Is the FCC’s reverse auction fatally wounded or just bloodied?

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Digital Beat

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Examining the flawed outcomes of the Rural Digital Opportunity Fund process—and the future of funding for rural broadband

It would not be a stretch to say that the Federal Communications Commission’s Rural Digital Opportunity Fund (RDOF) reverse auction has left a bad taste in a lot of mouths.

Rivkin-Fish

While the FCC was quick to announce success immediately after the close of the auction simply because most eligible areas were assigned, many policy makers and communities see the results as highly problematic and have roundly criticized the outcome, leaving us to ask: Is the FCC’s reverse auction fatally wounded or just bloodied?

The biggest gripe about the auction results is that many bidders won on the basis of speed and latency claims that are widely believed to be unrealistic at best, and downright wrong at worst. In the best-case scenario, the FCC will deny these bidders in the certification process, opening those areas up for other funding opportunities (and the potential for truly high-speed, low-latency service). In the worst-case scenario, the FCC will certify many or all of these questionable areas, and will intervene only if winners falter in their implementation. The latter approach could ultimately leave communities locked in limbo for many years to come—waiting for the buildout of low-quality broadband and shut out of other broadband grant funding that could allow for faster implementation of real, viable projects.

Understanding the bidding weight mechanism

To understand how the Rural Digital Opportunity Fund auction results ended up the way they did, it is imperative to first understand how the FCC assigned bidding weights to different solutions. Weights were assigned to serve as a “penalty” deduction in the auction bidding process (Figure 1). The lowest weight (i.e., zero) was assigned to gigabit-speed, low-latency services, and the highest weight (90) was assigned to minimum-speed (25/3 Mbps), high-latency services. The higher the weights (and therefore the penalty deductions), the lower the amount of support a bidder received.

Figure 1: RDOF Bidding Weights**[1]**

Performance Tier	Speed	Usage Allowance	Weight
Minimum	≥ 25/3 Mbps	≥ 250 GB or U.S. average, whichever is higher	50
Baseline	≥ 50/5 Mbps	≥ 250 GB or U.S. median, whichever is higher	35
Above Baseline	≥ 100/20 Mbps	≥ 2 TB	20
Gigabit	≥ 1 Gbps/500 Mbps	≥ 2 TB	0

Latency	Requirement	Weight
Low Latency	≤ 100 ms	0
High Latency	≤ 750 ms & MOS of ≥4	40

For a given broadband provider, when the auction clock dropped below the level of the provider's weight deduction, the provider could no longer bid, since that level would imply no support. Therefore, the higher a bidder's weight deduction, the sooner the bidder might be out of the running. (This mechanism is explored further in our earlier analysis.)

The weight system was intended to ensure that the best and most sustainable solution available would be competitive. In the previous Connect America Fund II auction, which was the model for the Rural Digital Opportunity Fund, fixed-wireless providers and satellite companies that had much lower incremental deployment costs per census block won more areas than did cable or fiber-optic operators. As a result, the winning bidders had low typical speeds (i.e., 10/1) and, for satellite services, high latency.

The Connect America Fund II auction’s weight system was intended to ensure that providers of higher-quality services—when available for a census block—would have a competitive advantage in the auction. But the FCC received some criticism that the minimum eligible speeds were too low, and that satellite providers were still able to pick up some areas simply because they have close to zero incremental capital costs for a given area—allowing them to bid down to single-digit-percentage support levels.

Where census blocks were contested (i.e., multiple operators were still bidding when the auction made its budget target), the Connect America Fund II auction continued and it became a race to the bottom; in the end, either satellite providers won or competing bidders received unsustainable support.

For the Rural Digital Opportunity Fund auction, the FCC decided to remedy this dysfunction by adding a rule that the lowest-weight bidder would automatically win in such situations rather than letting the auction continue. Only if there were multiple lowest-weight bidders would the auction continue.

What went wrong in the initial Rural Digital Opportunity Fund auction?

One of the primary concerns around the Rural Digital Opportunity Fund auction results is that several fixed-wireless providers, hybrid fiber/fixed-wireless providers, and the satellite provider Starlink, a part of aerospace company SpaceX, were allowed to participate in the auction at the above-baseline or gigabit tiers, which is optimistic at best—and technologically infeasible at worst. These designations gave the bidders a major competitive advantage, allowing them to bid aggressively with higher implied support levels from the FCC and the lower projected capital construction costs that come with wireless or satellite deployment. The result is that these bidders won some areas outright, as the only gigabit bidder in the clearing round.

The FCC’s evaluation of providers’ claims in the long form review process (discussed below) will thus be essential to ensuring that auction money is flowing to providers that can deliver what they promised.

While above-baseline speeds (100/20 Mbps) are certainly attainable for fixed-wireless networks in

dense urban areas, current fixed-wireless networks in rural areas struggle to consistently and ubiquitously deliver even 25/3 Mbps over contiguous service areas. Real-world rural deployments are more likely to deliver very good connectivity to *some*, and sub-broadband speeds or no connectivity at all to others—particularly those that are farther from towers and have line-of-sight obstacles. This reality is a far cry from the Rural Digital Opportunity Fund mandate to deliver the claimed performance speeds to *all* address points within the awarded census blocks.

Additionally, SpaceX won a high number of areas with an operationally-unproven technology: low-Earth orbit satellites. The FCC had previously indicated that it was strongly leaning toward assigning SpaceX’s Starlink network a high-latency weight, if the company was allowed to participate at all. Ultimately, the FCC not only allowed SpaceX’s participation, but the company was assigned to bid in the above-baseline, low-latency tier, with a very low corresponding weight.

The FCC’s decision to assign Starlink this weight at its current development stage was inconsistent with the Commission’s earlier statement that it would be inappropriate to experiment with new technologies using taxpayer funds in the context of this auction. The FCC’s decision to allow SpaceX’s participation at this tier also effectively broke the auction design.

The auction design was intended to apply a weight to satellite technologies that would allow them only to pick up areas for which terrestrial providers could not find an effective return on investment—typically very scattered and isolated rural areas. This is because satellite providers such as SpaceX have almost no capital and few operational expenses associated with providing service to the areas for which they were awarded subsidies, because their satellite infrastructure is already in place or has been planned to be deployed regardless of the Rural Digital Opportunity Fund outcomes. (Allowing several fixed-wireless providers to bid in the gigabit tier further led to situations where the superior, sustainable technical solution could not win outright.)

The result of the weight that the FCC assigned to SpaceX is that the company was instead able to outbid cable and fixed-wireless technologies in many places—and even fiber in some cases—collecting a very large share of the overall Rural Digital Opportunity Fund support nationwide.

The new rule ensuring the lowest weight be preferred when multiple bidders existed for a census area did not work as intended. The extensive bidding by SpaceX and fixed wireless providers at 100/20 meant they were often the ones with lowest weight. A hybrid fiber-to-the-curb technology, which could deliver close to the gigabit tier (1 Gbps/500 Mbps) or a mixture of gigabit and slightly lower speeds, would therefore not be offered any advantage in the auction. It would be assigned the same tier (100/20 Mbps) and weight (20) despite building a significant, durable, and scalable infrastructure delivering dividends for decades to come.

And the FCC’s new rule also had a flaw (apart from the weight assignment) that often prevented the best outcomes in the round when the regular auction stopped. Let’s say two fiber providers were bidding for an area during this round. At gigabit speeds they would be assigned a weight of zero. Let’s further say Starlink and a fixed-wireless provider bidding at 100/20 also were bidding at this round. Their weight would be 20. Because the fiber providers tied, the auction would need to continue for this area. Unfortunately, the FCC did not require that the providers with the greater weight be dropped for subsequent rounds (which would have been rational, given that they were not tied with the fiber bidders). The result was the very race to the bottom the FCC was trying to avoid, with the fiber providers dropping out a few rounds later as the support levels became unsustainable for them.

What happens next at the FCC?

Now that the initial auction is complete, winning bidders have submitted a “long-form” application to the FCC. This form includes more detailed information about each entity’s qualifications and proposed network, as well as a letter from a bank committing to provide a line of credit. The FCC will review this information before determining the feasibility of those winners delivering on their commitments. The FCC will engage winners to document their technical and financial capabilities when needed; the winners will submit final, detailed network designs and letters of credit in the summer. Only after this process can a winning bidder officially receive funding.

Though the long-form filing deadline has passed, the FCC has not yet revealed whether initial Rural Digital Opportunity Fund winners have satisfied the requirements. Even after the FCC makes these decisions, it could allow significant “cure time” to allow bidders to come up with sufficient funding guarantees. It is possible that we may not know which winners were denied certification until late 2021.

The FCC has indicated it will take a very strict approach in determining the ability of winning bidders to deliver on their commitments through this financial and technical analysis. However, while there have been some voices raising the alarm on the auction results that prioritized SpaceX, we do not yet know how much technical scrutiny the FCC will apply to winning bidders, nor whether the FCC has the time and engineering capacity available to critically evaluate the bidders’ long-form technical designs.

That is a concern for areas won by SpaceX, in particular. SpaceX’s service is expensive. Current pricing includes a $499 charge for a starter kit and $99 per month for service. Even if consumers qualify for the FCC’s forthcoming Emergency Broadband Benefit Program, which will cover up to $50 of broadband service costs each month, Starlink’s price point will likely remain out of reach for many. And when the temporary Emergency Broadband Benefit Program comes to an end, all customers will be left to pay the full price of service.

Another concern is the capacity of Starlink’s network. While Starlink’s testing stage can currently

provide speeds greater than the 100/20 Mbps the company committed to for the Rural Digital Opportunity Fund, the capacity of the network is limited by the shared capacity of each satellite. To meet its Rural Digital Opportunity Fund obligations, Starlink will need to deliver 100/20 Mbps to all addresses in the areas that it was awarded—regardless of the capacity needed to serve households outside of the Rural Digital Opportunity Fund areas.

To do this, Starlink will need to either increase the number of satellites and ground stations, and/or find a way to throttle capacity for non-Rural Digital Opportunity Fund users to deliver the necessary speeds to those in Rural Digital Opportunity Fund areas. Starlink is also expected to face competition from other low-Earth orbit satellite providers, all of which are competing for a small market of customers. Low take-rates could render Starlink’s business model unsustainable.

Finally, the cost to maintain the Starlink network is unknown. If the satellites require frequent replacement, this would dramatically alter the economic viability of the model, and therefore the operational continuity of the network—potentially leaving customers with largely obsolete hardware.

Implications beyond the auction

The FCC’s long-form evaluation and the Rural Digital Opportunity Fund awards it ultimately makes will have implications for awarded areas—particularly in regard to other upcoming federal funding opportunities. It is common practice for federal agencies to not award broadband funding to geographic areas that have received broadband funding from a different federal agency. For example, any area that has received Connect America Fund Phase II funding from the FCC is ineligible to receive ReConnect funding from the U.S. Department of Agriculture (USDA).

The National Telecommunications and Information Administration (NTIA) is expected to release rules and an application package for its new broadband infrastructure grant programs in the summer of 2021, and the legislative language that created the programs made it clear that NTIA should coordinate with the FCC and USDA to ensure that the same project areas are not funded by more than one agency.

However, areas that have been awarded federal support for satellite service have previously been an exception to this rule, with ineligibility instead aligned with the funding of terrestrial service. This precedent could mean that areas that SpaceX won in the Rural Digital Opportunity Fund might remain eligible for other federal funding, regardless of FCC review outcomes, while all other Rural Digital Opportunity Fund-funded areas would be considered ineligible for NTIA grants.

But, if NTIA and other agencies do decide to exclude all Rural Digital Opportunity Fund-awarded areas from their funding opportunities, SpaceX-awarded areas could be locked out of the opportunity to develop futureproof, terrestrial broadband solutions that would truly meet their needs—and would

instead be stuck with an expensive, unproven, and potentially economically unviable solution.

For areas to be served by high-speed, fixed-wireless providers, the exclusion from future funding is even more problematic. Even if future federal funding programs allow eligibility for areas that can demonstrate the inability of previous solutions to deliver on their speed and latency commitments, failure to deliver will not be known until final deadlines for buildout of the network, which is more than six years away. Currently, the only practical solution is for the FCC to set a very high bar for certifying winners to at least filter out the most unrealistic claims.

The future of the reverse auction format

The Rural Digital Opportunity Fund auction results are a far cry from the victory lap the FCC made immediately upon concluding the first round. However, there were also many cases in which the auction format worked as intended, producing surprising and welcome commitments from providers promising to deploy gigabit-fiber solutions in areas that had historically been bypassed by broadband technology deployments. Ultimately, if policymakers continue to rely on the reverse auction format, it should be in a revised format that builds on the successes in the auction while frankly acknowledging and addressing the failures.

As the FCC contemplates the second round of the Rural Digital Opportunity Fund, which will distribute billions in support, the Commission could consider the following strategies to support more productive outcomes:

- **Maintain the bidding weight system.** While not applied perfectly to every provider, applying bidding weight in the reverse auction format was effective in many scenarios for providing sufficient support to futureproof fiber solutions, and prioritizing those solutions over less-capable wireless deployments. This mechanism is the heart of the reverse auction. It helped evolve the FCC’s process from a mere money distribution system to a strategy to prioritize support for superior, long-term broadband solutions.
- **Apply heavier bidding weights to unproven or subpar technologies.** The bidding-weight mechanism worked well in many areas, but failed significantly in others. This is largely because the FCC chose to apply lower weights to wireless and satellite technologies that are highly unlikely to provide robust broadband solutions for all residents in awarded areas. Applying heavier weights to technologies with speed claims unproven in the real world would help to ensure that wireless and satellite solutions are only awarded when no wired option is available, and that federal money is not being spent on networks that would be built regardless of support.
- **Filter out higher weight bidders in clearing round.** Bidding for an area that is competitive enough to attract more than one fiber-to-the-home provider should not continue to include “higher-

weight” technologies. Allowing only lowest-weight bidders to continue would prevent a race to the bottom where the weaker bidder wins by default and not based on merits.

- **Conduct a thorough review process.** How will the FCC evaluate bidders’ network designs in the long-form review process? That remains unclear. A thorough, realistic review is essential to maintain the integrity of the auction. The FCC must evaluate a proposed network’s ability to support an entire awarded service area at promised speed and latency tiers. If FCC engineers find that the proposed solution would fall short of the commitments made by the provider, the award should not be made, and the service area should be made eligible for other funding from the FCC or another agency.

- **Add performance benchmarks and noncompliance penalties to ensure awardees are delivering.** While awardees are asked to report deployment progress to the Universal Service Administrative Company USAC) on an annual basis, no performance benchmark is set until the end of year three, at which point providers must be serving 40 percent of the awarded area. This means that the public will not know whether first-round awardees are even on track to meet their obligations until 2024—at which point less than half of the awarded area might be built out. By the end of year five, awardees are only obligated to have built 80 percent of the awarded area.[2]

And while the FCC claims that “failure to meet the terms and conditions of support can result in increased reporting obligations and possible withholding and/or recovery of support,”[3] it is not clear that meaningful penalties will be applied. The FCC should add shorter periods of performance so that stakeholders can better understand whether progress is being made -- and should follow through in penalizing awardees that do not meet these benchmarks, including by precluding defaulting entities from participating in future funding programs.

Learn and correct

So, should the FCC do away with reverse auctions for fixed broadband? We believe there is still room for the reverse auction format as a supplement to more traditional grant programs. But the FCC needs to learn from and correct some of the critical flaws revealed in the Rural Digital Opportunity Phase I auction. At stake is not simply an efficient use of federal funds, but the very future of broadband for rural communities. At worst, it could lock in place investments that prevent local communities from closing the broadband gap for many years to come, and at best it could ensure that our rural communities gain best-in-class critical infrastructure for decades to come.

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[1] “Auction 904: Rural Digital Opportunity Fund,” Federal Communications Commission, accessed April 15, 2021, https://www.fcc.gov/auction/904/factsheet

[2] “Auction 904: Rural Digital Opportunity Fund,” Federal Communications Commission, accessed April

15, 2021, https://www.fcc.gov/auction/904/factsheet

[3] ibid.

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