

The Rural Digital Opportunity Fund: Rural America's Broadband Hopes at Risk



I. EXECUTIVE SUMMARY

RDOF Phase I encouraged many with the promise of needed support to connect homes with true broadband services in unserved rural communities. However, RDOF's Phase I exposed many issues which will likely lead to deployment delays, missed expectations, or worse. Specifically, some applicants that bid in the Gigabit tier have submitted unrealistic wireless network designs that are highly unlikely to produce Gigabit service to rural communities. Also, several awards for wide swaths of the country with varied terrain and topography went to bidders with limited financial and operational qualifications. Despite this, the \$9.2 billion awarded was far below the \$16 billion budgeted amount.

Careful Scrutiny During the Long-Form Process Is Warranted to Ensure That Proposals Demonstrate Responsible Network Design and Financial Viability Is Warranted

The Commission can address these issues during the upcoming long-form review. In addition, it should strive to accelerate the RDOF Phase II auction while implementing key improvements to the rules. The FCC should not hesitate to disqualify bids that are incapable or unlikely to deliver promised services. As 160 members of Congress recently requested,¹ the FCC should scrutinize long-form applications and apply transparent criteria to determine the qualifications of bids, with specific focus on:

1. **Technology/Network Design:** The Commission itself initially expressed reasonable concerns about new technologies, and proposed² (but unfortunately did not retain³) reasonable limits upon certain types of bids. It foresaw the problem with allowing bidders to obtain funding using unproven technologies at the Gigabit level. Unproven methods risk stranding rural consumers without broadband infrastructure.
2. **Financial and Operational Qualifications:** The FCC reasonably sought to include smaller companies seeking to serve relatively limited areas. But there are questions regarding how some applicants, with apparently limited operational experience, bid for and won RDOF support for vast areas that they will likely not be able to build or operate.

It is reasonable to ask for a close look into whether these controversial bids led to the lower-than-anticipated dollar amounts of support in the reverse auction. Our members ask: why, after years of underinvestment by private companies, will the relatively small levels of RDOF support through Phase I suddenly make these areas attractive investments to smaller new entrants? Will these companies exist long term, or fail to deliver on promises as has occurred in the past?

The analysis in this paper points to the need for applicants to demonstrate responsible network design and financial viability. Cases where these are not apparent should be subject to extensive and transparent review. Specifically, the FCC should examine:

¹ Letter from James E. Clyburn, Member of Congress, *et. al.*, to The Honorable Ajit Pai, Chairman, Federal Communications Commission, (Jan. 19, 2021).

² *Rural Digital Opportunity Fund Phase I Auction Scheduled For October 29, 2020*, Notice and Filing Requirements and Other Procedures for Auction 904, AU Docket No. 20-34 *et. al.*, (rel. June 11, 2020) ("*Auction Procedures Public Notice*"), ¶¶ 98-99.

³ *Ibid*, ¶ 100.

- Winning bids that claim to utilize wireless technology at the Gigabit level; and
- Winning bids by parties lacking a history of providing service in rural areas, particularly those that report limited financial means compared to the expense of serving large territories, such as those promising to serve nearly statewide areas; and
- Winning bids utilizing low earth orbit (LEO) satellite technology, which is only in the beta testing phase and not yet commercially available.

II. THE LONG FORM PROCESS SHOULD CLOSELY EXAMINE UNTESTED TECHNOLOGIES AND FINANCIAL QUALIFICATIONS

A. Technology/Network Design

Initially, the Commission’s proposed rules would have reasonably precluded applicants from bidding in the Gigabit tier if they proposed to use technology that they have not previously deployed to consumers (including fixed wireless) in a commercial environment. The Commission correctly observed that it would be “unreasonable” to expect an applicant to be able to offer Gigabit speeds using fixed wireless technology “unless it has a reported history of offering such speeds.”⁴

The Commission further noted that “Auction 904 is not the appropriate venue to test unproven technologies using universal service support.”⁵ It continued:

“The risk of default—and therefore leaving an area unserved longer than necessary—is significantly greater if Commission staff, in making its determinations, cannot rely on concrete examples of the technology being used to offer high speed or low latency service directly to residential consumers... We are guided by our obligation to preserve the Universal Service Fund and do not want winning bidders and support recipients to default and strand consumers with no service, unreliable service, or with service that is not reasonably comparable to service offered in urban areas.”⁶

The Commission also stated that the only applicants that can make a case to bid in the Gigabit performance tier are those that proposed to use a technology that has a “proven track record” and “concrete examples” of providing qualifying service “directly to residential consumers.”⁷

By the Commission’s own and accurate assessment, the risk of default and lack of service to consumers is “significantly greater” if there are not “concrete examples of a technology being

⁴ *Comment Sought on Competitive Bidding Procedures and Certain Program Requirements for the Rural Digital Opportunity Fund Auction (Auction 904)*, Public Notice, 35 FCC Rcd 2295 (2020) (“*Auction 904 Comment Public Notice*”) ¶ 51; see also Footnote 291: “A finding that it is not reasonable to expect that an applicant is capable of meeting the relevant public interest obligations would not necessarily mean that a potential bidder is incapable of meeting the public interest obligations. Instead, such a finding would mean that **it is not in the public interest to risk awarding support to an applicant that Commission staff believes is likely to default or be unable to fulfill its obligations**” (emphasis added).

⁵ Auction Procedures Public Notice, ¶ 98.

⁶ *Id.*

⁷ *Id.*, ¶ 99.

used to offer high speed” service to real-world consumers. And yet, in the same document, the Commission permitted just such high-risk situations to arise, allowing applicants a unique, separate opportunity to show that they are “reasonably capable” of offering Gigabit level service.⁸

Reassuringly, the FCC did state that “**such applicants face a high burden** to persuade Commission staff that they are reasonably capable of meeting the public interest obligations in rural areas”⁹ on a case-by-case basis.¹⁰ The FCC also noted that “the more in-depth long-form application process will further minimize the risk of authorizing an unqualified applicant.”¹¹ The process and criteria for the heightened short-form case-by-case evaluation of these bidders was opaque and lacked transparency. A group of stakeholders, including NRECA, urged the FCC to publicly lay out the specific standards for the “high burden” these case-by-case evaluations would be required to meet.¹² Unfortunately, the FCC decided not to do so. In order to protect rural consumers from being stranded without adequate broadband infrastructure for the foreseeable future, and to protect the integrity of the Universal Service Fund, the Commission must transparently hold to this high burden in the long-form process.

Specific concerns with winning bids that utilize wireless technology at the Gigabit level

As the Commission itself had expressed concerns about the use of technologies that are unproven in the marketplace, Gigabit level bids using wireless technology must demonstrate responsible designs capable of delivering this level of service consistently and reliably. However, concerns have been raised that some applicants “who appear to be relying on wireless technology submitted bids in the Gigabit tier for areas that cannot feasibly be served at these speeds due to geographic obstacles, whereas others submitted bids that appear to be financially unrealistic in other areas.”¹³

NRTC has worked with several rural utilities across the country to design and deploy wireless networks. NRTC agrees that wireless technologies can provide Gigabit speed, but its experience shows that the conditions for this speed are largely unable to be met in rural America for a number of reasons. These reasons include the need for substantial spectral bandwidth at lower frequencies for propagation, availability of vertical assets for higher frequency spectrum, near or

⁸ *Id.*, ¶ 100

⁹ *Id.*, ¶ 106. The FCC continued, “[G]iven distance limitations, spectrum bands attributes, channel bandwidths requirements, backhaul and medium haul requirements, tower siting requirements, capacity constraints, required upstream speeds, required minimum monthly usage allowances, and other issues raised in the record, we expect it will be similarly challenging for a fixed wireless provider to make a case that it can offer a mass market service meeting the Gigabit performance tier public interest obligations in the less dense areas eligible for Auction 904. This is so especially for entities lacking an operational history of offering Gigabit service in rural areas. Accordingly, we expect that relatively few fixed wireless and DSL technologies will be able to meet the short-form requirements for bidding in the Gigabit performance tier.”

¹⁰ *Id.*, ¶ 97; *see also* ¶¶ 98; 107.

¹¹ *Id.*, ¶ 97.

¹² *See* Letter from Michael R. Romano, Senior Vice President – Industry Affairs & Business Development, NTCA–The Rural Broadband Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, AU Docket No. 20-34, *et. al.* (fil. June 2, 2020).

¹³ *See* Letter from Skyler Ditchfield, Chief Executive Officer, GeoLinks, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 19-126 (Jan. 14, 2021) (“GeoLinks Letter”), p. 1.

absolute line of sight from transmitter to antenna, and a substantial deployment of fiber optic cabling for backhaul purposes.

Many of the areas where support was assigned to fixed wireless bidders to provide Gigabit service would either fail to meet these conditions or be prohibitively expensive to achieve. One example of such an environment is in the mid-west where somewhat flat terrain and limited vegetation provide a reasonable environment for deploying high throughput wireless networks. However, the conditions still fall short of those required for Gigabit service due to the large number of sites required to meet this goal, the number of which would be both financially and practically infeasible to deploy. As a result of the above considerations, NRTC typically focuses on designs that can meet the Above Baseline performance service obligation even in these areas.

NRTC applies a proven approach that combines detailed technical design with comprehensive financial modelling to assess the feasibility of building, deploying, and operating broadband. The technical design explores both Fiber to the Home (FTTH) and Fixed Wireless Access (FWA) broadband using a variety of technologies. The design is taken through a preliminary design which includes a route plan for FTTH and a propagation study for FWA, enabling the ability to determine capital costs for the broadband network. The financial model considers all significant capital and operational costs to design, deploy, and operate a broadband network along with source of revenue and financing to determine quantitative measures of financial feasibility.

One of the accepted metrics for measuring feasibility is the Internal Rate of Return (IRR). A feasible project achieves an IRR that exceeds a threshold rate. Later in this paper, we provide examples of the many advantages cooperatives and other local providers have over greenfield operators when deploying broadband. These advantages, such as access to well-priced debt capital, allow them to generally achieve their threshold IRRs in the range of 5%, which in nearly every case is lower than most other private and public companies' thresholds.

In the case of the mid-western cooperative, a FTTH-only design resulted in a negative IRR, *i.e.*, the initial investment could not be paid off by any reasonable expectation of future revenues. Shifting the focus to a hybrid design using FWA generated coverage that could deliver minimum service levels exceeding the Above Baseline (> 100Mbps / 20Mbps) and Low Latency (<100ms) service tier. This was based on a design utilizing unlicensed 5.8 GHz spectrum. Each site operated in a four-sector configuration. The goal was to deliver service to all addresses in the area rather than service to "as many as possible."

Because of this, the focus was on cell-edge throughputs, *i.e.*, the minimum throughput delivered to all end-users in coverage, and in the case of Above Baseline service, this meant 100 Mbps cell-edge throughputs. This design would be required for an RDOF winner to meet the service obligations of RDOF recipients, including serving all locations in an eligible area. Assuming 80 MHz channels per sector, this design required a minimum receive sensitivity that could achieve 16-QAM modulation to provide 100 Mbps at the cell edge. Furthermore, the design methodology considered multiple factors for determining realistic site locations that account for terrain and proximity to backhaul and power. This means sites were selected to be located along existing electric plant that is either fiber-fed or serviceable from a point-to-point microwave link.

As shown in Figure 1, providing Above Baseline (100 Mbps) coverage to the eligible (blue border) areas of a single Census Block Group (CBG) required five fixed wireless sites to serve 178 eligible locations. NRTC’s analysis showed that a fixed wireless network achieving 100 Mbps service would be achievable and result in an IRR above the provider’s threshold when accounting for a 50% take-rate and RDOF support.¹⁴

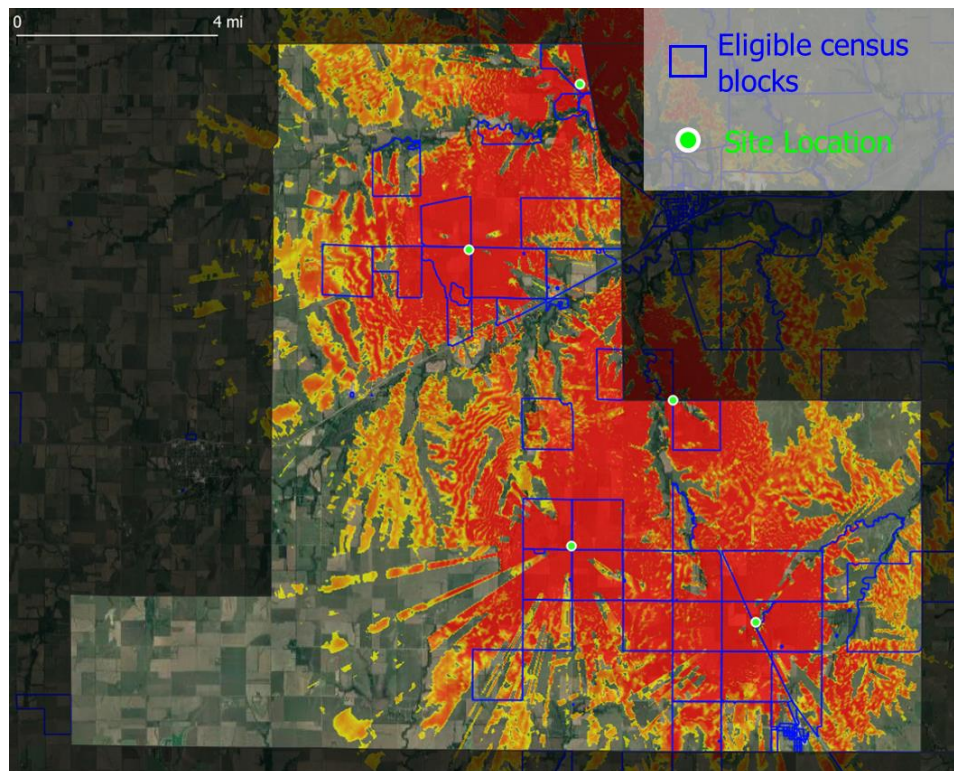


Figure 1: Above Baseline coverage for all eligible customers – 5 sites

Given the results of the auction, NRTC has embarked on an analysis to understand what it would take to achieve Gigabit-level services with FWA in this specific area.

As noted above, NRTC’s analysis ahead of the auction indicated that FTTH was not feasible in the region considered. To examine FWA’s ability to deliver Gigabit service, NRTC considered public information including vendor specifications and FCC filings, and concluded that 1 Gbps links could be achieved with Multiple-Input Multiple-Output (MIMO) point-to-multipoint systems operating with an 80 MHz carrier in 5.8 GHz, if the signal quality could support a modulation level of **4096-QAM**. It found that Gigabit service could only be achieved with lower modulations with 160 MHz of available spectrum, which is not realistic in most rural situations.

¹⁴ A 50% take-rate is used based on market experience including a comprehensive 2020 benchmarking study of rural broadband projects. The FCC guidance of using 70% is appropriate for network engineering purposes to deliver sufficient capacity, but is unrealistic for financial modeling purposes.

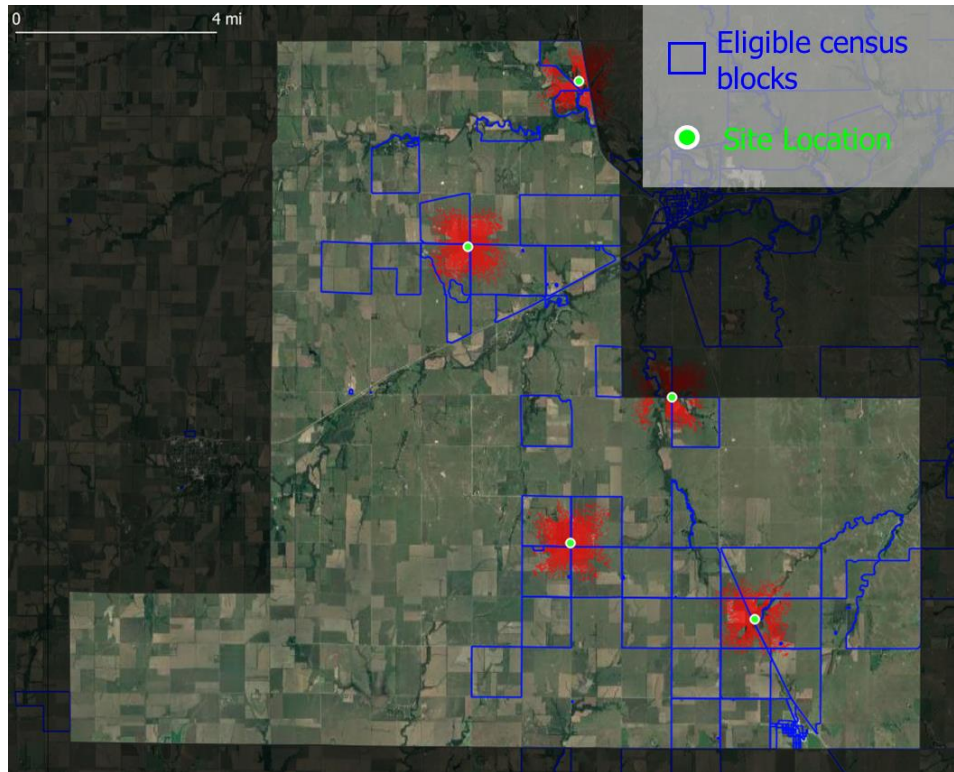


Figure 2: Gigabit service with five sites does not reach all eligible customers

Figure 2 shows how the five sites in Figure 1 would reach far fewer customers at the gigabit level. Increasing the required modulation from the 16-QAM (needed to deliver 100 Mbps service) to the 4096-QAM (needed to deliver 1 Gbps service), increases the sensitivity required to achieve a link. This in turn decreases the achievable link distance per site. Keeping all other assumptions the same relative to the Above Baseline (100 Mbps) network design, the required sensitivity to achieve 4096-QAM would result in the effective Gigabit service shown in Figure 2. The drastically reduced footprint represents a fraction of the required coverage for eligible areas.

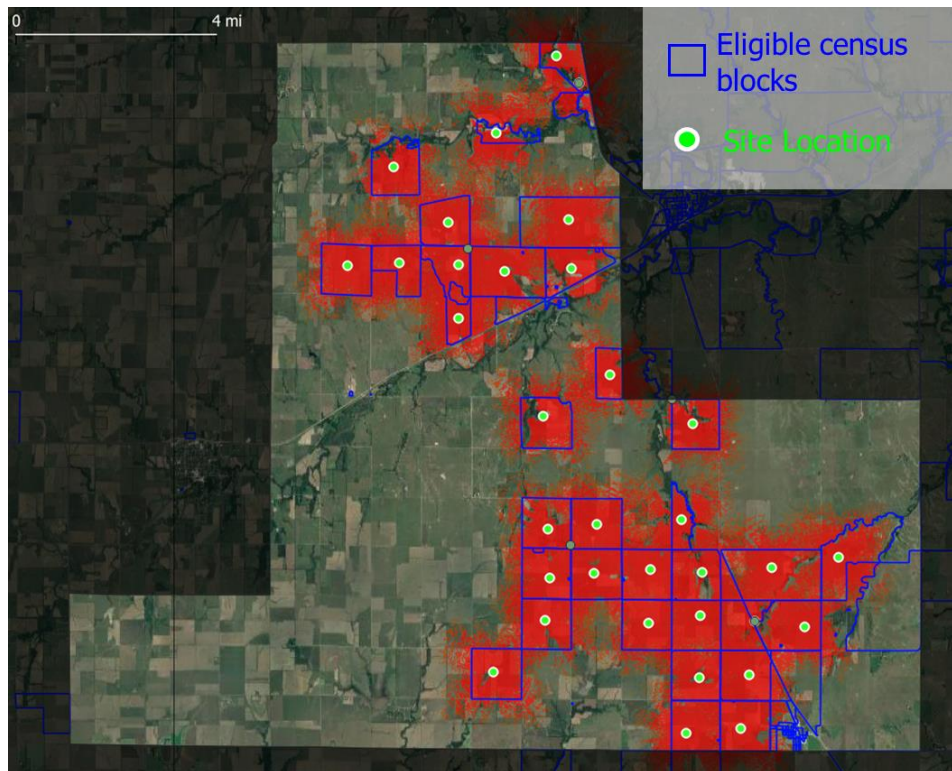


Figure 3: Gigabit service for all eligible customers – 34 sites

Delivering fixed wireless Gigabit service to the eligible areas in this ideal terrain would require 34, rather than five, sites, making it economically suspect and very difficult to practically deploy.

NRTC’s analysis shows in Figure 3 that it would require 34 sites, rather than five, to cover the eligible areas of the CBG being studied with Gigabit service. Even with RDOF funding, the costs of these additional sites are prohibitive, resulting in a negative IRR. To understand these economics, it is useful to consider that with a 50% take rate each site would serve an average of only 2.6 subscribers. Accounting for site construction, RF electronics, and backhaul, these sites could cost between \$50-\$100K each, depending on several factors. Furthermore, this assumes that one could space these locations evenly throughout the CBG. In practice, it would be a large challenge to find this many locations this close together and build these sites.

A separate wireless Gigabit approach would be to use millimeter wave (mmWave) solutions at higher bands such as 60 GHz. While the large channel bandwidth available in the mmWave bands can readily deliver greater than 1 Gbps services, the high carrier frequency decreases propagation to be only effective over extremely short distances which must be in direct line of sight with few obstacles. As such, in NRTC’s experience, use of mmWave solutions serves to simply replace the FTTH drop and requires an expansive fiber deployment including both backbone and distribution network. Any cost benefits from eliminating the physical fiber drop fails to materially improve the overall network economics enough to achieve feasibility.

Therefore, though theoretically possible, it is highly questionable how a responsible design could deliver financially viable Gigabit wireless service in rural areas, using current technologies (whether at mid-band or mmWave frequencies). Currently, NRTC is unaware of large-scale

commercial deployments of fixed wireless in rural environments consistently offering 1 Gigabit service that have, in the Commission’s own definition, a “proven track record” of providing qualifying service “directly to residential consumers.”¹⁵

Furthermore, real-world deployments face additional challenges. These include:

Less-ideal propagation environments. The example above focused on an extremely favorable environment for wireless propagation, but many of the areas Gigabit wireless bidders won encompass regions with less ideal vegetation and terrain, which reduces propagation and line-of-sight distances.

Noisy spectrum. Spectrum quality varies, even in rural America. NRTC’s analysis assumes 80 MHz of spectrum is available at every site in the network. However, noise floors often reduce the footprint for higher-throughput services.

Non-ideal site location: The Above Baseline design accounted for many of the real-world factors that drive site selection, but as the density of sites increases, finding the necessary site locations that have adequate power and backhaul becomes proportionally more difficult. Non-ideal site locations can result in needing additional sites to cover certain areas.

Theoretical vs actual equipment performance: As has been the case for every generation of wireless equipment, performance at theoretical levels is not achievable in real-world conditions. Additional scrutiny is warranted to determine what is achievable.

In conclusion, achieving a feasible Gigabit fixed wireless service even in the most ideal circumstances is very difficult. The Commission should consider whether bidders that used responsible designs for fixed wireless based on real-world expectations were harmed as they likely used more demanding criteria than those who bid Gigabit wireless. Moreover, communities will be harmed if these bidders cannot deliver the promised service levels. The FCC can mitigate these harms during the long-form process by scrutinizing in detail the assumptions bidders used.

Low Earth Orbit-based applications should also be subject to close and transparent scrutiny

While Low Earth Orbit (LEO) satellite systems did not bid in the Gigabit tier, winning bids based on LEO technology should also face transparent scrutiny. While delivering broadband service at the speeds promised by these applicants may appear to be viable, this service is currently in beta testing and commercially available on a limited basis in extremely limited areas, and questions remain. At the current time, LEO-based broadband lacks the “demonstrated capabilities to perform at certain speed and latency combinations”¹⁶ the Commission reasonably requires. As the Commission has stated, “Auction 904 is not the appropriate venue to test unproven technologies using universal service support.”¹⁷ Awarding bids to experimental and unproven LEO satellite service is a direct contradiction to the procedures PN. Some have noted

¹⁵ Auction Procedures Public Notice, ¶ 99.

¹⁶ *Id.*, ¶ 98.

¹⁷ *Id.*

the high cost of LEO customer premise equipment (CPE).¹⁸ The FCC should evaluate these costs in light of the Congressional requirement that services supported by universal service high-cost programs like RDOF be available to rural consumers at rates “reasonably comparable” to those enjoyed by urban residents.¹⁹ Questions also remain about the ability of LEOs to consistently provide a high level of speed as thousands of subscribers sign up for the service. Again, if this service were commercially available widely, real-world data would be available. But it is not. In addition, the fact that satellite providers eventually plan to deliver service to areas regardless of whether they get subsidized to do it makes it a poor use of limited dollars.

Therefore, the FCC should apply transparent and clear criteria to LEO applications during the long-form process. The Commission noted that allowing an applicant to bid in the auction did not mean that it had made “a definitive finding that the applicant will meet the public interest obligations.”²⁰ Thorough review during the long-form process is necessary to determine if a finding about an applicant’s network design and other factors will ensure that rural consumers receive the services promised on an ongoing basis.

In order to prevent rural Americans from being stranded without adequate broadband services, the FCC should closely scrutinize network designs that claim to offer unproven designs or technologies including both Gigabit service with wireless technology and Above Baseline service from LEO satellites. An expeditious review should apply clear and transparent criteria. Any applications that appear unlikely to deliver promised speeds to all locations should be disqualified per FCC rules.

Specifically, the Commission could take specific, immediate steps to improve the transparency of the long-form application review process:

- Publicly identify bidders that were given special dispensation to bid in a higher tier than is currently, widely commercially available.
- Publish the technical standards for each technology that will be used for evaluation purposes.
- Provide, along with any approval of long-form applications, the technical and financial rationales explaining the application’s acceptance.

Moving forward, the FCC should adjust RDOF Phase II rules to require a detailed design of proposed wireless networks in the short form, including propagation studies that are specific to a bid’s proposed service area. And agency staff should establish transparent criteria by which the technical viability of such bids will be evaluated.

¹⁸ See Letter from Brandon Presley, Public Service Commissioner, Northern District, Mississippi to R. Edward Price, Senior Counsel, Space Exploration Technologies Corp (Jan. 21, 2021), noting a reported \$400 customer premises equipment cost, available at <https://twitter.com/BrandonPresley/status/1354117627480825858/photo/1>.

¹⁹ Telecommunications Act of 1996, U.S.C. § 254(b)(3) (1996).

²⁰ Auction Procedures Public Notice, ¶ 125.

B. Financial and Operational Qualifications

The FCC permitted applicants to bid across many CBGs representing large amounts of the auction's reserve price without demonstrating access to sufficient capital and without operational experience in operating large networks. The Commission chose to limit the financial information it required of applicants in the short-form process.²¹ While minimizing burdens is laudable, the auction rules permitted anyone so approved to bid in as many eligible CBGs as they wished. Therefore, if a small provider with limited financial resources was approved to bid in a state with the anticipation that it would limit its bidding area to a small area proportionate to its financial wherewithal, but instead chose to bid across wide swaths of territory, or even statewide, there was nothing to prohibit them from doing so.

There is some skepticism regarding winning bids that appear to have been awarded to firms with questionable financial and operational qualifications, especially given their size, experience, and the number of CBGs they plan to serve. In some of these instances, there also appear to have been questionable technology and network designs involved as well, as discussed above. There was no practical method in the short-form process to determine whether applicants could financially deploy or sustain the provision of broadband services at the levels promised.

Blair Levin from New Street Research noted, "For every auction—and RDOF will not be different—the question for the FCC is how it will ensure that the parties live up to their commitments and then how will it address those cases where they don't." He continued, "In our view this opens the door to the new FCC to reject a number of applications from smaller players who won large sums."²²

Additionally, a draft resolution by two National Association of Regulatory Utility Commissioners (NARUC) commissioners urges the FCC to closely scrutinize the long-form applications of RDOF support winners to ensure that each provider does in fact have the technical, financial, managerial, operational skills, capabilities, and resources to deliver the services they have pledged for every American they plan to serve regardless of the technology they use.²³

New entrants face significant challenges

As investment bank Raymond James notes, the ultimate success of new entrants "remains to be seen." They observe that some may lack experience running communications networks and do not benefit from "scaling existing systems and infrastructure."²⁴

²¹ *Id.*, ¶¶ 56 – 61.

²² See Linda Hardesty, "Congressmen worry RDOF funds will be squandered," *Fierce Telecom*, January 25, 2021, available at <https://www.fiercetelecom.com/financial/congressmen-worry-rdof-funds-will-be-squandered>

²³ See Resolutions Proposed for Consideration at the 2021 Winter Policy Summit of the National Association of Regulatory Utility Commissioners, Revised 1/26/21, <https://pubs.naruc.org/pub.cfm?id=7C12088E-155D-0A36-31B6-1EF5C9FCBFA>.

²⁴ See Mike Dano, "Incoming FCC chief could inherit RDOF boondoggle," *Light Reading*, 1/20/21, <https://www.lightreading.com/opticalip/incoming-fcc-chief-could-inherit-rdof-boondoggle-/d/d-id/766787>; in addition, "There are several winning fixed wireless companies who won subsidies, apparently in the Gigabit tier, where we immediately see several red flags," noted the New Street [Research] analysts." *Id.*

Additionally, lack of established customer relationships is another significant hurdle. Achieving the take rates necessary to provide a profitable business based on the high cost of Gigabit technology deployment will be a challenge for a new entrant.

Even if new entrants overcome these challenges, they will find it difficult to achieve returns acceptable for private investors, especially in the wake of low RDOF Phase I support. Lender time horizons will be much shorter for these entrants than is seen for established rural providers. Required return to investors to offset the significant risk will also be much higher.

Competitive bidding levels from these entrants reduced the funding available in many CBGs to a point where it will hinder the ability for these small operators to secure funding and to create sustainable businesses

Many CBGs were bid down significantly below the reserve price, in many cases down to 1% of the reserve price. The FCC’s calculated reserve price was based on what the ACAM model showed was the amount required to make these CBG’s economical.

Given the relative lack of RDOF support in many CBGs and the already difficult economics of Gigabit services in these areas for new, privately capitalized entrants, this further adds to the financial and operational risk.

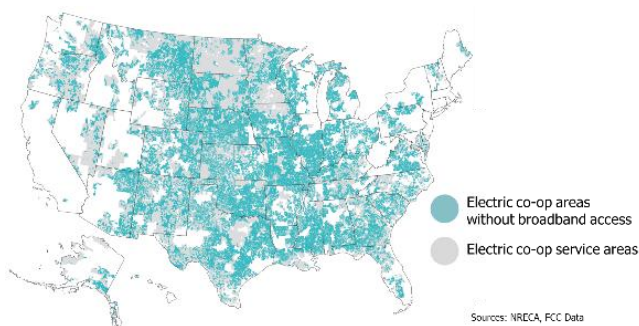
Furthermore, in many of these areas there were local, community-based electric and telco providers standing ready to deploy reliable broadband service for their members, with a clear path to financing from cooperative lenders. Consumers in these communities seek assurance that those who won support will be able to follow through on their commitments.

Cooperatives have a model that aligns well with rural broadband investment needs

In contrast, America’s 900 electric cooperatives own 4.2 million miles of electric distribution lines (42% of U.S. miles) and power 20 million businesses and homes. These cooperatives have served their communities for generations providing services that were rarely, if ever, extended to rural areas based on the economics of their areas due to lower population density.

Cooperative, independent, and family-run telcos also have served these communities, but cover a smaller footprint.

Rural cooperatives have watched as bandwidth needs moved beyond the capacity of rural DSL networks prevalent in rural areas, yet most member territories still lack true broadband.



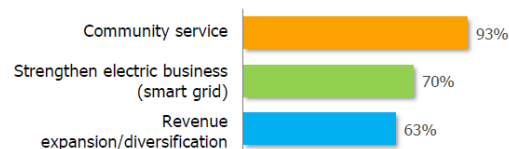
The reason for this is simple. The economics of rural broadband are no different than those of the rural electric business – and this precluded investment. Not only was there a lack of new broadband entrants, but existing providers (save for the co-op and independent telcos) were not investing in upgrading their infrastructure. In fact, larger incumbents such as Frontier and Windstream have gone through bankruptcies and restructurings. And some incumbents continue to miss CAF II obligations to deploy even 10/1 service to these locations where RDOF winners

promise to build much faster networks for drastically lower levels of support. And in some cases, the very incumbents that are failing to meet 10/1 Mbps CAF II obligations won RDOF support.²⁵

Local, community-based providers are responsive to their communities, and in many cases utilize a cooperative model. They upgrade their networks and serve their communities well with sustainable models. However, sustainable investment from new entrants and larger operations have mostly been unsuccessful and have left their customers with legacy technologies.

Given how critical broadband is for communities, many electric cooperatives have made investments to offer broadband for their members. Community service and commitment to members are their primary motivations. Broadband also strengthens their core electric businesses by enabling Smart Grid communications.

Motivations to invest in broadband



Source: Rural Electric Cooperative Benchmarking Report, 11/20/20

Beyond the motivation to serve, the cooperative model provides several advantages that make investment in robust rural broadband economically viable:

Access to patient capital at attractive rates: Cooperative lenders such as National Rural Cooperative Finance Corporation (CFC) and CoBank and programs such as RUS are able to provide long term, low cost debt capital. When members receive CFC and CoBank loans, they almost always are secured by the cooperative as a whole. Given the generational stability of electric cooperatives, co-ops can access capital on favorable terms.²⁶ Additionally, these loans are long-term in nature and average 20 years.

Long return horizons: Cooperatives appreciate investment in long-lived assets with paybacks that exceed 10 and even 15 years.

Existing assets (lower capital expenditures): Co-ops typically have existing facilities such as a building to house a head end, or a Network Operations Center, warehouses, vehicles, billing systems, and other facilities.

Existing operations (lower operating costs): While co-ops deploying broadband need to build dedicated teams, they can leverage shared resources from their electric businesses such as

²⁵ See Joanna Nelius, "CenturyLink, Frontier Failed to Meet FCC Deadline for Rural Broadband Rollout," *Gizmodo*, January 22, 2021, available at: <https://gizmodo.com/centurylink-frontier-failed-to-meet-fcc-deadline-for-r-1846114780>. See also, "Mapping, Impact & Adoption: A Research Agenda for Effective Rural Broadband Policy," Remarks of Gigi Sohn Before the Association of Public and Land-Grant Universities, Thursday, January 28, 2021: "To the extent that any broadband provider was held accountable for failing to meet deadlines or build the promised network, what was the penalty and the final outcome? How many companies were allowed to participate in high-cost fund auctions after missing deadlines or defaulting?" Available at <https://www.benton.org/blog/mapping-impact-adoption-research-agenda-effective-rural-broadband-policy>.

²⁶ In contrast, lenders are concerned about the ability of some RDOF wireless bidders to meet requirements, such as securing necessary Letters of Credit, for example. See "RDOF Broadband Results Raise Concerns About Execution, Financial Risk," CoBank Report, Jeff Johnson, Jan. 2021; <https://www.cobank.com/-/media/files/ked/communications/rdof-broadband-results-raise-concerns-about-execution-financial-risk-jan2021.pdf?la=en&hash=5B917148725176D058F81B062E753AC125B8FD75>

finance, marketing, administration, mapping, warehousing, purchasing, and installation and maintenance.

Intimate knowledge of service territory: When co-ops and other local providers deploy broadband within their electrical service territory, they have an intimate knowledge of the terrain, locations and other attributes that others would not be privy to. When co-ops deploy outside of their existing electric territory, they may lose some of these advantages but would be in similar and familiar terrain and likely still have advantages compared to a provider that had not operated in that state or area. This knowledge can be especially helpful in planning fiber routes and propagation maps.

The need for broadband communications for Smart Grid: Electric co-ops have a need for communications to elements of their electric grid to enhance operational efficiency, reduce down time, reduce wholesale energy costs, control new sources of distributed energy such as solar, battery storage, electric vehicles and increased responsiveness to their members.

Relationships with members (greater take rates): Co-ops know their members well and are shaped by the specific needs of the communities they serve. This local, member-driven structure is one reason why cooperatives enjoy the highest consumer-satisfaction scores within the electric industry. For broadband, this results in very favorable take rates that average over 50%. In fact, in a recent survey,²⁷ 88% of respondents reported take rates that exceeded their business plan objectives.

Responsibility to serve: Even with all of these advantages, deploying broadband is still a generational decision for a cooperative. Co-ops put their balance sheets on the line, with equity built up in many cases over 80 years, and they accept the long payback horizon. Local providers deploy broadband because of their responsibility to their communities, to ensure that they have the infrastructure necessary to meet today's and tomorrow's needs.

These reliable organizations, focused on their communities for generations, in many cases received substantially lower RDOF support, or had to withdraw from the auction due to the auction dynamics from bidders without demonstrated financial wherewithal or large-scale operating experience.

Proposed Remedy: In order to prevent rural Americans from being stranded without adequate broadband services, the FCC should closely scrutinize proposed funding descriptions for those with limited experience providing robust service in rural areas. As with technology and network designs, clear, transparent criteria should be applied. The review should be expeditious. Any applications that appear unlikely to be able to deliver promised speeds to all locations should be disqualified per FCC rules.

Moving forward, in addition to applying this scrutiny during the Phase I long-form review process, the FCC should propose RDOF Phase II rules to require an applicant to demonstrate, at the outset (short form), the financial ability (and access to capital necessary) to deploy and maintain a broadband network as promised.

²⁷ Rural Electric Cooperative Broadband Benchmarking Report, NRTC, November 10, 2020; <https://www.nrtc.coop/white-paper/Broadband-Benchmarking-Report-2020.pdf>

III. PROPOSED SOLUTIONS AND CONCLUSION

The long-form application process is the last opportunity to properly scrutinize questionable bids and protect the integrity of the USF and uphold confidence in any future public auctions. The FCC should publicly establish objective, transparent technological and financial criteria that will be used to measure the qualifications of applications through the long form process. Anything less risks stranding rural consumers without adequate access to broadband and wasting scarce USF resources.

The only backstop provided by the auction rules to ensure that rural consumers are not left stranded by winning bids that are not capable of fulfilling their public interest obligations are to be found in the long-form application process. This applies to bids that fall short on technology and network design, as well as those that may lack evidence of sufficient funding.

Technology/Network Design:

The Commission stated that “the more in-depth long-form application process will further minimize the risk of authorizing an unqualified applicant.”²⁸ The Commission further declared that wireless Gigabit applicants “face a high burden to persuade Commission staff that they are reasonably capable of meeting” their RDOF obligations.²⁹

The Commission was correct to call for a “**high burden**” to demonstrate a bidder’s ability to provide service at the speed and latency tiers promised in return for funding. The criteria for this standard in the long-form process should be transparent and public – unlike the closed-door “case-by-case” determinations made in the short-form process that led to the current situation.

Project Funding Descriptions

The long-form application also requires a project funding description.³⁰ The Commission aptly noted that even if it found an applicant “financially qualified” to bid through the short-form process, this approval does “not preclude a determination at the long-form application review stage that an applicant is not authorized to receive Rural Digital Opportunity Fund support.”³¹

Recommendations and Conclusion

As with the assessment of a bidder’s technology and network design plans, the Commission should carefully scrutinize project funding descriptions using transparent criteria. The FCC

²⁸ Auction Procedures Public Notice, ¶ 97

²⁹ *Id.*, ¶ 106.

³⁰ According to the Long Form Instructions, this description should include the following: “The estimated project costs for all facilities that are required to complete the project, including the costs of upgrading, replacing, or otherwise modifying existing facilities to expand coverage or meet performance requirements to all required locations; the estimated costs must be broken down to indicate the costs associated with each proposed service area at the state level and must specify how Rural Digital Opportunity Fund support and other funds, if applicable, will be used to complete the project, and; the description must include financial projections demonstrating that the long-form applicant can cover the necessary debt service payments over the life of any loans.” FCC Form 683, *Application for Rural Digital Opportunity Fund Phase I Support*, Auction 904 Instructions, p. 22, available at <https://docs.fcc.gov/public/attachments/DA-20-1422A4.pdf>, citing Auction Procedure Public Notice ¶ 312.

³¹ Auction Procedures Public Notice, ¶ 61.

should disqualify applications that do not demonstrate how providers will fund both build-out and operational expenses.³²

Based upon information currently available, it appears likely that a number of applications could be found to lack the adequate responsible network design, operational, and/or financial resources to deliver services to all locations as required with available funding.

The following recommendations are offered:

1. Rather than engage in an extended process to adjust these applications to “fit” real-world needs, the FCC should not hesitate to disqualify those not likely to fulfill their obligations.³³ While disqualification at this point may not be the desired outcome of the Commission or those unserved locations, it is a better choice than to approve an inadequate application. In the latter case, rural consumers would face multiple years without broadband access before this funding shortfall could be addressed and money reauctoned.³⁴ Neither should the Commission permit applicants to retroactively reduce the level of promised service if, under scrutiny, the promised level appears to be unattainable.³⁵ Therefore, the FCC’s transparent evaluation of long-form applications, as recommended above, should occur in an expeditious fashion. Those that are found to be lacking should be disqualified without inordinate delay.
2. Mitigate the delay of funding to areas that otherwise would have been covered by disqualified applications. The FCC should consider holding a “Phase 1.5” auction for only the CBGs where initial winning bidders were deemed unqualified in the long-form evaluation period. Due to the function of the auction, it would often be impossible to determine who among other bidders (if any) for the same area would have been qualified. Therefore, the Commission could hold a smaller, more streamlined auction among those who qualified in the states in question during Phase I. Such action would increase the pace of funding in these areas.
3. In any event, any funding not awarded in Phase 1 or Phase 1.5 (if held) should be transferred to Phase 2 of the Rural Digital Opportunity Fund. This next phase should include reforms noted above. Specifically, Phase II should require, upfront in the short form:
 - a detailed design of proposed wireless networks, including propagation studies that are specific to a bid’s proposed service area; and
 - an applicant to demonstrate, in the short form its financial ability (and access to capital necessary) to deploy and maintain a broadband network as promised.

³² See fn. 23, *supra*.

³³ If further examination shows that any applicant may have purposely been less than forthcoming with the Commission regarding its technical and/or financial qualifications, referral to the Enforcement Bureau may be warranted.

³⁴ Notably, some winning CAF II applications have been approved only recently, well over two years after the auction. It will be additional years before build-outs can be completed, leaving consumers in these areas in a funding limbo not of their making.

³⁵ See GeoLinks Letter, pp. 2-3.



The National Rural Electric Cooperative Association is the national trade association representing nearly 900 local electric cooperatives. From growing suburbs to remote farming communities, electric co-ops serve as engines of economic development for 42 million Americans across 56 percent of the nation's landscape. As local businesses built by the consumers they serve, electric cooperatives have meaningful ties to rural America and invest \$12 billion annually in their communities.

As community-focused organizations, NRECA and its members are intensely interested in the deployment of robust broadband capabilities in the rural communities they call home. Over 150 NRECA members provide fixed broadband service today, deploying fiber-based, fixed wireless or combined fiber and fixed wireless technologies. In the Connect America Fund (CAF) II auction, 32 co-ops won 35 bids across 15 states worth more than \$254 million over ten years to bring broadband to 86,716 locations. More about 200 electric cooperatives were deemed qualified to participate in the RDOF Phase I auction.



Member driven. Technology focused.

NRTC is a Member-Driven and Technology-Focused cooperative, providing solutions that help its 1,500 electric and telephone members bring all of the advantages of today's evolving technology to rural America. NRTC helps members evaluate, build, and operate broadband, mobile and smart grid networks.

NRTC has worked on over 40 rural broadband deployments using both fiber and fixed wireless technologies – representing more than \$2 billion dollars in rural infrastructure investment, more than 100,000 miles of Fiber-to-the-Home and fixed wireless plant passing more than 600,000 rural homes and businesses. NRTC also provides Managed Internet Services, operational support, and mobile and wireless solutions to over 450 rural telecommunications operators in 40 states.

In 2020, NRTC formed a consortium to participate in the Rural Digital Opportunity Fund (RDOF) Phase I Consortium. It helped its rural cooperative members obtain more than \$156 million in support paid over 10 years.