

Perspectives on the December 2019 Auction of Numbers in the 833 Numbering Plan Area

Report to the FCC of the
NANC Toll Free Assignment Modernization (TFAM) Work Group

July 14, 2020

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Assignment

In a December 12, 2019 Letter from Kris Monteith, Chief of the FCC's (Commission) Wireline Competition Bureau to the Jennifer McKee, NANC Chair re: Toll Free Assignment Modernization the Toll Free Number Assignment Modernization Issues Working Group (TFAM working group) of the NANC was assigned with evaluating five separate questions related to the December 17, 2019 auction of toll free numbers in the 833 Numbering Plan Area (NPA) and providing a written report on perspectives coming out of those evaluations to be used as input to a separate analysis and report being prepared by the WCB.¹ Specifically, the TFAM working group was tasked with offering evaluations from the perspective of both participants in the 833 Auction and potential future auction participants.

1. Evaluate the utility for bidders of the single round, sealed-bid Vickrey auction design used in the 833 Auction and suggest any alternative auction designs or aspects of the design that would be more useful for bidders in any future toll free number auctions.
2. Evaluate the education and outreach efforts undertaken throughout the 833 Auction process.
3. Evaluate the application process for the 833 Auction, specifically the auction application requirements and the decision to not require a post-auction application, in view of the Commission's commitment to promoting auction transparency and integrity and its goal of ensuring the auction is simple and cost-effective.
4. Evaluate the upfront payment mechanism in the 833 Auction considering the Commission's goal of ensuring bidders in toll free number auctions place sincere offers, while maximizing auction participation and recommend whether to modify the upfront payment mechanism or amount of upfront payment required in any future toll free number auctions.

¹ Dec 16, 2019 Letter from Kris Monteith, Chief, Wireline Competition Bureau (WCB), FCC to Jennifer McKee, Chair, North American Numbering Council (NANC), ("TFAM working group Charge Letter")

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5. Recommend improvements for any future toll free number auctions that would promote the efficient and equitable assignment of toll free numbers through competitive bidding.

The TFAM working group was not tasked with making broader recommendations related to the future assignments of numbers as such none of the material herein is meant to offer a recommendation pro or con relative to continued use of a market-based mechanism for the assignment of numbers.

Background

In its June 2018 Report to the Commission the TFAM working group expressed the opinion that the rules and processes in place for 8yy number assignment prior to the introduction of the auction mechanism were working well and needed minimal adjustments. None-the-less the TFAM working group proposed rule changes that would be necessary to make a market-based assignment mechanism (like the auction) work and identified potentially damaging implications from adopting a market-based mechanism. The TFAM working group’s current assignment, the subject of this 2020 Report, entails offering perspectives on the initial attempt at a market-based mechanism (the December, 2019 833 Auction) from the perspective of those parties desiring the numbers that were slated for assignment outside of the historic ‘first come first served’ mechanism of the past.

The table below details selected outcomes from the auction process.

Number of completed applications (with upfront payments):	44
Number of completed applicants not allowed to bid:	2
Number of bidders:	39
Number of winning bidders:	35
Total Net (second) bid value:	\$285,075
Total Highest Bids:	\$6,819,035
Total Vickrey Delta:	(\$6,533,960)
Number of Toll Free numbers bid on:	1,660
Number of Toll Free numbers with 1 bid (going to the winner for \$0):	1,406
Number of ties for highest bid:	0
Bidders with amount due:	9
Qualified bidders with refunds:	35
Number of bidders needing assistance to complete bid:	1

While the 833 Auction goals or priorities were not necessarily known at the outset, the general sense was that the auction generated less revenue than perhaps was anticipated. Further, auction revenues were likely insufficient to cover one-time costs of designing and building the auction platform, and then running the auction itself. To the extent this proves true any unrecovered auction costs could be amortized across future auctions as well. A secondary cost recovery option (although not favored by the TFAM working group) would be an increase to the toll free number tariff rate

Approach

The *TFAM working group Charge Letter* specifically asked the working group to analyze the questions set forth from the perspective of participants in the auction.

We believe that the NANC is well suited to provide the perspective of participants in the 833 Auction and potential future auction participants for use in the Bureau's report. With that perspective as its lens, we therefore direct the NANC, via its Toll free Number Modernization Issues Working Group, to address the following...²

Few of the companies represented by the nine voting members of the TFAM working group participated in the auction. As a result a decision was made early on to reach out to all parties that participated in the auction (those that completed the initial registration step) and to all toll free Responsible Organizations (Resp Orgs) (regardless of whether they had participated or not) to seek feedback on their experience with the auction.³ Feedback was received from more than a dozen entities and has been factored into the analysis and evaluation undertaken in the preparation of this Report.

Following initial review of the five issues identified in the TFAM working group Charge Letter the TFAM working group determined that the issues raised by the questions naturally broke into two separate groups and a decision was made to handle each group separately. The first grouping (Issue Group A below) involved the requests to evaluate and provide participants perspectives on education and outreach, the Application process, and up-front payments. The second grouping (Issue Group B below) involved the requests to evaluate and provide participant perspectives on the auction mechanism used in the December 2019 auction and suggestions for future improvements.⁴

² TFAM working group Charge Letter

³ The process was limited by the TFAM working group's inability to ask specific questions of participants flowing from the restricted time provided for analysis and Paperwork Reduction Act requirements that would have come into play if specific questions were asked. As a result, our request for "feedback" noted the issues that were under review by the working group and made the opportunity for comment available to interested parties.

⁴ In reviewing the auction mechanism the terms "participants" and "potential future participants" was interpreted to be inclusive of the *customers* that bidders were in many cases representing in the auction; numbers are assigned for use by end-users with Resp Orgs acting as proxies for those users.

Resources Used

In addition to the responses received to the request for feedback discussed above the TFAM working group incorporated input from other sources into the formulation of this Report. Generally, our analysis included review of the auction results, discussions with / responses from potential and actual auction participants, discussions with the auctioneers, review of reasons for auction choice in the original order, a review of relevant economic literature, responses to the Commission's March 13, 2020 Public Notice inviting Comments on the 833 Auction, and the discussions within the TFAM working group that led to our consensus recommendations.

Deliberation Process

The TFAM working group held its first full meeting via web and audio conference on February 11, 2020. The initial meeting made clear that as a general matter the members of the TFAM working group were not convinced that the changes wrought on number assignment by the introduction of the auction mechanism (and the resulting ‘ownership’ of numbers by auction winners) were beneficial, particularly given the results of the December 2019 auction. The group ultimately decided that despite misgivings about the entire process the questions posed to the group presumed the continuation of the use of a market-based auction mechanism in the future and that the task at hand was to evaluate how to make that process work best for those that participate in the process. Weekly meetings of the full group have been held since that first week with the exception of a pandemic-related three-week break during late March and early April. The TFAM working group’s initial meetings involved exploring the results of the December 2019 auction, reviewing the auction processes and procedures (with the help of Joel Bernstein from Somos) and developing and having approved the request for feedback from auction participants.

The TFAM working group next broke into two sub-groups to handle the issue grouping discussed above. These groups general met weekly (with the same short break in the meeting schedule). Work from each of the sub-groups was brought back to the full TFAM working group for discussion and development of a consensus on the response. The results of that process are codified in the discussions below.

Issue Group A: Perspectives on Education and Outreach, the Application Process, and Up-front Payments

Issue 2: Evaluate the education and outreach efforts undertaken throughout the 833 Auction process.

In addition to evaluating the utility of the single round, sealed-bid Vickrey auction design used in the 833, the Commission tasked the TFAM working group with evaluating the education and outreach efforts undertaken throughout the 833 Auction process including any recommended improvements for future toll free auctions. Somos did an extensive amount of education and outreach (perhaps too much) through its website, webinars, conference presentations and making itself available for questions. More detailed auction education/outreach efforts and information is included in the attached Exhibit 1. Most of the feedback applauded the information and efforts provided to applicants and interested parties.

The vast majority of 833 Auction participants appreciated - and took advantage of - the auction education and outreach efforts and provided positive feedback. Some suggested improvements included the following:

- The information provided was too detailed. Some complained about the volume of emails and confusing communications.
- The detailed information for such a small auction seemed unnecessary and perhaps added unnecessary expense.
- While most of the education/outreach efforts were helpful, some complained that the upfront payment information was confusing.
- The Commission should maintain, like other Commission auctions, an 833 Auction page to inform future auctions participants.
- Provide an example or run-through of an auction.

First, while the 833 Auction information was plentiful, there was some confusion about where best to host the information. The Commission felt it was appropriate for Somos to host information about the auction for several reasons: (1) the Commission designated Somos as the official auctioneer, (2) Somos built the auction software, (3) Somos conducted the auction, and (4) most participants, it contended, were not familiar with the Commission's website, but they were familiar with Somos. The TFAM working group does not necessarily disagree, but it

recommends that any future toll free auctions be listed on the Commission's auction site⁵ even if it is simply to provide a link or general information to the auctioneer's page. We note that the Commission's Wireline Competition Bureau hosted an 833 Auction site, but it is unclear why it did not continue to maintain the site. Also, while Somos's auction website⁶ included everything needed for the auction some applicants or interested parties look to the Commission's auction page for auction information. Therefore, the TFAM working group recommends that the Commission maintain a toll free auction presence on its website even if it is to link to Somos's (or the auctioneer's) website.

Second, some feedback stated that unless participants were familiar with a Commission auction (e.g., spectrum auctions), some participants seemed a bit caught off-guard as they seemed to be expecting something more akin to an eBay auction. For example, some complained about the lack of information before and during the actual bidding process. Somos held a mock 833 Auction for qualified bidders a few days prior to the actual auction. The TFAM working group suggests that any future toll free auctions include a mock auction at the *beginning* of the process or available via a recorded video accessible at any time, that way potential participants may not be deterred from applying and could lead to more participation.

Third, the TFAM working group received a suggestion to provide for more Resp Org-specific outreach; however, this issue seems to be an internal Resp Org issue rather deficiency in Somos's (or auctioneer's) outreach efforts. As evidenced above, and in the exhibit, the auction outreach was extensive. Once information was received by the Resp Org, it was up to that Resp Org to include the appropriate people on the Resp Org team. Therefore, Resp Orgs should decide at the outset who is part of that internal team for the information to be sent and properly disseminated.

⁵ <https://www.fcc.gov/auctions/>

⁶ <https://auction.somos.com/>

Finally, there was some feedback on basic instructional information being made available without having to log into the auction system. While the auction secure website⁷ required a login to see the instructions, those instructions were also available on Somos's main auction website. The TFAM working groups recommends that the Commission's website and the auctioneer's website contain the same basic information for future toll free auctions.

Commission Staff Feedback

The Commission's auction division conveyed to the TFAM working group that it was pleased with the auction process, including education and outreach efforts, and Somos's involvement. In particular, Commission staff noted that Somos's software development team was excellent as was Somos's auction management team. The Commission also noted that Somos was readily available to respond to questions and worked collaboratively with the Commission staff.

Issue 2 - Summary and Recommendation

Impressions of auction education and outreach efforts were overwhelmingly positive. The TFAM working group recommends that (1) future toll free auction education and outreach be streamlined and the materials be simplified; (2) the Commission maintain a toll free auction website presence; and (3) consideration be given to providing a mock auction at the *beginning* of the process or via a recorded video accessible at any time.

⁷ <https://secure-auction.somos.com/>

Issue 3: Evaluate the application process for the 833 Auction, specifically the auction application requirements and the decision to not require a post-auction application, in view of the Commission's commitment to promoting auction transparency and integrity and its goal of ensuring the auction is simple and cost-effective.

Application Process

In this section, the TFAM working group provides feedback on the 833 Toll free auction application process. Although the Commission's goal was to ensure a simple process, some applicants (and non-applicants), felt the requirements made the process extremely challenging.

Application requirements varied slightly depending on the type of applicant, i.e. legal classification. Applicants selected among the following options: Consortium, Corporation, General Partner, Government Entity, Individual, Limited Liability Company, Limited Partnership, Other or Trust. Some requirements for applicants who filed as Government or Individual included Applicant Details, Additional Real Parties of Interest, and Commission Regulated Entities or Applicants for Licenses, while all other classifications needed to provide Direct Ownership Interests and Indirect Ownership Interests, in addition to Additional Real Parties of Interest, and Commission Regulated Entities or Applicants for Licenses.

Requirements were structured to help ensure an entity only apply once and with no affiliation or agreement to any other applicant. While the enforcement was necessary, some of the requirements for the different ownership levels required in some cases many hours and resources, as well as legal consultation, and guidance from Somos to complete all the steps within the process. The larger entities that participated noted the application process was quite onerous and time-consuming and in at least one case, a participant noted they decided not to move forward with participating due to the level of effort involved.

It could be said that the complexities of specific requirements could be a direct result as to why there were more registrants than applicants. Only sixty (60) of the ninety (90) parties that registered, completed the process. Of those sixty (60) applicants, only forty-six (46) were qualified to bid.

It could also be said that these requirements, could have led to the lack of participation by Resp Orgs, as the 833 pre-code opening had a much higher participation than the auction itself.

One-hundred forty-seven (147) Resp Orgs participated in the pre-code opening process, while only twenty-three (23) registered for the auction.

Although the requirements were complex and required very specific details, the application instructions were easy to understand and follow and Somos was available to applicants throughout the entire process. The vetting process was required for Resp Orgs/companies already regulated by the Commission. This raised the question of whether Resp Orgs be allowed by default, without having to go through a time-consuming/onerous application and verification process. In the event of future auction(s), the Commission should consider this. In addition, returning applicants should not be subjected to the same lengthy application process. This could raise concern for the fairness of different approval process, which is discussed in more detail in the section for approval uncertainty.

Approval Uncertainty

While many pieces of the application process went well, the approval process could be improved – especially the resubmission process. Those involved with the process appreciated Somos’s assistance as the auctioneer and application advisor, but unfortunately the resubmission process led to final resubmitted application outcomes after the application deadline.

To explain, upon application submission, applications were deemed complete or incomplete. Incomplete submissions were followed up with a letter from Somos with a broad reason for the application being deemed incomplete. Applicants then had two weeks to cure the deficiency(ies) and resubmit the application. As with spectrum auctions, applications were strongly encouraged to contact Somos to clear up any questions. When applicants worked with Somos on application deficiencies, per Commission spectrum auction process, Somos could not affirmatively state whether the resubmitted filing was now complete. The reason given was that the applicant was able to change the application right up to the resubmission deadline, and the applications that were changed were reviewed *de novo*, so Somos could not tell applicants whether or not their application would be considered complete. To complicate matters, upfront payments were due at the same time as the end of the resubmission period. Therefore, applicants had no way of knowing whether resubmissions cured deficiency(ies) or whether a deficiency

remained and were still required to make an upfront payment. Further, non-Resp Orgs that chose to bid through a Resp Org that was not approved, had no further opportunity to choose another Resp Org in order to participate because the deadline had lapsed.

Therefore, the resubmission process presented unreasonable - and likely unintended – outcomes, for those choosing to bid through a Resp Org. Those who chose to bid through a Resp Org that was not deemed qualified to bid were left with no way to participate in the auction, as it was far too late to apply on their own or apply through a different Resp Org.

To cure for the resubmission process shortcomings, the application process should be modified to allow for either or some combination of the following: (1) more detailed explanation in the initial deficiency letter from Somos ; (2) allow Somos to provide feedback upon review with the applicant, or (3) allow for multiple resubmissions with a specific timeline for Somos response. A more flexible and cooperative process would likely lead to more satisfied applicants; (3) providing a grace period for non-Resp Orgs to seek another Resp Org if their original Resp Org choice does not qualify.

The application process could also be improved with slight modifications to the identity verification process. In order for applicants to be issued application credentials, Somos had to verify applicant identities. For Resp Orgs, this task was much simpler since most were known entities or easily found via Lexis/Nexis-type searches or general internet searches. However, lessor known companies or individual applicants with little to no searchable information had to verify their identities via video calls where they had to show government identification and evidence of address for confirmation purposes⁸. While Somos made every effort to handle verification in a timely fashion, non-Resp Orgs did not receive credentials as quickly as Resp Orgs.

To cure for these shortcomings, all Resp Org applicants should be issued credentials at the outset since they are known “trusted entities.” This would be akin to the Commission’s use

⁸ Note that Somos did not seek credentials such as a picture of the Applicant’s driver’s license or Social Security Number upfront because it created an increased security issue thus was not pursued.

of its FRN database when it evaluates carriers' identities. As for non-Resp Orgs, if the Commission continues to open toll free auctions to non-Resp Orgs, then it should consider streamlining the application process for those entities by granting approval at the outset if the applicant has participated in a previous auction.

Post-Auction Application

The 833 Auction appropriately omitted a post-auction application. Unlike auctions with complex assets (e.g., spectrum), implementation of the use of an 833 number simply takes the toll free number and a Resp Org. Future toll free auctions should continue to omit a post-auction application.

Issue 3 – Summary and Recommendations

The Application Process while onerous for some was reasonable overall, but could be improved in a few key ways. First, Resp Orgs and returning non-Resp Orgs should be approved to participate by default without having to go through the time-consuming/onerous application and verification process. Second, the application process should be modified to allow for either or some combination of the following: (i) more detailed explanation in the initial deficiency letter from Somos; (ii) allow Somos to provide feedback upon review with the applicant, or (iii) allow for multiple resubmissions with a specific timeline for Somos response. Third, the Commission should consider providing a grace period for non-Resp Orgs to seek another Resp Org if their original Resp Org choice does not qualify.

Issue 4: Evaluate the upfront payment mechanism in the 833 Auction considering the Commission's goal of ensuring bidders in toll free number auctions place sincere offers, while maximizing auction participation and recommend whether to modify the upfront payment mechanism or amount of upfront payment required in any future toll free number auctions.

In creating the guidelines for the 833 Auction, the Commission set the upfront payment price at \$100 per number. If a company was going to bid on 100 numbers, their upfront payment was $100 \times \$100 = \$10,000$. Out of the 17,638 numbers that were originally desired by more than two entities, only 1,660 were bid on during this auction. There might have been stumbling blocks that caused such a low participation level. The registration process (as discussed above) and the upfront payment are among the possible explanations. In this section, the TFAM working group discusses upfront payment options and improvements for future auctions.

There are many options for upfront payment models for global auctions, including:

- 1) eBay - works on a trust level
- 2) Rasmus - secures a draft against a credit card
- 3) Sotheby's - takes higher upfront payments for premium lots

Upfront Payment Amount

Deciding on the amount of the upfront payment depends, in part, on what the upfront payment is intended to do. Is the intention to maximize revenue or maximize the number of participants, for example? Since one of the Commission's stated goals was to increase participation, the TFAM working group suggests that at a minimum, the upfront payment should be enough to cover the auction costs, which should cure for any concerns about favoring one goal over another.

Bidder Trust

While running an auction, the TFAM working group believes the Commission must guard against bidder fraud or discourage non-serious bidders. However, the TFAM working group also notes that the toll free community is comprised of Resp Orgs, as implied by their title, they are

“responsible” and that means they embody some level of trust. These Resp Orgs already possess certain designation and associated assets (toll free numbers) which can be considered as collateral. If a bidding Resp Org decided to walk away from a winning bid, their status as a Resp Org and / or current inventory could be at risk. If non-Resp Orgs continue to participate in future auctions, the Commission should consider either a bond requirement or upfront payments based on some percentage of the standard floor value concept as outlined in issue 5 below to help protect against fraud or maintain auction integrity. For example, a non-Resp Org that intends to bid on twenty (20) numbers could be required to provide 25%, or some other percentage up to but not exceeding the standard floor price for its upfront payment. This option would allow Non Resp Orgs to bid by themselves or bid via a Resp Org agent.

Issue 4 – Summary and Recommendations

The essence of Issue 4 revolves around trust. Resp Orgs should not be required to submit an upfront payment because they are “trusted entities” with a current toll free inventory that can be used as collateral. Fines could be levied on these bidders if they do not complete their purchase. Further, many auction houses do not require upfront payments from “known” bidders. Non-Resp Orgs are more concerning because they can be seen as having nothing to lose. Therefore, the Commission should consider a bond requirement or creating an upfront payment percentage as illustrated above. This upfront payment amount could also be tied to auction cost such that it will be sufficient to cover the minimum cost of setting up for the auction. The TFAM working group also suggests allowing for additional payment methods, such as by credit card to encourage participation, as many participants noted this as a minor drawback.

Issue Group B: Perspectives on the Auction Mechanism and Future Improvements

In addition to the three issues discussed above evaluating the ease with which participants were able to access the auction, the TFAM working group was tasked with evaluating two questions regarding the auction mechanism that was chosen for use in the December 2019 ‘trial.’ Specifically, the TFAM working group was asked to:

Evaluate the utility for bidders of the single round, sealed-bid Vickrey auction design used in the 833 Auction and suggest any alternative auction designs or aspects of the design that would be more useful for bidders in any future toll free number auctions.

And, to:

Recommend improvements for any future toll free number auctions that would promote the efficient and equitable assignment of toll free numbers through competitive bidding.

The terms ‘utility’, ‘equitable’, ‘efficient’, ‘participants’ and ‘future potential auction participants’ were evaluated and defined (below) as the first step in the process.

- *Participants*: Is read to include those parties that evaluated registering for the auction, those that registered for the auction (regardless of whether they ultimately made a bid), and the *customers* that those parties were in many cases representing in the auction; numbers are assigned for use by end-users with Resp orgs acting as proxies for those users.
- *Potential future auction participants*: Is read to include any party that may want any number in the future (because it is unclear how broadly the Commission may extend the ‘market-based’ approach to number assignment in the future).
- *Utility*: Is read in this instance to mean both “useful” and / or “fit for purpose.”⁹ the TFAM working group determined that it was important to look at the utility to both winners and losers at the auction (since it would not necessarily be the same for each group).

⁹ Merriam Webster Dictionary

- *Equitable*: Is read to mean fairness. In the instant case it requires that there be a consistent set of rules that is known by all participants and applied equally to all parties such that everybody has the same chance to bid on a number. An auction process would be viewed to be ‘equitable’ when all participants have equal opportunity or access to acquire any toll free number and are provided with the same information and are subject to the same auction conditions.
- *Efficient*: Is read in terms of the functioning of the market with specific focus on transaction costs to all auction participants and the administrator, and relative to proceeds from the auction. In this context, transaction cost will be measured in terms of the amount of resources (both material and time) committed to achieve a desired result, i.e. including a consideration of time spent on the process both before and after the auction, and the changes in value of the item that may occur over time in the event of a delay in releasing the items to the winners. For example, time delays may change participants’ assessment of efficiency of the resources they committed to acquire a toll free number relative to the value of number. The value of toll free number is not necessarily static, it may diminish if (for instance) the bidder had factored a time sensitive use of the number into the bid calculation, and delivery was later delayed.

As a preliminary matter it is also important to consider the three separate characteristics of the auction as conducted (below) and evaluate the utility of each separately.

- It was conducted in a *single round* (the alternative being multiple rounds).
- It was conducted using *sealed bids* (keeping each bidder’s bid amount private).
- It was conducted using a *Vickery* second-price auction structure wherein the highest bidder “wins” but pays the price bid by the second place bidder (as opposed to paying the price it bid – which would be the first, or highest, price).

General discussion of auction

Our investigation of auction techniques suggests that given the lack of demand for the toll free numbers made available in the recent 833 Auction, no auction type would have yielded an optimal pricing solution similar to what would have been achieved under competitive conditions

with established demand.¹⁰ That aside, we recognized that for certain items, auctions are an efficient way to sell at the best price possible but the level of efficiency that can be achieved varies with the types of auction selected, the number of participants, and the structural adjustments made to ensure that efficiency. Any auction approach selected can be adjusted by adopting certain principles (or mechanisms) to achieve a desired general result or prevent perverse outcomes.¹¹

The Commission adopted the current experiment for the assignment of selected 833 toll free numbers with the stated goal of ensuring that the assignment of each of those 833 number be market based and equitable¹²; it chose competitive bidding through an auction process, specifically a Vickrey single-round sealed-bid auction where the winner (highest bidder) only pays the second highest bid price, i.e. a second-price Sealed-Bid Vickrey auction.

¹⁰ This conclusion was reached following review of the results of the auction.

¹¹ See Leslie Fine, “Auction” in *The Economics of Special Markets, The Marketplace*. “.... once a seller has decided on which of the four basic auction forms to use, he can use many variations within the auction to further manipulate the outcome to maximize revenue. These mechanisms can have profound, and often counterintuitive, effects on bidding behavior—and therefore on outcomes. Among the available mechanisms are reserve prices, entry fees, invited bidders only, closing rules, lot sizes, proxy bidding, bidding increment rules, and postwin payment rules.” <https://www.econlib.org/library/Enc/Auctions.html>, last visited May 20, 2020.

¹² Toll Free Assignment Modernization, WC Docket No. 17-192, CC Docket No. 95-155, Report and Order, FCC 18- 137, 33 FCC Rcd 9274, para. 1 (2018)

Issue 1: Evaluate the utility for bidders of the single round, sealed-bid Vickrey auction design used in the 833 Auction and suggest any alternative auction designs or aspects of the design that would be more useful for bidders in any future toll free number auctions.

Looking at “utility” to bidders using that word to mean “useful” and limiting that evaluation only to those that actually submitted bids in the December 2019 Vickrey auction, that auction resulted in the assignment of all numbers for which there was a bid to the highest bidder for that number – so it was a “useful” mechanism to those *winning* bidders.¹³ If the evaluation is expanded to include parties that did not bid on set-aside numbers (and therefore have not been awarded any of those numbers) the auction was not a “useful” assignment mechanism. Per input from those that participated in or considered participating in the auction, it appears that there were instances of customers that desired set-aside numbers that were unable to obtain them through the auction process and there were also parties that did not participate because the process of participating required more effort than the value that obtaining the numbers would have brought. For these parties there was no utility derived from the auction.

Evaluating utility within its meaning of the fitness for the purpose or worth of the approach to bidders it is even less clear that the chosen mechanism provided utility. Bidders were unable to obtain the bid-upon numbers or gain access for assignment to any of the large grouping of 833 numbers held for the auction until after the auction was completed (more than 2 and ½ years after they first requested assignment). While there were multiple requests for more than 17,000 numbers in the 833 NPA following the Commission’s solicitation of number requests from Resp Orgs in April 2017, fewer than 10% of those numbers received any bid in the auction, and fewer than 2% received more than a single bid in the auction. It is unclear why this occurred. It could have been a function of the very broad request to identify 2000 numbers in the 833 NPA that was made to each Resp Org in April 2017 or perhaps a result of the substantial lag in time between that request and when numbers were assigned (during which time Resp Orgs would have needed to obtain other numbers to fulfill their customers’ needs for a number).¹⁴ It

¹³ A small number of winning bidders provided feedback that they were happy with the auction.

¹⁴ For example, if a particular 833 had time-sensitive importance in the valuation of the potential bidder when interest was first expressed, the bidder may no longer be interested as value of the auctioned number would have diminished.

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may also have been due to difficulty in registering or understanding prior to registration close if a participant was approved or other reasons.

	Quantity of numbers
Total numbers available in Dec 2019 auction	17,638
Total numbers receiving bids	1,660
Total numbers receiving more than a single bid	254

Given that 90% of the requested numbers were not assigned to any party as part of the process the utility of the process seems minimal. From the perspective of those that bid on the 1,660 numbers that did receive a bid the auction introduced delay for all, and unnecessary expense to the assignment of 85% of those numbers (numbers for which there was only a single bidder). The bidders for 1,406 of the numbers ultimately assigned via the auction had to go through the time and expense of participating in the auction to get a number that had no other bids. So, while the auction may have had positive utility to those bidding on the 254 numbers for which there were multiple bids it likely had limited utility for bidders on the remaining numbers. All that happened was the bidder (and ultimate end user) was unable to gain use of the number (that they eventually received for free anyway) for an uncharacteristically long delayed time period.¹⁵

¹⁵ Some numbers are still not available to parties that wanted them but were unable to participate in the auction.

Issue 5: Recommend improvements for any future toll free number auctions that would promote the efficient and equitable assignment of toll free numbers through competitive bidding.

There seems to be little question that the use of a single-round sealed-bid auction is superior to multi-round public bidding for use with number assignment.¹⁶ However, It is not as clear that the choice of the a “second” price Vickrey model on top of the single-round sealed-bid mechanism is useful in this environment and the Commission should consider eliminating that feature of the auction.

Problems arising from the use of the “second-price” component of the trial auction

Although the auction as executed last year (with the second price award design) appears to satisfy the equitable criteria as it relates to the ability of all bidders to have the same opportunity to present a sealed bid,¹⁷ a few perverse results arose that could be resolved with process adjustments if the Commission continues to use the Vickrey second-price auction model to assign future toll free numbers. For example, the results from the initial trial show it failed to yield a market-based price for many 833 numbers especially where the winner was the only bidder, and paid nothing. Technically this could be considered a misinterpretation of the Vickrey second-price sealed bid where the winner is expected to pay the second highest bid price. In the case of a single bidder, there was no second bid and interpreting the price to be zero is not consistent with a market solution as anticipated by the Commission.¹⁸

In addition to the zero-price issue, analysis of the auction results reveals that for some 833 numbers with more than one bid the gap between the first and second bid prices were quite large. This is likely due to the fact that the Vickery auction mechanism encourages bidders to bid high figures regardless of the true valuation of the item (i.e. the 833 number). Every auction type has its unique incentive characteristics that dictates the participants’ behavior or strategy (using

¹⁶ The members of the TFAM working group and virtually all of those respondents that provided feedback indicated support for the single round, sealed bid auction. Some mentioned the Vickery auction by name.

¹⁷ At least one party commented that they did not believe the auction rules were fair, but that criticism went to the qualification requirements, not to whether the rules were known and applied consistently.

¹⁸ Those instances with single bidder should be declared as no transaction under Vickrey auction style used in the December trial; since there was no second bid of “zero” a price cannot be established for the numbers with a single bidder.

available information) to achieve their desired outcome; with Vickrey, the primary focus is being the highest bidder and winning the item with less concern for facing any penalty for over-bidding.¹⁹ The original Vickrey [1961,1962] studies were based on the premise that each bidder independently formulates a private valuation and the bidder's auction payoff "depends on i) what he knows; ii) whether he wins; and iii) how much he pays."²⁰ In other words, each bidder knows what the item is worth to him but doesn't care about the worth to others except as strategic information to assist in choosing a bid.²¹

Vickrey style auctions have rarely been used for any practical purpose until quite recently; rather, it is recognized in economic literature as being useful largely for its theoretical properties.²² Should the Commission continue its use for future number assignment, serious considerations must be given to the TFAM working group suggestions to amend the auction mechanism so the auction process can yield more practical results.

Suggested Auction Mechanism Improvements

Any future toll free number auctions would be improved by encouraging additional participation²³ in the auction through implementation of the changes discussed in relation to Issues 2, 3 and 4 above and adoption of the specific changes discussed below that we believe would drive the result closer to market based pricing.

1. Use a more traditional first price single round, sealed-bid auction. The process would be the same as the December 2019 trial except that the highest bidder would pay the amount of their bid. This would encourage all bidders to diligently develop their independent valuations for the item and that will inform their bid price. Bidders would then have the

¹⁹ See Paul Milgrom pp. 262 – 264; also p.268. See also Leslie Fine, "...in a second-price sealed-bid format, the winner pays the bid of the next-highest bidder, and so bidders raise bids, secure that they will not be disadvantaged if rival bids are lower." <https://www.econlib.org/library/Enc/Auctions.html> (last visited May 20, 2020)

²⁰ Id. P.265.

²¹ Id.

²² See McAfee and McMillan (JEL 1987), p. 702

²³ Another point revealed by our research is the confirmation that the level of competition matters in an auction, i.e. high level of participation is crucial to an auction's success. See McAfee and McMillan (JEL 1987), p. 729. Future auctions can benefit from the suggestions to encourage participation found throughout this report.

incentive to offer bids that reflect their valuation for the item with the premise that they have considered all relevant market factors.²⁴ This system would be no more or less equitable or efficient than the mechanism used in the trial, but would result in generating substantially more revenue that could be used to support both the auction itself and the overall costs associated with running the toll free number assignment process.

2. Adopt principles to avoid zero price or unreasonably low-price assignments. Regardless of whether the Commission determines to continue using a second price (Vickrey) auction the auction should be improved by setting a minimum price. Going forward there should be a standard floor of \$1000 or some other amount per number. If Commission continues use of the Vickrey auction mechanism used in the trial the minimum price could be the same kind of floor referenced above, or something different (e.g. a reserve price could be established that would be set at 50% of the highest bid or the second price bid (or floor) whichever is higher). Such a mechanism would result in non-zero price even when there is only one bidder.

3. Return numbers with only a single bid back to the normal pool of available numbers. If the process does not yield a price for numbers receiving a single bid the transaction can not be completed: An alternate approach that could be used with either a first price or second price auction mechanism used in the trial would be to assign only numbers for which there were multiple bids under the new rules. Any numbers for which there is only a single bid in the auction would be returned to the pool of available numbers and made available immediately to the bidding party under traditional number assignment rules (no ownership transfer).

²⁴ When the winner pays the winning bid amount every bidder must strategize to avoid overbidding to escape the winner's curse. By W Hahn, and S. Seaman, "The Winner's Curse and Optimal Auction Bidding Strategies" Graziado Business Review, Volume 12, Issue 2, 2009.

Process Improvement Recommendations

In addition to the suggested changes above to the auction mechanism, additional adjustments are recommended to the overall process to assure that any future auction promotes ‘equitable and efficient assignment.’

First, to improve the “equitability”, process adjustments to the current rules should be made to ensure that all parties that desire to obtain or bid for a toll free number at the auction are able to do so. This goal could be achieved in a variety of different ways, some thoughts are:

1. Communicate to potential bidders when their application is sufficient or insufficient to be a qualified bidder. This should take place at any point in the registration process and not wait until the registration period is closed so adjustments or corrections could not be made. The Communications of approval could include the warning that any changes after that point could cause the approval to be rescinded.
2. Allow parties requesting numbers to understand throughout the registration process who potentially approved bidders are so that they could move their request to a bidder that they know has been authorized. Particular concern should be given to resolving problems that can be experienced by end-users whose number requests would be negated through the disqualification of unaffiliated bidders.

Second, any evaluation of the efficiency of a particular auction cannot be separated from the entire process in which the auction takes place. To improve the efficiency of any future auction the Commission should take great care to ensure that entire process – not just the auction mechanism itself – is efficient and timely. Recommendations to improve the process in the future include:

1. Letting much less time lapse between the identification of the toll free numbers to be auctioned and the auction itself – the goal should be less than 6 months.
2. Improving the overall registration process by pulling in all relevant information associated with a potential bidder that Somos may already have due to Resp Org registration.

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3. Consider allowing all Resp Orgs in good standing to be automatically registered for the auction or to register to participate under relaxed filing requirements to entice more bidders to participate. If adopted non-Resp Orgs would be allowed to register under the previous rules or a new set of rules.

Conclusion

The TFAM working group appreciates this opportunity to provide its perspectives on the recently concluded auction of numbers in the 833 NPA to the Commission and stands ready to address any further questions. As stated above, none of the material herein is meant to offer a recommendation pro or con relative to continued use of a market-based mechanism for the assignment of numbers.