



Building for Permanence: Why the BEAD Reset Demands Infrastructure, Not Illusions

By David J. Malfara, Sr.

BEAD Restructuring: A Pivotal Moment for American Broadband

With the release of the BEAD Restructuring Policy Notice on June 6, 2025, the National Telecommunications and Information Administration (NTIA) has fundamentally altered the direction of federal broadband deployment. Gone are many of the social policy mandates and regulatory overlays. In their place stands a streamlined focus: deploy fast, deploy affordably, and deploy reliably.

But amid this regulatory reset lies a deeper question: What are we actually building with these billions of public dollars? Are we laying down enduring infrastructure, or are we just lighting up temporary services that will fail the communities they are meant to serve?

This is the moment to reaffirm a foundational truth: broadband is not just a service—it is infrastructure. And only fiber, built atop resilient Layer-0 foundations, delivers infrastructure that lasts.

The Shift in BEAD: From Policy Overlay to Performance Metrics

The restructuring policy sweeps away many of the original BEAD Notice of Funding Opportunity (NOFO) conditions—diversity mandates, affordability directives, climate planning, and even labor reporting. In their place is a simplified set of criteria that prioritizes the lowest cost per broadband serviceable location (BSL), the fastest path to deployment, and compliance with basic performance benchmarks: 100/20 Mbps, latency under 100 milliseconds, and a standard installation timeline.

Critically, NTIA has declared the program "technology neutral." Fiber, fixed wireless, cable, and LEO satellite are now ostensibly equal in the eyes of the funding framework. But not all technologies are equal in what they leave behind.

Layer-0: The Foundation That Matters

In the OSI model, Layer-0 isn't just a formality—it's the foundation of the physical world. It includes the buried conduits, handholes, ducts, and vaults; the utility pole attachments and easements; and the fiber optic cable routes themselves. Layer-0 is infrastructure. It is the permanent, physical platform upon which all future digital services will be built.

Fiber networks constructed with new Layer-0 investments represent tangible community assets. These assets endure. They enable competitive service provision, support wireless backhaul, and allow for affordable future upgrades without tearing up roads or trenching anew. They are the railroads of the digital age.

One powerful model for ensuring long-term community benefit is the public-private partnership. Under such arrangements, the municipality retains ownership of the Layer-0 assets—the conduit, vaults, and rights-of-way—while private service providers lease access, deploy fiber, and deliver service. This approach allows for shared investment and local control while leveraging the private sector's operational expertise. It is not the only path to sustainable deployment, but it is one that directly addresses affordability, long-term equity, and open access without resorting to rate regulation.

By contrast, wireless technologies rely on leasing spectrum and attaching antennas to existing structures. They do not leave behind conduit. They do not improve rights-of-way. They do not build Layer-0. These are ephemeral service extensions—not infrastructure.

When federal funds are used to deploy fiber, we are building a foundation. When they are used for fixed wireless or mmWave service, we are merely borrowing the air.

The Mirage of mmWave and Wireless Hype

The myth that millimeter wave (mmWave) 5G and future 6G technologies can replace fiber is persistent and problematic. It is not grounded in physics.

Millimeter-wave frequencies suffer from extreme propagation loss. Signals at 24 GHz and above are blocked by common materials—walls, glass, even foliage. Rain and humidity degrade them further. To maintain usable service, mmWave systems require dense, short-range deployments with line-of-sight connections. This might work in urban environments with fiber-rich backhaul and dense pole infrastructure. It cannot be economically or technically justified in rural or suburban settings.

Even where mmWave is deployed, it depends on fiber to connect each cell site. It is not a replacement for fiber—it is a fragile appendage to it. Wireless may provide temporary access, but it does not build anything enduring. It does not create Layer-0.

BEAD and the Long-Term Risk of Ephemeral Networks

Disadvantaged and rural communities—the very focus of BEAD—are at the highest risk of being underserved by ephemeral solutions. When public funds are used to deploy radios and electronics without a supporting infrastructure base, the outcome is predictable: in seven to ten years, that equipment will be outdated or unsupported, and those communities will again fall behind.

Radios fail. Spectrum access changes. Vendors exit markets. Technology lifecycles move faster than public funding cycles. If BEAD dollars are used to build networks that only exist in the air, we will soon be back to fill the gap with more funding, more promises, and more temporary fixes.

We cannot allow this cycle to repeat. Public funding should not be used to rent broadband access. It should be used to build broadband infrastructure.

The Case for Fiber, Reasserted

Fiber networks meet or exceed every performance metric defined by BEAD. They support symmetrical speeds well beyond 100/20 Mbps. They scale to 1 Gbps, 10 Gbps, and beyond with simple electronics upgrades. They have life spans of 30 to 50 years. They are immune to interference, to weather, and to the performance degradation that plagues wireless systems.

Perhaps most importantly, fiber networks are built on Layer-0 infrastructure. They leave behind something real: a conduit path, a rights-of-way footprint, a vault, a cable route. These are community assets. They enable competition. They reduce future deployment costs. They allow counties, utilities, or co-ops to build from them for decades.

Fiber is not just a deployment. It is an investment in permanence.

Conclusion: The Reset Is a Responsibility

The restructuring of BEAD gives states and territories a second chance to get this right. NTIA has removed many of the constraints and opened the field to technological competition. But with that freedom comes a critical responsibility: to choose the right foundation.

If we prioritize expedience over permanence, we will be forced to revisit these same gaps a decade from now. If we invest in Layer-0 infrastructure today, we can close the digital divide—not just temporarily, but for generations.

True broadband policy doesn't just connect a household. It builds a highway.

The BEAD reset is not a retreat from vision. It is a challenge to build what lasts.

How Big Bang Broadband Can Help

Big Bang Broadband LLC brings decades of practical experience in fiber deployment, network design, and broadband economics. We work with municipalities, local technology planning teams, and private-sector providers to:

- Evaluate the feasibility of Layer-0 infrastructure ownership models;
- Facilitate public-private partnerships that protect community interests;
- Translate complex BEAD requirements into actionable implementation plans;
- Advise counties on scalable, sustainable network designs tailored to their geography and demographics;
- Promote long-term value by emphasizing investment in infrastructure over short-term fixes.

Whether assisting with grant strategy, proposal evaluation, or community education, we serve as a trusted guide for those committed to building networks that endure.

David J. Malfara, Sr. is a broadband infrastructure strategist and CEO of Big Bang Broadband LLC. He serves on the Local Technology Planning Team for Marion County, Florida and has spent over four decades designing and deploying broadband systems throughout the U.S.