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Ten (Suggested) Commandments for Closing the Digital Divide

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States are set to receive billions of dollars in federal funding—enough to close the digital divide once and for all. Following these 10 commandments will ensure they make the most of the money and citizens get the connectivity they need.

KEY TAKEAWAYS

1. Take advantage of market competition by allocating funds via reverse auction.
2. Allocate funding on a technology-neutral basis to prioritize functionality.
3. Set reasonable, non-symmetrical speed thresholds that will actually benefit consumers.
4. Focus on first serving those who currently lack broadband entirely, rather than overbuilding.
5. Target individuals' needs by putting money in the pockets of consumers.
6. Collaborate with other states and the federal government to learn from mistakes and converge on the best practices for efficient deployment.
7. Evaluate internal regulations and remove barriers to broadband deployment that would eat up time and money without getting services to citizens.
8. Weed out unsound bidders by withholding full payment until the promised project is complete.
9. Resist calls for government-owned networks, except as a last resort, and rely instead on experienced broadband providers with economies of scale.
10. Provide ongoing oversight to incentivize successful project completion.

INTRODUCTION

For at least a decade now, nearly every U.S. state has been trying to bring high-speed broadband—an integral part of modern life—to all households. Yet, despite the efforts of federal and state policymakers, a significant portion of U.S. households lack available fixed broadband service. But that should now be on the verge of changing. With a massive infusion of new federal funding on its way to states, there is an opportunity to bridge the geographic digital divide once and for all.[1]

While the task of permanently closing this gap is daunting, the right policy framework to accomplish it can be summed up in two overarching principles: make the most of available funds, and make sure that the projects on which the money is spent are seen through and bear fruit. While these simple principles may be complex in practice, by adhering to these guidelines, states can take tangible steps toward putting their broadband policies on the path to full connectivity.

Unfortunately, however, it may not be that easy. Many advocacy groups want to use the money not to close the digital divide, but rather to reduce the market share of incumbent broadband providers. To do so, they would prefer the funding be used for broadband overbuilding—spending federal monies to provide broadband to places that are already served—ideally going to local governments or nonprofit co-ops. If states want to close virtually the entire digital divide, they will need to resist this path and instead focus on economically viable projects that maximize the connectivity this funding can produce.

MAKE THE MOST OF AVAILABLE FUNDING

Broadband funding comes from multiple quarters: Federal Communications Commission (FCC) and Department of Agriculture subsidies, for example, are ongoing. But of special interest to states are the funds from the American Rescue Plan Act and the Infrastructure Investment and Jobs Act (IIJA).[2] Of these, the largest single chunk of money is the IIJA's Broadband Equity, Access, and Deployment (BEAD) program under which each state will receive at least $100 million, with the National Telecommunication and Information Administration (NTIA) distributing additional funding based on need.[3] For many states, this may seem like a license to spend freely on the most enticing projects without much regard for total cost. But even large amounts of money will not close the fillable gaps if states do not spend wisely.

By taking the following steps, however, states would be well positioned to direct limited funds in ways that would produce maximum connectivity for their citizens.

1. Use Reverse Auctions

The best starting point for a state to get the most from its broadband investment is to harness the advantages of a market through a reverse auction. Unlike a traditional auction in which bidders are competing with increasingly large bids to buy something, a reverse auction presents the task that bidders must accomplish and then successively lowers the price the government will pay until only the proper number of bidders remain.

The FCC has used reverse auctions to distribute broadband subsidies at the national level for some time.[4] Other state and federal entities routinely bid out projects such as road expansion,

bridge construction, and other items to make the most of taxpayer dollars. Economizing broadband deployment funds is equally important, and using competitive bidding for broadband projects would yield similar benefits and prevent states from overpaying for the broadband their citizens need.[5]

An auction has several advantages over a bureaucratic assessment of broadband proposals. First, the process forces broadband providers to come up with the lowest-cost way to effectively serve customers, since competitors would otherwise bid lower and take the award. Second, it allows for flexibility and innovation in how companies meet the requirements set by the state. Third, it presents fewer opportunities for corruption by using objective, weighted factors (e.g., speed) and price, rather than the subjective preferences of government officials. Finally, it is a faster yet more comprehensive process than individual evaluation because it does not require policymakers, with their limited knowledge of all market dynamics, to read and assess the details of every plan.

As in comparable FCC auctions, prices for subsidized service should be bound by a benchmark. For example, the FCC's Urban Rate Survey provides reasonable benchmarks that prevent winning bidders from charging astronomical prices, while not foreclosing the ability for unsubsidized competition to enter as market conditions change.[6]

In the context of broadband, the auctions must begin with clear thresholds for service quality. These standards should leave the auctions as open as possible while also weeding out bidders that are unable to provide the minimum service citizens need. Incorporating the standards discussed ahead would help strike the right balance between a competitive field of bidders and the competence and quality of service those bidders would provide.

2. Be Technology Neutral

As states prepare to develop the thresholds of service for which broadband providers must bid, they should be technology neutral, not favoring or disfavoring any particular medium of broadband provision over another. The broadband marketplace is diverse. Traditional copper wires have been joined by fiberoptic and coax cables. While traditional fixed wireless solutions remain, as the rollout of 5G continues, in-home 5G products are becoming increasingly available to provide a quality of service similar to that of wireline. Low-Earth-orbit (LEO) satellite offerings are coming online to provide fast service even in far-flung places with relatively low latency.[7]

With so many options available, states should expect pressure from various industries seeking to market their preferred technology. Policymakers should resist this pressure. There is no one-size-fits-all technology that will always be the optimal solution for consumers. Fiber, for example, has advantages in capacity but is also quite expensive to install, such that reaching remote areas in rural states is often impractical. It would be foolish for a state to, for example, bring fiber to every inch of its territory when LEO satellites are on the verge of alleviating the worst connectivity gaps.

Moreover, to favor any particular technology stifles investment in burgeoning technologies that could provide even better service in the future. Committing to only fiber now, for example, cuts off opportunities for potential satellite and fixed wireless competitors to provide service far more cheaply, especially in rural areas. Setting generic overall benchmarks for service, without unnecessary restrictions on the technology used to achieve them, would also include the widest

possible pool of competitors to ensure that states and their citizens get the biggest bang for their buck.

3. Set Reasonable, Nonsymmetrical Speed Benchmarks

Next, states must determine what those overall benchmarks should be. The most important broadband metric for most users is download speed, but other factors, such as upload speed and latency, should also be considered.

There is likely to be much discussion about what broadband speeds are adequate in today's economy and in the future. Here, again, states are likely to face pressure from many quarters insinuating, for example, that only gigabit symmetrical service (i.e., the same download and upload speed) is enough to participate robustly in a connected world. But these pitches, whether they come from activists or broadband providers' marketing materials, are untrue. Many attempts to impose unrealistic speed requirements have the effect of sneaking in a technology mandate for fiber by gerrymandering the definition of broadband to a level that only fiber can meet.

Artificially raising the bar of what constitutes usable broadband without regard for actual use cases or the cost trade-offs of higher speed is counterproductive.

States should set service thresholds based on how consumers actually use broadband, not based on arbitrary utopian standards. A previous Information Technology and Innovation Foundation (ITIF) report finds that bandwidth requirements for commonly used technology (e.g., Zoom and Skype for video calls and video streaming services such as YouTube and Netflix) are far exceeded by the U.S. speed test average.[8] Even the most bandwidth-intensive services require nothing close to gigabit speeds. YouTube, for example, recommends only 20 megabits per second (Mbps) to play its highest bandwidth "4K" video resolution.[9] More speed is generally a good thing in the abstract, but artificially raising the bar for what constitutes usable broadband without regard for actual use cases or the cost trade-offs of higher speeds is counterproductive. Not only would it deplete funds faster than necessary, it would crowd out competition for those funds at the expense of long-term broadband competition within the states. It's a bit like providing funding for more expensive autos that can drive 600 miles per hour when the speed limit is only 55.

In addition, across the board, Internet users download far more than they upload.[10] This fact will hold true as long as the volume of the downloadable Internet vastly exceeds what any one user might be able to produce in their lifetime. Given this, there is no practical reason for consumer broadband upload speeds to match download speeds, nor would actual consumer usage benefit from this requirement.[11] Even applications for video calling do not require blazing upload speeds to work properly: Zoom's HD video calling, for example, requires only 3.8 Mbps.[12] Symmetrical networks, therefore, are not necessary for functional broadband.

A reasonable speed threshold would be 100 Mbps download and 10 Mbps upload. The IIJA sets a 100/20 Mbps threshold for some qualifying broadband projects, so this is also a potentially useable threshold. Setting higher benchmarks at this time would slant both the distribution process and the end state of the competitive market toward unnecessarily gold-plated, exorbitantly pricey projects at the cost of true universal coverage. It would also open the door to wasteful overbuilding—the goal of many of those who argue for gig symmetric networks.

4. Don't Overbuild

A key part of making the most of broadband funding is to not duplicate existing broadband deployments. Such duplication, or "overbuilding," has distortionary effects on both the distribution of funds and the long-term health of the broadband market.

First, overbuilding gives more funding to already served areas at the expense of those with no service at all. It is certainly necessary to maintain and upgrade networks over time, but the government's priority should be to use its limited funds to finance connectivity in areas that are economically impractical to reach without them. If an area already has service, then, by definition, it can be reached without extra government support. Second, when a private company has risked its own capital to deploy a broadband network in an area, government subsidies to new projects unfairly tilt the competitive landscape toward subsidized projects.

Even if overbuilding is seldom an explicit goal in broadband policy, it can be a consequence of policies that are misshapen in other ways. Setting arbitrarily high definitions for broadband, for example, would make many areas that have high-speed broadband appear unserved and thus candidates for unnecessary subsidies. If a state is targeting 200 Mbps download and 100 Mbps upload, for example, consumers with high-quality service at 100/20 would appear unserved.

Identifying truly unserved areas requires accurate mapping. The FCC is in the process of creating updated maps that should be more accurate than those of the past, which had an average false positive rate of 21 percent.[13] But the broadband landscape is inherently difficult to capture, and even a perfect snapshot in time is bound to become outdated quickly. Rather than wring their hands about mapping inaccuracies, therefore, states should do their best with the best data available from the FCC and other sources, recognizing that this may be an iterative process that is best started sooner rather than later. Adjusting for inaccuracies could mean setting a threshold that deems an area unserved if it has less than 20 percent coverage. But even then, determinations need not be set in stone. Rather, states should allow for challenges to findings that determine areas are unserved, allowing Internet service providers (ISPs) that serve those areas to present evidence of that fact and rebut the map's showing that a government subsidy is needed to build a network there.[14]

5. Give Direct Support to Citizens

There is a possibility that some states will have money left over after paying for broadband in their entire geographic areas. In such situations, given the flexibility of certain funding programs, states should look to put broadband funding directly into the hands of citizens. In many parts of a number of states, the work of installing initial broadband infrastructure has already been completed, with the lack of adoption being a more-pressing barrier to achieving the full benefits of connectivity. The diverse needs of consumers can be met most effectively by allowing them to decide how the money gets spent. For example, a connectivity voucher that can be used to defray the cost of broadband service, buy computer hardware, or pay for a class on digital literacy skills would tackle connectivity problems where they actually are.

Vouchers for broadband service itself could work in concert with the other principles discussed in this paper. For example, giving money directly to consumers would counter harmful overbuilding, since all competitors would have access to the funds, rather than the government picking winners and losers by crowding out ongoing private investment.[15]

6. Collaborate and Learn From Mistakes

Every state is going to receive broadband funding, which means there will be multiple iterations of grant distribution occurring simultaneously. The best-case scenario would see states look to each other and federal agencies for guidance and to avoid repeating each other's mistakes.

States should be particularly attuned to the progress made by other states, especially those with similar geographies or broadband needs. Publicly reporting plans, timelines, and progress would benefit both other states and the quality of that progress as a whole.

A Pew analysis of state plans has so far found that the degree of comprehensiveness of states' plans for BEAD funding varies considerably, with some providing far more details than others.[16] As of November 2021, 16 states were yet to articulate any sort of plan for the incoming funding.[17] This type of inconsistency provides opportunities for states to locate potential gaps in their plans and fix them without reinventing the wheel.

Transparency is key to getting the most from collaboration, and states should publish as much information as possible about their processes and progress, including posting the applications of bidders for BEAD funding (whether successful or not). This kind of openness would both broadcast good ideas and incentivize realistic, detailed reports that stand up to public scrutiny.

States can also lean on and learn from the federal government, especially NTIA and the FCC, which will be working to standardize reporting methodologies and create a website to inform users of their eligibility for grants. Clear and frequent communication is the best way to find out what works and what doesn't so that the best ideas and methods of funding good projects rise to the top and common pitfalls are avoided. NTIA already provides helpful webinars that give technical assistance on how to prepare grant applications.[18] States should make use of these and also tell NTIA about other topics for which they could provide assistance.

7. Remove Regulatory Barriers to Deployment

Using these funds to their full potential also requires minimizing regulatory barriers that shuttle money toward fees and administrative hurdles instead of actual deployment.

States should, for example, avoid prescribing network management practices under the guise of "net neutrality." In the current broadband marketplace, net neutrality is merely a slogan whose popularity far outweighs its practical import, and would impose regulatory costs without any benefit to consumers.

Excess regulatory costs reduce how far broadband funds can go and could result in higher prices to consumers as administrative burdens erode the economic viability of lower prices.

Every dollar diverted toward a right-of-way fee or byzantine approval process is a dollar not spent on getting citizens the broadband service they need.

In 2018, the FCC's Broadband Deployment Advisory Committee (BDAC) published a working paper on the most common examples of, and solutions for, regulatory waste in deployment.[19] It found that regulatory obstacles generally fall into one of two camps: the first is "softer" procedural barriers such as lack of transparency, discriminatory practices against different types of providers, and unwillingness to adapt alongside new technologies. The second group

comprises more tangible barriers such as excessive fees and unreasonable regulatory requirements.

States should seek to minimize both types of obstacles by enacting statewide policies that require local governments to create a streamlined process. This would include exempting new utility poles from zoning review and putting "shot clocks" on the time a locality has to approve necessary construction permits.[20] Here, too, greater transparency in interstate reporting would enable local governments to design the best possible processes by sharing good ideas and shedding light on problems.[21]

Beyond process reforms, states should cap fees paid to access public Rights of Way (ROWs). When expanding their network to a new area, providers need access to infrastructure such as telephone poles. Local governments, public utilities, and other pole owners often see these fees as a source of quick revenue, or even as a rental of public property.[22] Under this mindset, it is perhaps satisfying to get extra cash for the public purse at the expense of ISPs, and ultimately the federal government. But in reality, the public would be left better off from extensive deployment of affordable broadband than it would be from a short-term bump in local revenue. Every dollar diverted toward a right-of-way fee or byzantine approval process is a dollar not spent on getting citizens the broadband service they need. Excessive fees could also result in a state running into legal limits on certain types of fees.[23] States should, therefore, require that ROW fees recover actual costs to the government or pole owner, but not allow them to become a revenue-generating business of their own.

In addition to limiting regulatory barriers, states can also take positive steps toward broadband deployment by enacting dig-once policies. "Dig-once" means all potential broadband providers can lay network infrastructure in underground ROWs at the same time. This reduces the overall cost of repeatedly excavating the same trenches and mitigates the potential traffic delays such excavations cause. Many states have already adopted dig-once laws, which are ripe for copying by states that still lack them.[24]

MAKE SURE SELECTED PROJECTS ARE COMPLETED AND SUSTAINABLE

8. Don't Write the Check Until Project Completion

One challenge is that some bidders may not have the know-how to complete projects despite creating an attractive application. One simple mechanism that would significantly enhance accountability is to withhold payments from broadband providers until they have built the networks they promised. States should be clear that the funds would only be dispensed once the companies fulfilled their obligation to deploy broadband.

If a company is unable to get credit that's backed by the promise of government funding after completion, the state would be right to wonder whether completion is really likely.

Similar practices are already the norm in certain industries, such as construction. Cost-reimbursement contracts are often used in government contracting when initial uncertainty surrounding costs and timeframe makes an up-front payment less feasible than reimbursement upon completion.[25] Similar uncertainties regarding successful broadband deployment favor a guaranteed reimbursement that helps incentivize a cost-effective project completion.

Some providers may not have the money on hand to pay for their construction up front, but guaranteed funding from the government would ensure easy access to credit for viable providers. Indeed, if an applicant for a subsidy is unable to get the credit it needs to build, that determination would serve as another check on the viability of the proposal by harnessing the risk assessment expertise of banks and other credit sources to protect the state's investment in any given provider: If a company is unable to get credit that's backed by the promise of government funding after completion, the state would be right to wonder whether completion is really likely.

9. Prioritize Experienced Providers With Economies of Scale

Throughout the process of distributing funding, states should be wary of fly-by-night companies proffering snake-oil business plans in order to collect a quick profit from government funds. To avoid this, states should both ensure that business plans are well capitalized and be on the lookout for unrealistic companies that lack a proven track record of sustainable business. For example, building a new broadband network requires substantial expenditures to locate and pay for skilled labor. With labor shortages already a concern in the industry, a cheap bid without a workforce is unlikely to come to fruition.[26] Likewise, the physical components of a broadband network are expensive and, given current supply-chain woes, sometimes difficult to acquire.[27] An unvetted company that lacks the capital and logistical capacity to get the necessary equipment in place should not have its bid taken seriously. States could conduct this kind of "gut check" by requiring companies to make basic disclosures articulating their business capacity before states consider them to be qualified bidders for funds. Another temptation will be to create government-owned networks (GONs) on the theory that removing profit motives and operating in the public interest will work out better for consumers. But for all the good intentions of GONs, they seldom live up to their high-flown expectations.[28]

Indeed, proposed solutions to gaps in broadband access often include some suggestion of municipal broadband networks in the vein of electricity and other utilities. ITIF has argued that the complex, capital-intensive broadband market does not lend itself to effective government-run networks.[29] This mismatch is borne out by a slew of failed municipal broadband projects that have cost taxpayers millions, ended up being sold to private providers for a loss, or both.

States should be less willing to believe pie-in-the-sky promises from companies and local governments that may not know what they're doing than the tried-and-true expertise of companies that have already deployed and operated broadband in large portions of the country.

Stories of failed municipal broadband networks abound.[30] In fact, a University of Pennsylvania study wherein Christopher Yoo examined 20 municipal fiber projects through the lens of traditional financial analysis finds that 11 of them had a negative cash flow that suggests they'd be unable to pay off their operational expenditures or the debt incurred in their creation.[31] Of the remaining companies, 7 were projected to break even after 60 years, of which 5 would take over a century (far above the estimated useful life of a broadband network, which is around 30–40 years).

The municipal broadband network in Chattanooga, TN, is often hailed as a success story of government-run broadband. And yet the same analysis finds that at the time the study was conducted, Chattanooga was on track to generate a positive cash flow after 412 years—though

the network was achieving a revenue growth rate of 41 percent. More to the point, the $162 million Chattanooga project, whose funders included the U.S. Department of Energy and $50 million from the city's own electric power board, also received generous federal funding that most municipalities would be unable to replicate. Including this initial financing in the calculation makes the time horizon for positive cash flow stretch to 683 years.

Faced with the failure of the core service of running a broadband network, advocates of GONs move the goalposts on the purported benefits of such projects to include metrics other than finances, such as economic stimulation. And yet, to use the Chattanooga example again, in the time period following its deployment, unemployment in that area of Tennessee decreased more slowly than did unemployment in the state as a whole.[32] There is little in the way of logic or evidence that suggests that an expensive, overbuilt gigabit network generates much more local economic development than a less expensive, non-overbuilt 100/20 Mbps network does. Additionally, economic literature shows no empirical evidence that municipal broadband networks provide any targeted benefits (e.g., increased broadband subscription rates) or more-diffused benefits (e.g., employment growth).[33]

Betting citizens' future broadband access on unscrupulous speculators or ideological crusaders is a recipe for prolonging the digital divide while wasting the money that, in competent hands, could have eliminated it.

None of this has quenched the thirst for government-run networks, and the scope of eligible areas has been growing; plans for a municipal network made their ill-advised debut in the city of Beverly Hills, CA, (whose median household income is $101,241, and whose residents have a greater-than-average number of choices of broadband providers) in 2019. Within months, the project was running both behind schedule and over budget; it was also designed based on a projection of demand that misused the term "bandwidth," which will very likely lead to incorrect estimates of demand.[34] The Beverly Hills project perfectly encapsulates the sort of waste states must be cautioned against, as channeling funding through poorly laid plans into an unfriendly market is an excellent way to minimize the amount of good these funds can do.

If there is any case for a GON, it should be a last resort and limited to locations in which no private enterprise has been able to achieve service. Sinking money into unproductive ventures is not costless. Not only do taxpayers foot the bill for cost overruns, the opportunity cost of choosing to fund an unsustainable business model very likely includes the successful completion of an eventual economically viable project by a better candidate. This is why more weight should be given to bids from experienced private providers.

The choice of recipients for broadband funding should be a meritocracy, not based on ideology. States should, therefore, be less willing to believe pie-in-the-sky promises from companies and local governments that may not know what they're doing than the tried-and-true expertise of companies that have already deployed and operated broadband in large portions of the country. Betting citizens' future broadband access on unscrupulous speculators or ideological crusaders is a recipe for prolonging the digital divide while wasting the money that, in competent hands, could have eliminated it.

10. Provide Ongoing Oversight

Once contracts are awarded, the state should not simply walk away. Ongoing oversight, such as requiring semiannual progress reports, is a necessary part of ensuring project completion. These reports could be coupled with premiums paid to companies that deploy ahead of schedule as well as reduced payments to companies that are slow to live up to their promises. Even though a state that follows the previously highlighted practices would withhold the allocated funds until project completion, oversight along the way could help inform future projects and draw early attention to those that are not fulfilling their obligations.

CONCLUSION

Recently allocated broadband funds offer a singular opportunity to close the digital divide and enable all Americans to participate in today's connected economy. This opportunity imposes great responsibility on state policymakers to wisely steward the funds. Political pressure and self-interested activism will be a constant problem, but observing these 10 commandments would empower states to lead the way into a better broadband future.

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ENDNOTES

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