Meter Box:
25 additional feet

Restore 6 feet
landscaping

Making Difficult Projects Financially Feasible – With or Without RDOF

Rural communities need to understand their options and make the most efficient decisions to stretch their funds.

By Paul Sulisz / *Biarri Networks*

Communities across the nation are working to secure funding to build the kind of broadband infrastructures that will bring them squarely into the modern era.

Some are bidding in the FCC's long-awaited Rural Digital Opportunity Fund (RDOF) Phase I auction. In all, the feds will allocate $20.4 billion in RDOF over the next 10 years to bridge the digital divide in unserved and some partially served areas. Others are applying for grants or loans from the USDA or state governments. The opportunity that these dollars promise to unlock for residents and businesses in these communities is great. Now, remote work and school will be possible. Telehealth and precision agriculture can be powered, and

Granite belt: Go aerial from this point

Restore 10 feet paved driveway

Microtrench 50 feet fiber cable

better voice and cellular coverage can be achieved. In short, Americans in these census blocks can enter the digital economy and enjoy a better quality of life. But grant awards are never guaranteed.

Broadband projects in rural areas are some of the most difficult to make financially feasible. Population density is low, terrain can be unforgiving, and homes often are miles apart, especially in agriculturally rich areas. With fiber costing between $8 and $10 per foot (for aerial builds), the amount available for subsidies isn't a lot in the grand scheme of things. But many rural communities can't wait any longer for connectivity. So, what's a community to do?

SUGGESTIONS FOR COMMUNITIES

1   Start with a high-level view.
It's good to have a baseline understanding of top-level numbers to know whether a project is financially feasible and what the bill of materials (BOM) will cost. Running those numbers and comparing them with those of other communities similar in size will help verify that your assumptions are correct and that you're still in the game. Recently, Biarri compared a project it's currently working on with one similar in nature and scope. In this instance, the split between aerial and underground builds between the two projects was comparable. As a result, it was quickly determined that the project would be feasible.

In many ways, this basic – yet often overlooked – step reduces risk and ensures that your assumptions are correct. If your community is small, you can easily run these numbers yourself using software such as Biarri Networks' FOND. But for much larger areas, it's best to seek outside assistance from engineers or other partners.

2   Check your financial models.
After taking a high-level view of a project, the next important step toward making the project pencil out is to understand the financial models. A lot of project leaders fail to check whether their assumptions are consistent with the requirements of the funding they apply for. An important consideration is that all publicly funded programs require applicants to follow a rigorous process, and the funds have strings attached.

One fiber-to-the-home (FTTH) project that's planned in the Western states seeks to leverage RDOF funds to grow the footprint of a previously planned project. In this instance, the RDOF funds would cover rural mountainous areas that would require public funding to bring the project to fruition. In theory, it sounds like a prudent course forward, but the project's financial backers require an

RDOF match, which comes with significant strings attached. Because neither the financial backer nor the project owners fully understand the RDOF rules (RDOF is only a subsidy and requires the provider to invest most of the money) and how those requirements fit into the financial model, the project won't be feasible without RDOF dollars. That's the kind of situation that might tank the entire project.

Had organizers treated the RDOF-qualifying areas as financially separate entities, they could have supplemented existing funds with RDOF more easily and the models would have worked. Now, they'll be holding their collective breath to see what, if anything, the FCC will choose to award them. That's why it's so important – as basic as it sounds – to know financial models at the beginning of the planning process.

3 Pick the low-hanging fruit. Incumbent and nonincumbent ISPs and wireless carriers may have roles to play in the potential success of your project. There are instances in which these entities have existing infrastructure that can be expanded or enhanced to bridge the digital divide. Working with a carrier or ISP can be the answer to your community's connectivity needs. Start by looking at your community's current infrastructure. Ask yourself whether using existing telecommunications assets, enterprise networks, or dark fiber providers would be more efficient compared with a completely new build.

4 Be efficient. At the project leadership level, it's easy to be intimidated by the vast array of technological and design-build options available. One of the things Biarri and other advisers do for clients is demystify the complexity of fiber broadband projects. For instance, there are many terrific vendor-driven technology options on the market, and each has

competitive advantages. Because it is vendor-neutral, Biarri has been able to recommend various network architectures to make projects feasible, then compare models with the BOM to make construction costs most efficient (and effective).

Looking at the bottom-up data – meaning the actual total counts of homes passed, not averages – can help determine the best and most-efficient network architecture. In some cases, Biarri has advised clients to go beyond GPON to next-generation architectures because the data say they will be needed. Understanding the options and making the most efficient decisions can help stretch funds.

5 Check your math. Sometimes the best insurance policy is simply to check the work. This applies when engineering a broadband project, and it's especially important when dealing with a logistically complex project. A provider should check its math and make sure it has the correct assumptions. Don't be afraid to have an outside consultant review the numbers.

Biarri frequently undertakes "bake-offs" to help communities and electric co-ops get a sense of what benchmark costs to expect. Using the same data, architecture and other assumptions, Biarri runs the numbers through its automated design models. This type of second opinion provides a level of confidence in the decision-making of project leaders and helps inform the next steps of the process. Grade school teachers were right: Math is important!

6 Data integrity matters. The accuracy of data will make or break a project. Once a provider has rechecked its math, the most important step is to recheck the data. That's how to eliminate risk. A broadband project will run aground if the assumptions are off. "Dirty" or inaccurate data create financial roadblocks and cause a cascade of even more incorrect assumptions,

not to mention headaches. The biggest issue when the data are off is that construction projections are insufficient. In contrast, accurate data make the numbers work, align the BOM and processes squarely, and set the project up for success.

A good example: It's not enough to just plan a parcel-by-parcel fiber hookup to a home. Project managers need to know where the meter box is on the house and if a driveway or landscaping needs to be reinstated, repaved or repaired. These small factors add up quickly and can greatly impact overall construction cost.

When Biarri developed FOND, the company's engineers had these specific scenarios in mind. Parcel-by-parcel data in the United States already are in the system. It's then possible to add specific data about each home that will yield the most accurate numbers (again, where the meter box is, or whether driveways or walkways need reinstatement). Experience has shown that spending a great deal of time and attention on data integrity really matters.

Sadly, not many public entities, including electric co-ops, will spend the necessary funds to validate their data. As an industry, telecom providers need to change this type of thinking. Data validation reduces risk and functions as an insurance policy; it also helps set expectations among community stakeholders. After calculating a project's financial feasibility, use auto design to quickly run another feasibility test to see if there's a significant delta. This may reveal inconsistencies and opportunities to standardize the workflow – all hugely important factors in multimillion-dollar projects.

Take the right steps forward and I'm optimistic that your project will succeed. ❖

Paul Sulisz is the CEO of Biarri Networks, a telecom engineering company.