Target Optimization

- Minimize the sum of “impaired weighted-pops” across all licenses nationwide
 - Population weighted by a price index based on past auctions
 - The use of weighted-pops instructs the optimization engine to avoid impairing high value markets as much as possible
- All stations must be able to be re-packed or assigned to a relinquishment option
- Pairwise interference constraints must be enforced

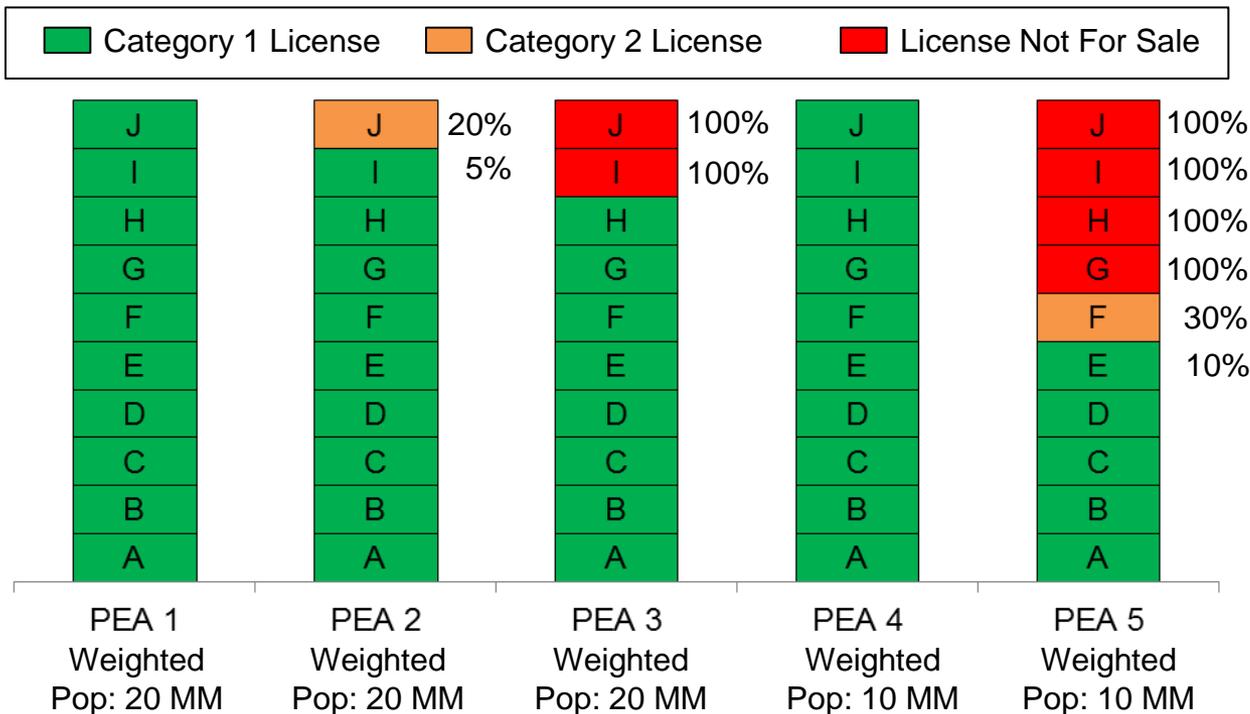
Example of Determining the Initial Clearing Target



Near-nationwide Standard

- Minimum sum of impaired weighted-pops (from optimization) / sum of weighted-pops for every license
- Must be less than 20% to keep the clearing target

Impairments in Country XYZ



Nationwide Impairment Calculation:

- Min Impaired Weighted Pops (all blocks): **89 MM**
- Total Weighted Pops (all blocks): **800 MM**
- Calculated Nationwide Impairment: **11.1%**

Once a Clearing Target is Set

- Clearing target and associated band plan for the stage is announced
- Reverse auction can now begin
- Forward auction applicants make upfront payments

Reverse Auction

The Comment PN proposes to use dynamic reserve pricing (DRP) only at the beginning of the first stage of the reverse auction

- During DRP, UHF stations will not become frozen
 - May create additional impairing stations in the 600 MHz Band
 - A UHF station that drops out of bidding is put in a “to be assigned” bucket
- After DRP turns off but before bidding continues impairments are determined again using optimization considering the UHF stations that have dropped out and all UHF non-participating stations
 - Same objective of minimizing sum of impaired weighted-pops across all licenses

Reverse Auction

- When bidding resumes, UHF stations that drop out will be tentatively assigned a channel in the TV portion of the UHF band and other UHF stations may become frozen
 - The feasibility checker considers channel assignments in the 600 MHz Band to be fixed
- Once the reverse auction is over in a stage, impairments are fixed for that stage and license impairment data is released to forward auction bidders
 - If that stage becomes the final stage, the channels assigned to stations in the 600 MHz Band become their final channel assignments

Forward Auction

The Comment PN proposes that the forward auction will follow the reverse auction in a stage

- Before the forward auction begins, bidders will know:
 - For each PEA, the supply of generic blocks in each license category
 - Detailed information about the location of impairments in specific license blocks
 - The revenue that must be generated to cover the second component of the final stage rule

Final Stage Rule

- A form of reserve price
- When met, incentive auction will end in current stage, at current clearing target
 - Mobile Spectrum Holdings reserve implemented
 - Forward Auction Clock Phase will run to completion, then Assignment Phase will occur

Final Stage Rule

FSR has two components:

First component ensures that winning bids reflect competitive prices

Second component requires proceeds from the forward auction be sufficient to meet mandatory costs and expenses

- Key terms of the proposal:
 - Average price per MHz-pop benchmark: **\$1.25**
 - Forward auction spectrum benchmark: **84 MHz** (70 MHz licensed)
 - High-demand PEAs: **40 largest PEAs by population**
 - Category 1 Licenses: any license with potential impairments that affect zero to 15 percent of the population of a specific PEA

FSR: First Component

The first component will be met if:

- For clearing targets at or below 84 MHz (with 70 MHz licensed):
 - The average price per MHz-pop for Category 1 licenses in “high demand” PEAs in the forward auction meets a price benchmark (\$1.25 per MHz-pop)
- For clearing targets above 84 MHz (with 70 MHz licensed):
 - The total proceeds associated with licenses in the forward auction exceed the product of the price benchmark, the forward auction spectrum benchmark, and the total number of pops for those licenses

Transitioning to a New Stage

The Comment PN proposes to move to a new stage if the final stage rule is not met during an extended round of the forward auction

- Proposal is to re-run the clearing target optimization at the next lowest clearing target
- Optimization will determine impairments based on the new clearing target
 - Overall level of impairments decreases
 - Location of impairments may shift

New Stage: Reverse Auction

- Bidders frozen in a previous stage may see prices reduce (become unfrozen) in a new stage
 - Since there are more channels available with a reduced clearing target, feasible channel assignments may now be available for bidders
- Propose to adjust the price clock
 - Price clock is reset to account for higher prices that are no longer frozen
 - Other bidders may not see their prices decrease for several rounds as the clock catches up

New Stage: Forward Auction

- Announce new supply and new impairment data
- Bidder eligibility is set to the bidder's bidding activity from the final round of the previous stage
- Prices will be incremented from previous stage prices
- Bidder demands carry over from one stage to the next

Once the Clock Phase is Complete

The Comment PN proposes to conclude the clock phase once bidding stops if the final stage rule has been met in the forward auction

- Winning bidders in the forward auction move to an assignment phase
 - Used to assign frequency-specific licenses to winners of generic blocks
- Final channels are assigned to all stations remaining on the air using optimization techniques

Final Channel Assignments

- Propose objectives for final channel optimization:
 - Maximize the number of stations assigned to their pre-auction channel
 - Minimize aggregate new interference above 1%
 - Minimizing relocation expenses
- Seeking comment on how to prioritize objectives
- A higher priority objective limits the next prioritized objective

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Questions?

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Contacts

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