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Refining the Biden Broadband Proposal

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Momentum for an infrastructure package presents a tremendous opportunity to close the digital divide. Policymakers should avoid a political stalemate by eschewing utility-style broadband overbuilding and instead focus on pragmatic expansion of cost-effective, competitive networks.

KEY TAKEAWAYS

- Taken together, policy proposals in the initial *American Jobs Plan* represent a significant shift toward utility-style broadband service that would undermine incentives for private investment and innovation.
- Treating broadband like a traditional utility would all but ensure future networks will face problems of deferred maintenance and under-investment similar to the other infrastructure problems the Biden proposal seeks to address.
- A better plan would pick up where the competitive system leaves off, focusing subsidies on genuinely unconnected areas and avoiding duplicative deployments. Targeted, cost-effective infrastructure spending frees up resources for adoption efforts.
- To overcome the various challenges of serving high-cost areas, all tools should be on the table, including satellite. Subsidies should be awarded through a flexible procurement auction that is technology- and ownership-model neutral.
- Speed expectations should be grounded in reasonable expectations of future demand rather than "future-proofing." An auction can be designed to make sensible cost and performance trade-offs for different communities.

INTRODUCTION

The Biden administration should be lauded for highlighting broadband as a critical public policy issue and for its willingness to propose substantial funding toward eliminating the digital divide. The potential productivity gains that would flow from having society organize assuming everyone is online are tremendous.[1] Policymakers should work together to ensure virtually all households in the United States have access to broadband and the resources to subscribe.

However, policymakers must make at least four critical choices when determining how to design broadband deployment subsidies: 1) what share of households to connect; 2) what baseline service should look like; 3) what type of broadband technology to support; and 4) what kind of ownership structure should be supported.

The proposed Biden plan appears to be influenced by progressive advocates who seek to undermine and potentially overthrow the successful U.S. system of intermodal competition between mostly large private firms to provide ever-improving broadband. It does this by providing maximalist response to each of these questions, including proposing to invest $100 billion to connect 100 percent of the country to "future proof" broadband (which would encourage massive and inefficient network overbuilding) while prioritizing support for government-owned or otherwise non-profit networks.[2]

Policymakers should put significant public resources toward eliminating the digital divide, but we should aim to build on the successes of the competitive system, providing subsidies to build in high-cost areas and help low-income Americans afford service.

Taken together these proposals indicate that the administration's proposal is less about bridging the digital divide and more about initiating a change in the ownership model of broadband in the United States. Some advocates propose the need for symmetrical gigabit networks—a bar so high and unmoored from any reasonable expectations of consumer demand that most cost-conscious private providers do not provide it today. On top of that, the plan explicitly calls for funding preferences that would direct subsidies toward municipal or not-for-profit networks.

Policymakers should put significant public resources toward eliminating the digital divide, but we should aim to build on the successes of the competitive system, providing subsidies to build in high-cost areas and help low-income Americans afford service. Such an approach can preserve the incentives for continued innovation and investment from private-sector firms for most of the country, but be flexible about how we help the rest. The available summary of the administration's "American Job's Act," while limited in detail, unfortunately indicates an ideologically driven effort toward transforming broadband into a utility provided by local governments.

Bridging the digital divide will require a balanced proposal that builds on the backbone of the United States' successful broadband networks. Policymakers should avoid spending limited funds building redundant networks where pretty good service already exists and instead focus on reaching truly unserved areas before considering broader speed upgrades. The economic literature is quite clear: the biggest societal gain from broadband infrastructure is from getting more users online, even if at relatively modest speeds, not from bumping up someone's

broadband speed from 25 to 100 megabits per second.[3] Additionally, policymakers should allow for fair competition in procurement auctions, and not have preferences or set-asides for any particular technology or ownership model. Lastly, any broadband connectivity plan must take on broadband adoption issues, to include affordability and digital literacy. Being cost-effective on the infrastructure problem should free up funds for the very real adoption and digital readiness challenges. By building on our broadband network's existing successes and by empowering users, policymakers will be able to make real strides in closing the digital divide.

For too long, policymakers on both sides of the aisle have given lip service to closing the digital divide. We finally have a real opportunity to do so. But it will represent an enormous lost opportunity if the administration politicizes this effort in an attempt to achieve activists' long-held goal of making broadband into a public utility, likely ensuring that this ends up yet again in a political stalemate. Both Democrats and Republicans should keep the goal firmly in sight: efficiently and effectively closing the digital divide. This report lays a framework for achieving that goal.

USE FUNDS EFFICIENTLY

If we hope to have a successful, one-time, large infusion of funds to extend our broadband networks, we should ensure funds are prioritized for where the need for subsidies is great but the total costs are not exorbitant. This "Goldilocks" approach is not easy. Think of three kinds of places: "Middle of nowhere" homes where the cost of running a wire is exorbitant; areas with moderate population density already served with decent broadband; and less densely populated areas where the costs of providing broadband make it challenging for the private sector, and not so exorbitant that subsidies would be unreasonable. (A fourth area would be most cities and densely populated suburbs where no subsidies are needed). For the sake of this discussion, we can refer to the first type of place as "**remote**," the second as "**built out**," and the third as "**dispersed**."

Policymakers should focus on building out broadband networks, before building up broadband networks.

By seeking 100 percent build out with super-fast networks, the Biden proposal focuses on remote, dispersed and built out areas. It would "fiber to the cabin" and fiber in dispersed places that already have existing networks. Past approaches have all too often focused on built out areas, because the costs are less and revenue more. Why do federal programs end up subsidizing broadband where it already exists? It's a bit like why John Dillinger robbed banks: because that's where the money is. The harder it is to receive federal support to serve a particular area, the less likely it is a provider will deploy a new network. As a result, providers bid or request funding for select areas where costs can be more easily recuperated, areas that may be served already in some capacity.

Lessons learned from previous federal funding efforts outline how funds are awarded in areas where an existing network or networks already operate; this occurred in the Rural Utilities Service Programs.[4] The result is duplicative networks in some areas, which diverts funding away from other areas with no existing network. As a result, the highest-cost areas still remain unconnected, despite federal programs having spent billions of dollars on rural broadband. Such wasteful

overbuilding is likely to occur if a new program prioritizes building extremely high-speed networks.

Overbuilding existing networks inevitably diverts limited funds away from completely unconnected areas and limits the ability of existing providers to recoup the costs of deployment since the new overbuilt networks take customer share. Broadband requires large capital expenditures to initially deploy a network. Once a network is deployed, the operating costs may be lower, but are still significant.[5] The lower the profit margin, the lower the likelihood that a broadband provider can effectively compete to provide better service and upgrade its network. Funding policies that disregard the state of broadband competition in a local market risk an inefficient deployment of resources that may lead to building duplicative networks where consumers may bear the brunt of the inefficiencies. But if these over-builders are small, private companies, non-profit co-ops, or municipal governments, they serve the purpose of broadband populists who want to overturn the current system where broadband is provided to most Americans by large, for-profit network providers.

Focusing first on truly unserved areas will help to avoid wasteful overbuilding. Based on existing data derived from the FCC's updated map repository, funding can be directed first towards the areas where the need is greatest. Once all dispersed areas are connected, with remote areas getting service through the new low-earth orbit satellite broadband providers, connectivity efforts can focus on upgrading existing services or building new networks in areas where existing local competitors are uninterested or unable to upgrade their own networks. Policymakers should focus first on building out broadband networks; then on building up broadband networks.

ENSURE FAIR COMPETITION FOR SUBSIDIES

The administration's infrastructure plan states a clear preference for municipal networks, helping to advance a long-time goal of populist, anti-corporate broadband activists.[6] There is a wide range of levels at which providers can work with local governments; in some circumstances, e.g., for high-cost, unserved towns, government-provided broadband should be on the table if private providers will not provide service. But as a general matter, municipal networks do not scale well to support broader U.S. broadband efforts.[7] Municipal networks often have an advantage when it comes to the cost of deployment (in part because they exempt themselves from fees imposed on private providers), but most still struggle to make reasonable returns, often fail to offer a more affordable plan than a local private provider, and do not contribute to the advancement of future broadband.[8]

Treating broadband the same as a more traditional utility like sewer lines or electrical distribution all but ensures future municipal networks will face similar problems of deferred maintenance and under-investment as the other infrastructure challenges addressed by the *American Jobs* plan.

Some activists push for municipal broadband simply because they prefer an ownership model that puts control in the hands of the local community rather than a for-profit entity, especially a big corporation. But treating broadband the same as a more traditional utility like sewer lines or electrical distribution all but ensures future municipal networks will face similar problems of deferred maintenance and under-investment as the other infrastructure challenges addressed by the *American Jobs* plan.

Providing broadband is not as simple as laying a "dumb pipe" and then walking away. Networks require continual investment, upgrading, repairs, etc., especially to keep up with changing technology. This is why broadband is regularly a leading industry in capex investment.[9] There is simply no such thing as a "futureproof" network: Even fiber networks require continual maintenance and upgrades to the electronics.

Moreover, municipal networks do not contribute to standards setting and innovation to the same extent as private providers. Advancements in broadband technology and the creation of interoperable standards are driven by private-sector contributors.[10] The private sector contributes substantially to research and development and to the standards and technical requirements proposed by international broadband technology groups.[11] It is through private providers that broadband has made most of its critical advancements, which in turn benefitted U.S. consumers across the country. Indeed, according to the National Science Foundation, the telecom industry (which includes broadband) invested over $3.7 billion in R&D in 2018.[12]

Despite conceivably having a lower cost of deployment through easy access to rights-of-way and utility poles and reduced taxes and fees, research shows that municipal networks regularly struggle to pay off their debt in a reasonable timeframe if at all.[13] This model may work in some limited circumstances, but the history of failed networks like in Provo, Utah or Burlington, VT strongly suggest this is not a good route to promote across the entire country.

But even more importantly, policymakers should not prioritize any one ownership model over others for federal funding. If the goal is additional consumer choice, much work remains to be done to remove common barriers to deployment and lower barriers to entry. Policymakers should streamline the pole attachments process and ensure pole replacement fees are shared fairly among all beneficiaries. Private broadband providers often face pole attachment fees that are more than double the federally regulated rate because of the legal exemption provided to municipal and cooperative utility providers.[14] Standardizing these rates would help to remove additional barriers to deployment in high-cost areas where providers must deploy a large network to serve a small population.

Rather than promote municipal broadband, any broadband infrastructure program should be rigorously provider (and technology) agnostic, providing funds to the providers that can best provide broadband to places without it.

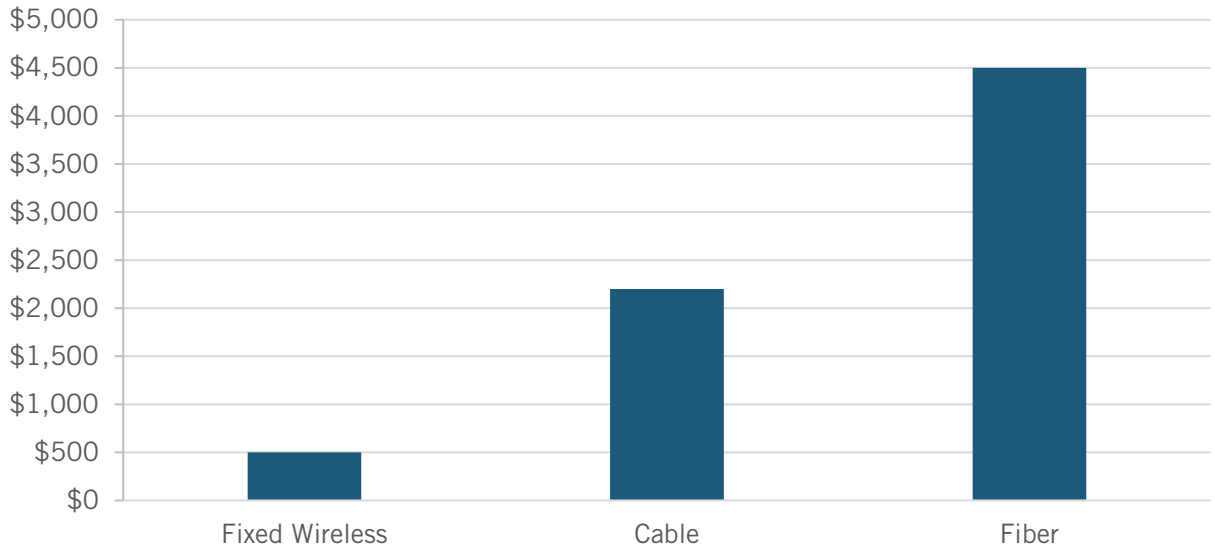
SET REASONABLE BENCHMARKS THAT ARE GENUINELY TECHNOLOGY NEUTRAL

Requiring ultra-fast networks, which provide broadband capacity well beyond current and near-future demand, will mean exorbitant capital expenditures and reduced funding for dispersed areas. Unrealistic expectations of future bandwidth demand risks gold-plating in the name of "future proofing" and those who are in dispersed areas will be left outside the broadband network. Instead of pushing for ultra-fast fiber networks for some, policymakers should instead focus on policies that first and foremost encourage connectivity for most. Only when all Americans are connected (including remote Americans through satellite), should policymakers consider using taxpayer funds to upgrade existing broadband networks to meet future demands. Even then, long-term performance goals should be reasonably grounded in anticipated application demand—broadening the population with access to networks that can achieve

100/10 Mbps or 250/25 Mbps will better reflect the trade-offs inherent to network capacity than requiring symmetrical gigabit service.

Policymakers should also remain technology neutral and leverage multiple broadband technologies to connect Americans. Recent research found that the average capital expenditure per fixed wireless customer was under $500, whereas the average capital expenditure per fiber customer was around $4,500 (see figure 1).[15] In order to maximize the productivity gains from limited subsidy funds, policymakers should consider the trade-offs associated with requiring a specific technology. With constant improvements in satellite and fixed, wireless technology, non-fiber alternatives can likely provide a quality broadband connection for areas where wired deployment would engender exorbitant costs.

Figure 1: Infrastructure cost per household for key broadband delivery technologies[16]



Many broadband populists argue that it is not about technology, but about the quality of service needed, namely symmetrical speeds. In other words, they press for networks with equal upload and download capacities, knowing that private providers rarely provide this because it is expensive and few if any consumers require it. Demanding networks with symmetrical speeds would be like requiring car manufacturers to sell cars that are able to go 70 miles an hour both forward and reverse.

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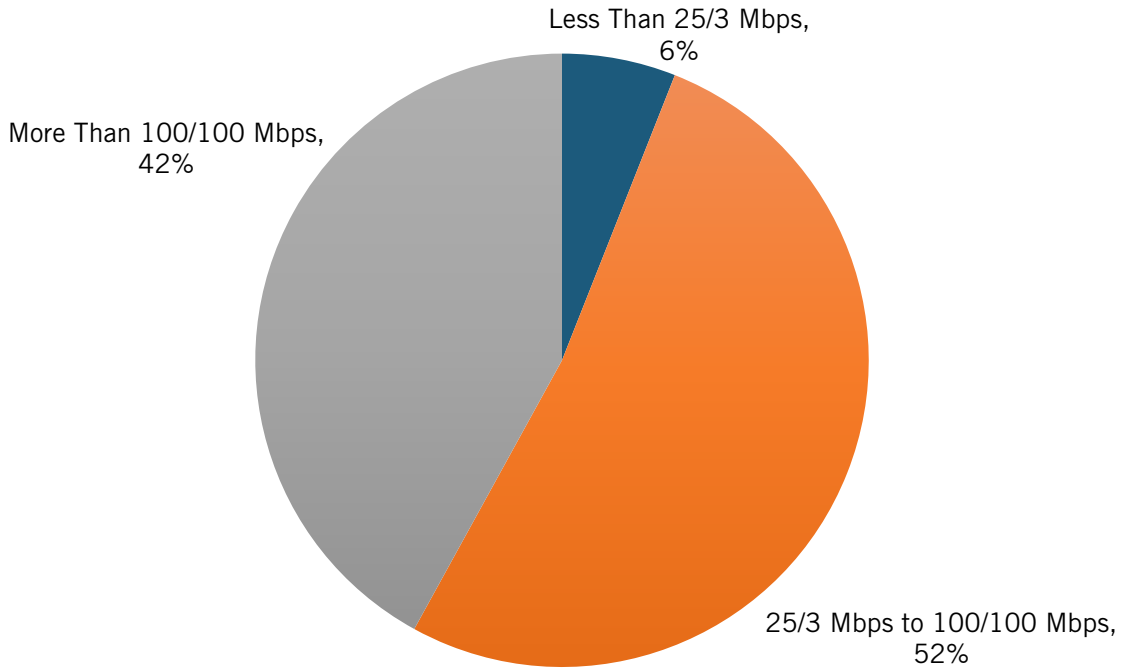
However, multiple empirical studies indicate that even through the pandemic, internet traffic has remained strongly asymmetric.[17] Existing network infrastructure was sufficient to support the increase in traffic triggered by the pandemic, and networks were able to appropriately scale to match growing demand.[18] Redefining broadband to require symmetrical speeds, specifically 100/100 Mbps, would mean that 58 percent of American homes now served would be considered unserved (instead of the current 6 percent) and thus eligible for potentially subsidies

(see figure 2).[19] This would lead to increased overbuilding, diverting funds away from true high-cost areas where consumers remain unserved.[20]

Figure 2: Percent of U.S. coverage by broadband speed bracket[21]



RELY ON REVERSE AUCTIONS AND FLEXIBILITY

A large injection of federal capital can succeed in bridging the rural broadband divide if it is reasonably targeted and allocated through a reverse-auction program. While the recent Rural Digital Opportunity Fund can be improved upon, it confirms evidence from prior Connect America Fund auctions: procurement auctions can help network deployment in high-cost areas much more cost effectively than other models.[22] Subsidies should be awarded through auctions that encourage organizations of all sizes and kinds to participate—particularly those with large economies of scale that can efficiently extend broadband service into otherwise uneconomical areas. Ensuring that large companies can participate and are not intentionally excluded by imposing onerous requirements or showing preference to not-for-profit providers is key to ensuring the most efficient allocation of scarce public funding.

Leveraging a weighting system, FCC experts can appropriately tailor standards and expectations based on the most recent research on broadband technologies and network demands.[23] We can expect firms receiving support to build the highest performing network that best fits the density and topography of a given area—legislators should leave the FCC room to design appropriate weighting of different performance criteria, rather than define an unreasonably high and rigid standard.

BUILD BEYOND NETWORKS—ADDRESS DIGITAL LITERACY AND AFFORDABILITY

Policymakers should take a holistic view of the digital divide and avoid focusing narrowly on access in rural areas. A multi-pronged approach is needed to ensure individuals not only have access to a network, but that they can afford it and can comfortably navigate the Internet to take advantage of their broadband connectivity. Any money saved from a more cost-effective approach to infrastructure should be put toward various adoption programs. In other words, policymakers need to ask themselves: Is it better to spend money to upgrade already adequate broadband for tens of millions of Americans or to devote the funding to help close the demand-side digital divide, which is almost exclusively one suffered by low-income households. It is unlikely both could be achieved even with $100 billion.

Affordability is a real challenge for many low-income Americans, especially considering our relatively high rates of poverty. It is time for a complete overhaul of our low-income broadband support, to provide an effective safety net so everyone can get online regardless of income. Funding should go towards vouchers whereby users can self-select the service or combination of services that fit their needs instead of being pigeon-holed into specific services or service providers. Such a program should be paired with other social welfare efforts, such as food assistance, and ideally in coordination with successful voluntary private-sector efforts to create low-income targeted offerings.

Part of the digital divide is exacerbated by digital literacy issues—affordability is not the only barrier to broadband adoption. This is a true challenge—as the *Lewis Latimer Plan for Digital Equity and Inclusion* notes, "43 million U.S. adults are functionally illiterate, creating a severe if not complete obstacle to deriving the benefits of Internet connectivity."[24] And as the *Washington Post* Editorial Board recently pointed out, "[t]here is little point in paying for an Internet plan if you don't know how to use the Internet."[25] Policymakers should invest in deploying training and tools to educate and empower users to access the internet. The *Lewis Latimer Plan* recommends the creation of a "National Digital Literacy Program" and a "Digital Navigators Corps" to help educate and connect those who remain unconnected.[26] To truly connect all Americans, a broadband policy will need to go beyond simply providing access; it will need to help encourage adoption.

CONCLUSION

The Administration's infrastructure plan highlights a long overdue commitment to connecting all Americans to bridge the digital divide.[27] But if we are to achieve this goal, policymakers need to set ideology aside: Whether it's the free-market view that only markets should pay a role; or the broadband populist view that America's private-sector broadband providers shouldn't be included. This means, first and foremost, developing a clear plan to direct funds towards connecting those who are truly unserved. Once we have connected most of the unserved and helped close the demand-side gap through affordability subsidies and digital literacy programs, then funding can be directed towards improving underperforming broadband networks. Policymakers should keep their eyes on the real ball: closing the supply- and demand-side digital divides and ensuring that scarce funding does that most efficiently. It is by building on previous successes and building out before building up that policymakers will bridge the digital divide and ensure that all Americans are able to meaningfully participate in the digital world.

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