

# Public-Private Collaboration Imperative to Deliver Modern Connectivity

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Feb 8, 2021 | Infrastructure, Technology | 1 comment



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Connectivity is a necessity in today's digital world. Economic opportunity, educational advancement, health and safety, social mobility, and civic engagement are increasingly tied to the widespread availability of high-speed digital communication.

Broadband is often discussed as a "common good," which is defined as something that a community provides to all members in order to fulfill a collective obligation to care for certain interests that all members have in common. Examples of common goods include roadways, public safety services, a judicial system, public schools, parks, cultural institutions, and public transportation, as well as clean air and water.

Whether through ubiquitous broadband or the promise of 5G mobile connectivity, these networks are underpinned by the fiber optic infrastructure that serves as the necessary communications backhaul. This infrastructure investment is capital-intensive and complex, given the intermingled business and physical network landscape of incumbent

mobile carriers, third-party dark fiber organizations, publicly-owned fiber assets and right-of-way access.

Historically, telecommunication service providers have funded fiber-network construction based on their ability to generate a return on investment (ROI). While this funding model has worked for decades to expand high-speed broadband and cellular connectivity to their current levels across the U.S., shifting public expectations have born the questions of whether this model can continue to meet the growing demand for service and who is responsible for this common good.

## Contextualizing the Digital Divide

Perhaps nothing has highlighted the critical need for high-speed connectivity more than the COVID-19 pandemic, which has driven entire communities to live, learn and work online. It has also exposed a rapidly widening digital divide in this country that impacts rural, urban, and suburban communities, each with their own unique needs and challenges.

Here are a few different digital challenges that exist:

1. **Rural Accessibility** – According to the FCC, only 65% of rural Americans have access to high-speed internet. Communities are primarily looking to service providers and rural electric cooperatives to identify a financial solution, in which the main hurdle is the low density of households that results in a high cost for network deployment. Connectivity rates are even lower on tribal lands, meaning over 41 million Americans have no access to wired or fixed wireless broadband. The economic and social disadvantages for these communities are mounting, which captures most of the attention and federal funding opportunities.
2. **Urban Affordability** – Urban communities typically face a different type of digital challenge, one that is multi-faceted and complex depending on the end user. According to Census Bureau surveys, three times as many households in urban areas than in rural areas remain unconnected. Those without home internet service are predominantly poorer, older, and less educated Americans; demographics which are more prevalent in cities. Many of these households already pay for cellular service and report that their phone lets them do everything they need to do online. This perspective was severely tested during the COVID-19 pandemic when families

truly needed broadband for work, school, and healthcare. This digital trend will continue even after we emerge from the global health crisis.

3. **Bandwidth Demand** – This scenario is not defined by a geography but is most commonly associated with urban and suburban communities, which were the first to be offered high-speed internet by traditional service providers. Household bandwidth needs have since increased to a level where the original network infrastructure is no longer adequate. These urban families and citizens are struggling to find service options that can meet their bandwidth and budget. Open-access fiber networks are starting to emerge in many medium-sized communities, whereby the network can accommodate multiple service providers that offer the end user a wider range of internet service packages for the modern household.
4. **5G Deployment** – The promise of vastly improved business applications and societal benefits are planned with the rollout of 5G. However, initial 5G deployment is targeted at densely populated areas to balance the cost of deployment with the areas of greatest revenue potential. The benefits of 5G will be delayed in areas where the full cost of deployment cannot be substantiated. Does the entire cost of 5G service delivery need to be shouldered by the wireless service provider? Or are there public-private partnership opportunities that can make 5G benefits available in less densely populated areas?

Admittedly, these scenarios are simplified but they do illustrate the complex layers of our digital divide and evolving connectivity needs for the modern community. The common denominators are the necessary investment in fiber infrastructure to bridge the collective digital divide, and the public will to accomplish this.

## Rethink Funding Models

So how can cities and communities participate in the funding of these critical infrastructure investments to serve the common good?

The chances are low that these networks can be built with 100-percent public funds. Likewise, the individual service provider funded model, which is based on subscribers and rapid ROI, is not suitably designed to address the larger digital divide. The cost of this investment, when measured against other investment opportunities and factors like subscription uncertainty and construction risks, is a fundamental deterrent for traditional service providers.

Even with no other service competition, service providers are reluctant to build new networks in low-density rural areas or replace existing infrastructure in underserved urban communities, fearing they won't recoup the investment. The individual service provider funded model will continue as an essential part of their own business; however, these private companies do not necessarily bear any non-reasonable responsibility beyond the management of their own networks and business.

Thankfully, new public-private funding models continue to emerge, presenting opportunities to reevaluate how we build and deploy high-speed networks in the future.

## Open Model Approach

The open model approach relies on enterprises using private investment to build fiber infrastructure in partnership with other interested parties that can generate revenue, dilute risk, and improve the overall business case. High capital-intensive fiber infrastructure is then shared between one or more service providers, inviting competition that can drive down the cost for end users and ultimately increase overall subscriptions and add new innovative services. In this case, the public is provided with a choice of a carrier and subscription service instead of one cable company, which could lead to the ever-looming cable monopoly.

Depending on how it's designed, this model can end up being the most affordable for addressing end user needs, but it can be challenging to implement. All stakeholders must be on the same page, and local governments, service providers, and infrastructure funding constituents must join in agreement in order to make this vision a reality. With the open access model, residents would not need to wait for their cable provider to justify their investment model in order to install fiber. This open access model set the stage for residents to get the right package at the right price.

SiFi Networks, an international network developer, is already making use of this model by privately financing, constructing, and independently operating open access fiber networks across the U.S. These networks are designed to send fiber past every home and business in the communities they serve, providing "superfast" internet connections with no latency. The networks operate independently of any end service provision, removing the need for other service providers to go through the expense and disruption of building separate networks.

As a standard measure, SiFi also installs smart city access points throughout the networks, allowing for future smart city applications such as street light management, intelligent public transportation, first responder communications, air quality monitoring, and water leak detection. By doing this, SiFi hopes to alleviate the risk of additional costs and disruption associated with future connectivity.

## Public-Private Partnership Model

The funding, construction and management of a ubiquitous fiber network takes commitment from all stakeholders, which is why a Public-Private Partnership (P3) model can effectively address the needs of all entities involved, including the local citizens.

A service provider may have a strong footprint in a city or a willingness to launch a business, but the investment needed to expand fiber connectivity or bandwidth to meet community needs might not meet their internal business analysis. Should the public partner be willing to contribute towards the upfront capital to build the network, the private partner would accept responsibility for the deployment, operations and internet or smart city services. There are already several good examples of this model, including The City of Westminster, Maryland and Ting Internet.

The blended P3 model attempts to address external needs while meeting internal financial requirements. Additionally, this type of partnership can be ideally positioned to capture and include public grants or loans dedicated to broadband, further improving the project business case. Many projects that end up in a P3 start out as independent efforts but both parties ultimately see they can more effectively achieve their common goal, and thereby the common good, together.

## Neutral Host Approach

The neutral host approach, specifically the deployment and expansion of 5G cellular networks in urban environments, continues to gain traction as a viable and financially attractive approach. Rather than have multiple private entities build out individual networks in parallel to one another, a single build out by a neutral host (e.g., a P3 or a real estate investment trust) would allow that infrastructure to be accessible to multiple carriers, enabling them to lease or co-invest in the infrastructure as opposed to build it out themselves.

In addition to the highest level of connectivity, neutral host networks also have the potential to protect community aesthetics. Even as we are at the earliest phase of 5G deployment, managing the density requirements of the small cell antenna technology has become a common challenge for communities. No one wants to look out and see a landscape of poles and antennae, and cities feel very strongly about keeping their infrastructure aesthetics discreet and pleasing. Currently, cellular carriers place an antenna approximately every 400 feet, which results in the presence of multiple poles from multiple providers. This could ultimately result in a Verizon pole next to an AT&T pole, next to a U.S. Cellular pole adjacent to a Mobilitie pole.

The urban small cell issue is so prevalent in U.S. cities that the City of Portland sued the FCC regarding permitting requirements for small cell pole access. Following a U.S. Court of Appeals decision in 2020, cities are encouraged to create programs to meet aesthetic objectives, as well as manage the internal costs and deadlines resulting from the FCC mandated “90-day shot clock” for permit approval.

There are some cities that are exploring how to scale the neutral host model, and with the anticipated growth of 5G networks over the next five years, this model will take shape as an important solution for both cities and carriers.

## Policy and Governance

So where does this leave the industry? Although market forces are trying to align themselves to make these new funding models happen, there is no real catalyst to do so. There is opportunity for an entity – perhaps it would be the government, or perhaps it would be a private entrepreneur looking to deliver on a vision – to step up and commit the necessary funding.

Policy and governance will clearly play a role, as much of this success relies on the local government’s management of the right of way, which carriers need to access to continue to provide service. But this also injects uncertainty, particularly from a revenue and aesthetics standpoint. What policies and programs can be introduced that serve both the carrier companies and the communities?

Author Fredrik Nael is attributed with the saying, “It takes both sides to build a bridge.” Elected officials can actively engage with the marketplace to discover the possibilities of new funding strategies to bridge the digital divide for their constituents, regardless of



geography or demographic. Open network solutions can help stimulate the considerable social and economic benefits of modern connectivity, which will serve the common good for decades to come.

## Discussion

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**Conrad Wagner** on February 10, 2021 at 10:16 am

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## COVID-19 Presents an Opportunity to Build Back Stronger Cities

by [Tripp Borstel](#), Director, Sustainability Solutions, ENGIE Impact

Many cities are leveraging lessons and actions of the COVID-19 crisis to refocus on and drive ambitious sustainability and resiliency strategies. These cities are implementing a “build back better” strategy that ultimately will benefit some of the most vulnerable groups affected by both climate impacts and COVID-19. These strategies can strengthen building infrastructure, create good jobs for those who need them most, and rapidly accelerate cities’ carbon emissions reduction goals.

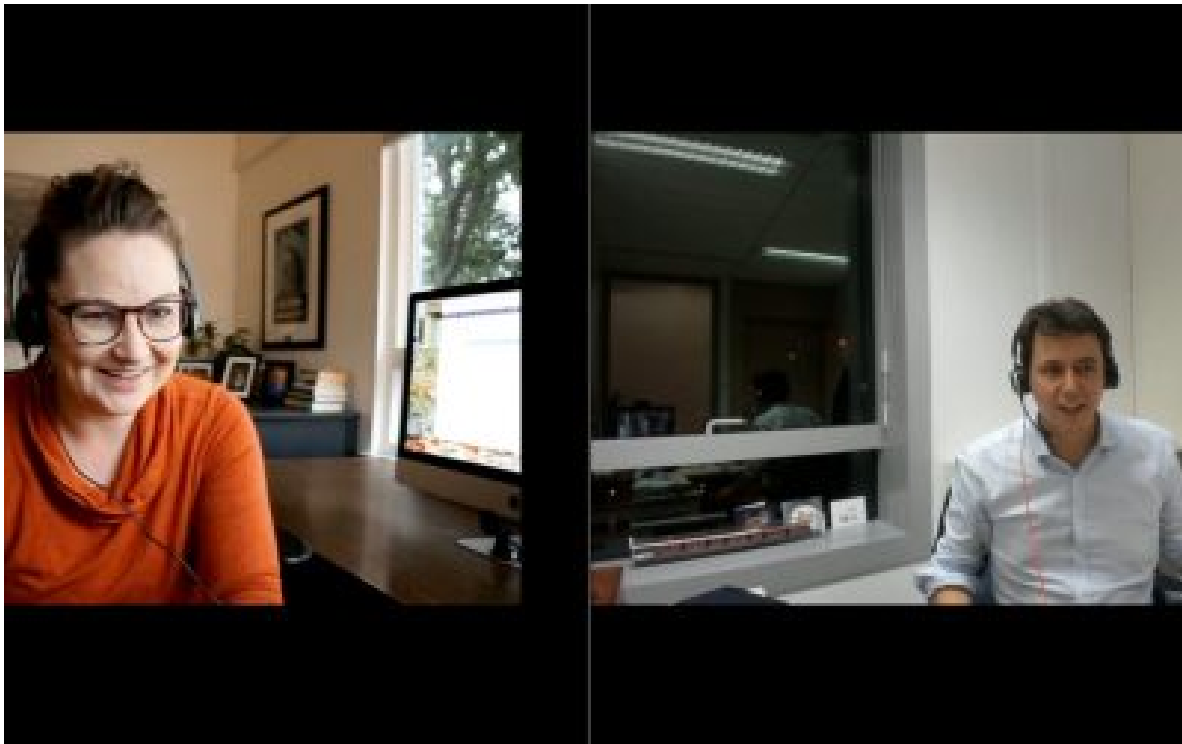
The work of better, happier cities cannot be implemented by governments or private organizations alone. Regional governments, businesses, banks, and financial institutions must commit to green stimulus and inclusive recovery. These recovery strategies will prioritize jobs and growing the economy, support health and pollution reduction, enhance energy and climate resilience, and support decarbonization, all while focusing on social equity.



## Responsive Government: Virtual Twins Help Cities Respond Quickly to Unexpected Situations

by [Rebecca Gibson](#)

The COVID-19 pandemic underlined the need for fast, intelligent, and sophisticated decision-making in government. Now, as cities, states, regions, and nations look to the future, they are harnessing the power of interactive 3D virtual twins to help them plan, develop, and test strategies to support their recovery and build resilience for meeting future crises.



## City Digitization Strategies During the Pandemic

by [Jessie Feller Hahn](#), Executive Director, Meeting of the Minds

I spoke recently with Jacques Beltran from Dassault Systemes about how the crisis has been an accelerator for cities and public agencies to implement digitization strategies. He's an experienced public servant now working with cities to address their data needs. He shares some relevant examples of how cities in Europe were lagging one to two months behind what was really occurring on the ground. I am particularly impressed by their work to build a virtual twin of the city's concert hall to simulate coughing, masks, and other conditions to plan a safe reopening. They found some very surprising findings. They also worked at a regional scale to predict and visualize viral spread to anticipate hospital capacity a month ahead – a key tool for regional officials. The use of virtual twins are extensive for cities.

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