



Broadband Performance Doesn't Exist If It Can't Be Measured

A National Catalog for Testing Priority Broadband Projects

Why States Need a Flexible, Engineering-Grounded Standard Now

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*Introducing the Priority Broadband Project Test Catalog - Developed by
Big Bang Broadband LLC (BBB)*

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ANNEX A.2 — COMPREHENSIVE TEST CATALOG (A.2.1 – A.2.200)
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Figure 1: Small excerpt from Annex A.2: a 200-test catalog standard designed to provide SBOs with a menu of normalized methods to verify selected Priority Broadband Project performance over the 10-year Performance Period

Broadband has become one of the most essential utilities in the modern economy, but unlike energy or water systems, the United States has never adopted a nationally consistent method for verifying broadband performance in real-world conditions. The BEAD program changes this dynamic in a fundamental way. Once a subgrantee finishes construction and certifies its network as operational, it enters the statutory **10-year Performance Period**, during which it must continuously meet the obligations set forth in 47 U.S.C. §1702(a)(2)(I). These obligations are not theoretical—they require a network to perform under load, under stress, and under the evolving demands of households, businesses, and advanced services, including the rapidly increasing influence of AI-driven workloads.

For states to administer BEAD responsibly, they need a structured way to measure and validate performance. Yet no single state wants to design a full engineering test suite from scratch, and no ISP wants fifty different states inventing fifty different compliance regimes. That is the vacuum the **Annex A.2 Test Catalog** is designed to fill.

The catalog is not a mandate; it is a comprehensive **menu** of tests. It gives each State Broadband Office the ability to choose the subset of tests most appropriate for its own deployment environments, architectural mixes, and policy priorities. Rather than forcing uniformity on states, the catalogue enables flexibility while preserving national coherence. A state with predominantly fiber deployments might select a different mix of tests than a state that expects a significant presence of cable, licensed wireless, or Low Earth Orbit satellite systems. The catalogue gives them the structure they need without constraining their judgments.

The Catalog as a Policy Instrument

The value of a comprehensive catalog is not merely technical—it is administrative. Legislators, budget authorities, oversight bodies, and governors all want assurances that BEAD networks are not simply built, but are performing as promised. A clear, unified catalog gives policymakers a way to understand what operational excellence actually looks like. It turns a vague concept (“the network must meet statutory requirements for ten years”) into something that can be tested, validated, and reported.

The catalog also resolves a long-standing ambiguity in broadband oversight: how to determine whether a network is **scalable**. Scalability is not measured at the moment of construction but over time, as demand increases and applications grow more complex. In the AI Era, this means networks must be able to handle the tail-latency sensitivity, jitter constraints, concurrency patterns, and workload bursts that distributed inference systems will produce. A performance catalog allows states to define scalability not as marketing rhetoric, but as an engineering reality.

The Role of Architecture—Neutral Testing

One of the most important principles embedded in the catalog is **technology agnosticism**. Every architecture—fiber, cable/HFC, hybrid fiber–wireless, licensed wireless, and LEO satellite—must demonstrate the same behaviors if it intends to qualify as a Priority Broadband Project. This ensures fairness, protects legislators from claims of favoritism, and lets engineering discipline—not political preference—determine suitability.

But neutrality does not mean sameness. The catalog recognizes that each architecture exhibits distinct performance characteristics and failure modes. States are therefore able to select tests that expose those characteristics while still adhering to the overarching statutory requirements. The result is a framework that is both flexible and firm: flexible in implementation, firm in principle.

The Index and Matrix as Tools for States

The **index of Annex A.2** provides the high-level map of all available tests. The **cross-reference matrix** then ties each test to the statutory clauses it supports, the engineering domains it touches, the architectures to which it applies, and the recommended burden-of-proof level a state might assign. These two instruments together act as scaffolding for any state seeking to build a defensible, auditable PBP testing program.

Instead of designing a program from nothing, a state can begin with this catalog, select the tests relevant to its priorities, add or subtract where appropriate, and produce a complete, technically rigorous testing suite in a fraction of the time.

The Existence of Full Test Descriptions

It is important to emphasize that the catalog is **not theoretical**. The detailed test descriptions—criteria, thresholds, procedures, measurement conditions, impairment models, workload profiles, and validation requirements—**already exist in draft form within the *Big Bang Broadband LLC Priority Broadband Project Operational Framework***. This framework includes exhaustive engineering detail designed to support precise and replicable testing.

States do not need to write their own technical definitions; the foundation is already built.

However, the existence of a draft does not imply that the content is final. It is intended to be the **starting point** for broader industry deliberation. The engineering community—including ISPs, network vendors, State Broadband Offices, researchers, standards bodies, and NTIA—will inevitably refine, debate, negotiate, and eventually standardize these tests. The BBB Framework simply accelerates the process by providing the first complete expression of what a PBP verification methodology could look like.

Why Narrative Standards Matter

Broadband policy is often dominated by numbers—speeds, costs, miles of fiber, households served. But what policymakers increasingly need is **narrative clarity**, not just metrics. They need to understand why low tail latency matters, how concurrency reflects real-world usage, why deterministic jitter bounds are essential for AI workloads, and how a network can appear fast on paper yet still fail to scale.

A deeply narrative standard, paired with a structured catalog of tests, gives policymakers the confidence to enforce requirements and gives engineers the language they need to explain complex system behaviors in understandable terms.

Building Toward a National Standard

Although each state will select from the catalog in its own way, the long-term vision is a unified national understanding of what constitutes a reliable, scalable, Priority Broadband Project. By making the catalog public and pairing it with a detailed technical framework, Big Bang Broadband is initiating a process that can converge into a common standard.

This standard would allow:

- comparable verification of PBPs across states
- greater accountability for subgrantees
- reduced administrative complexity for ISPs operating in multiple jurisdictions
- a consistent engineering basis for audits
- a defensible approach to scalability in the AI Era

Broadband has reached a stage of maturity where informal judgments are no longer sufficient. We now have the opportunity to professionalize performance oversight at a national level.

Conclusion: The Catalog as a Turning Point

Billions of dollars are flowing into broadband infrastructure, and states must ensure that these networks are built to endure—not just physically, but operationally. The Annex A.2 catalog gives them the structure to do so. The PBP Operational Framework gives engineers the detail needed for implementation. And the cross-reference matrix links all of it back to the statutory obligations that define a Priority Broadband Project.

In an era where AI, cloud, and edge-compute ecosystems are placing unprecedented demands on access networks, the catalog stands as one of the first attempts to articulate what long-term broadband performance truly requires.

This is a turning point for U.S. broadband oversight. The catalog offers states a way to move from assumptions to evidence, from generic expectations to measurable outcomes, and from hopeful planning to durable, enforceable engineering practice.

To learn more about the **Priority Broadband Project Operational Framework**, visit Big Bang Broadband's *Resources & Publications* page on its website and download the **Cross-reference Matrix** showing the relationship between the test plans listed in the **Annex A.2 Comprehensive Test Catalog (Index)** (also downloadable), and NTIA guidance + PBP statutory obligations here: [Resources & Publications](#)