

Private Investment in Community Digital Infrastructure

The case for private investment in community networks rests on investors' ability to capture the networks' impact on economic development.

By Michael Curri / *Strategic Networks Group*

Digital infrastructure is more than simply fast broadband. It is a platform for exchange and innovation that allows all residents and businesses to participate in the new economy and for local governments to deliver new and smart community services. This article outlines the economic case for bringing capital to communities so they have the digital infrastructure they need to be connected and sustainable in the new economy – while providing investors solid, long-term returns.

The economic case for private capital investment combines digital infrastructure with digital transformation. This new model takes an infrastructure approach to investing and drives practical use of broadband to improve local economies by retaining and growing local businesses, creating new jobs and improving local quality of life. This results in higher network revenue growth from increased demand, new subscribers and greater demand for community digital infrastructure – which generates steady, growing returns for a network and aligns investor goals with community needs.

Over the next decade, more than \$100 trillion will be deployed to build infrastructure assets throughout the world. A core element of all this development will be approximately \$150 billion for digital connectivity projects in the United States, including fiber networks

linking cities, governments, households and businesses. Within this context of infrastructure investments, all communities have choices in the future they want – they can choose to let others address their broadband gaps and thereby forgo the opportunity to control, or even influence, their local assets (such as infrastructure and data) and thereby their sovereignty. Alternatively, they can create paths to own and control their local infrastructure and thereby their social, political and economic futures.

To create and support local economic vitality and resilience, all businesses and residents must have the broadband they need and the awareness and capabilities to use it effectively. Communities seeking better broadband need solutions now. Their challenge is to determine what segments of the communities are unserved, underserved or overcharged; the demand for broadband (current and potential); and the best ways to close broadband gaps.

An economic case for investing in digital infrastructure is what communities and the broadband industry have been waiting for. The COVID-19 pandemic sharpened the argument that the case for broadband is not just economic but existential. Elected officials, local decision-makers and community leaders must understand that

- Investments in digital infrastructure cannot be delayed. Leaders no longer can wait for

their replacements to start and support a broadband initiative. Even if they do not have the experience, know-how or time left in their terms, their communities need reliable broadband now.

- The need is real and growing. The escalating transition of work, health care and education to digital platforms means that broadband no longer can be considered a luxury. It is essential to competitiveness and sustainability and to lessening the burden on networks that were not built for such loads.
- A new norm has emerged. The social distancing requirements of COVID-19 drive home the reality that gaps in broadband access, quality and affordability endanger the very survival of citizens and businesses in communities that do not have digital infrastructure.

BROADBAND CHALLENGES

In the United States, areas remain unserved, underserved and overcharged because private-sector internet service providers do not expect enough of a financial return to invest in those areas. Communities in this situation often wait for new funding, new technology or the next elected official who is prepared to take ownership of a broadband initiative. Even for areas considered “served” based on the FCC’s definition of 25/3 Mbps, COVID-19 shines a spotlight on the need for robust digital infrastructure in both rural and urban areas because unequal access and degrading internet speeds and reliability hurt local economies.

Community initiatives that attempt to address broadband gaps by becoming traditional broadband service providers are fundamentally flawed. If broadband were financially feasible in those areas, providers would be there already. Furthermore, communities attempting to provide broadband services to those areas have several disadvantages. Most notably, they must compete with experienced incumbents while trying to serve low-profitability areas. The business case for broadband is not flawed, it is correct – and that

is why those areas remain unserved, underserved or overcharged.

Another challenge for communities that adopt a traditional retail service provider approach is that vertically integrated service providers carry the costs of infrastructure, operations and retail services. New entrants into the market need to have enough market share (usually at least 35 percent) to cover those costs and generate the returns they need for a viable business case. This is a challenge when competing with incumbent providers that often targeted and already serve the most lucrative neighborhoods. In smaller markets, this precludes market entry, leaving some areas with minimal provider choice and underinvestment in broadband.

Commonly, communities enter into public-private partnerships that subsidize the business case to attract private-sector partners. However, such partnerships present several issues:

- They limit network access to the providers under contract. This risks pricing, offerings and service quality being uncompetitive with the rest of the market.
- If networks are built only in areas profitable for private-sector business cases, there still will be contention between public and private partners about where and when to roll out and where and when to leave unprofitable areas with a digital divide. This reduces local economic vitality and limits market growth. A partially built-out network also makes it challenging to roll out smart-community initiatives that must be communitywide for effectiveness in digital transformation, economies of scale, etc.
- A locality’s goals (economic vitality, community benefits, smart-community services, long-term planning) may not align with providers’ goals (maximizing profitability, targeting only the most profitable neighborhoods, lacking the tools to efficiently provision smart community services). This

may especially be true over the long term, limiting opportunities to implement smart-community services because it is often unclear how investment in smart-community services profits the private provider when many of the benefits are to the community and a social good.

Relying on traditional private-sector providers to step in and invest in community digital infrastructure is also flawed. Although communities see significant benefits from broadband investments in terms of retention and growth of local jobs and businesses and quality of life, such community benefits do not accrue to traditional private-sector service providers. This results in underinvestment in broadband relative to a community’s needs. In contrast, from the service providers’ points of view, the level of investment is rational because they can earn higher returns in areas with higher population densities and lower buildout costs. If investments in road infrastructure depended exclusively on the direct returns to private-sector investors, how extensive and of what quality would U.S. road networks be? Compounding that problem is that the short-term time horizons for private-sector service providers (typically three to five years) are not long enough to fully capture investment returns from local market growth.

Broadband gaps will continue until localities and investors find viable solutions that better align community needs with investors’ returns on their investments. The critical first step is to pivot to a digital infrastructure approach in which the long-term economic benefits to community growth and business success accrue to the network deployers, leading to a virtuous cycle that increases network revenue opportunities and returns on investment.

By taking a long-term infrastructure approach and growing local demand, communities can drive local economic growth and grow local markets for high-speed internet and value-added

services. This generates solid, steady cash flows from the projects and strong returns for investors.

A NEW APPROACH TO INVESTING IN BROADBAND: COMMUNITY DIGITAL INFRASTRUCTURE

Broadband is infrastructure. It is so vital to any community's economic and social health that localities increasingly regard it as an essential utility, like water and electricity. Similar to roads and electrical grids, community digital infrastructure stimulates local economic vitality, competitiveness, resilience and quality of life.

SNG has developed an economic case for private investment in broadband and digital infrastructure. The economic case can repay investors in many communities where the traditional business case doesn't work because it contains several features missing from the traditional business case.

1 Ubiquity. In the SNG model, digital infrastructure connects all residents and businesses in a community so everyone can effectively participate in an increasingly online economy, not just people who live in the most affluent areas. Ubiquitous, affordable broadband increases local participation and innovation, which grows local economies. This in turn grows local markets for broadband and value-added services. These spillover effects are indirect benefits to communities and a primary driver for public investment in infrastructure (roads, water and sewer systems, electric utilities).

Indirect community benefits (local job retention and growth, increased local GDP and tax base, etc.) are not the goal of incumbent providers' traditional broadband business case. However, investing in community digital infrastructure grows the local economy through broadband and digital transformation and captures new revenues from that growth. A network deployer can capture the

benefits of increased local economic activity through additional subscriptions (higher take rates), higher-value subscriptions and new services.

2 Commitment to digital transformation. Local leaders and stakeholders must endorse, raise awareness, and commit to drive practical use of online applications, which drives network usage and grows revenues. SNG has developed and tested tools and methods for digital transformation that will drive economic impacts and community benefits. Proactively training businesses to leverage digital infrastructure is very different from simply waiting for economic development to occur.

3 "Patient" capital. Community digital infrastructure investments require "patient" capital rather than investment from Wall Street or venture capitalists. Patient capital investors have a longer time horizon than traditional investors and are willing to forgo maximum financial returns for the sake of steady returns and social impact. They are still rational investors, however. Investing in community digital infrastructure is a low-risk impact investment. With proper due diligence, a startup broadband utility asset class can be relatively insensitive to periods of economic decline and a solid alternative to traditional investments where there is increasing volatility (e.g., stock markets), uncertainty with sustainability of investments (e.g., the oil and gas industries), negative yields (e.g., sovereign bond markets) or marginal yields (e.g., investment-grade bonds). Furthermore, the COVID-19 pandemic shows how critical broadband is for communities, greatly increasing the demand for digital infrastructure and opportunities for patient and infrastructure capital.

Pension funds (especially those for teachers, communications workers, electrical workers, etc.) and private infrastructure capital

are the right types of impact-seeking and patient investors that value an integrated economic case for broadband and are willing to invest in the digital transformation needed to drive local economic growth and network demand. This creates positive, forecastable cash flows with credible parties, which generate growing network earnings and capital returns from the digital infrastructure. That benefits communities by providing more resilient local economies, new ways of working together, and improved quality of life through better access to education, health and civic services for all – not just for people in the most profitable neighborhoods.

There is more money available than good investment opportunities. By structuring financing so local investors (whether large or small) can participate, communities can create new opportunities to invest locally in ways that will drive vested interest and better alignment between investors' goals and project outcomes. With stable returns plus community benefits, why invest elsewhere? What better way to invest than in digital infrastructure assets in places where those investors work and live?

Government funding (e.g., the CARES Act), tax credits (e.g., opportunity zones) and lending programs can improve the case for investing in these projects and reduce risk. These can be applied to projects when time frames align with project milestones. However, the success of community digital infrastructure projects should not depend on government funding and application review processes. Local leaders should be careful in seeking gap financing – their projects should be sustainable and profitable because of the economic benefits to their communities.

4 Structural separation. A digital infrastructure model's network

design structurally separates infrastructure and operations from retail services. This enables choosing the appropriate network operating model (one provider, multiple providers via open access, municipal service provider, etc.) based on the local environment and network demand (current and potential). Assessing local market opportunities needs to be part of the process. The network operating model should be determined in consultation with the community.

In an open-access model, a network provides high-capacity digital infrastructure to enable multiple competitive retail service providers to operate within a locality without making substantial capital investments (think airports where competitors use existing airport

infrastructure without having to build their own). Customers subscribe to the network and select services from one or more retail providers through a simple, user-controlled service selection interface.

Network operations revenues are primarily derived from customer subscriptions that cover the network build and operations costs, and new services from any provider interested in joining the network. Third-party retail providers are invited to offer services at competitive rates while providing ongoing fees for access to the networks and the locality markets. The cost for retail providers to access the markets is minimal compared with the cost of building digital infrastructure.

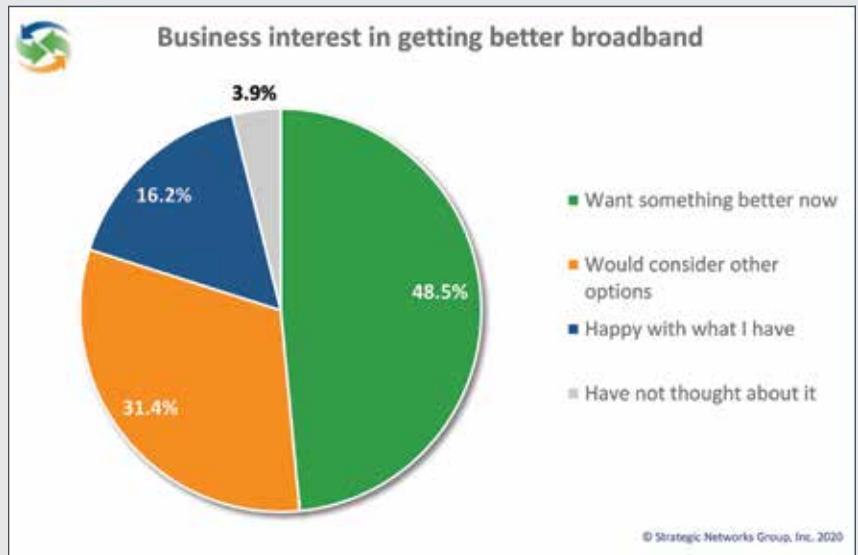
Wholesale fees – what the retail service providers pay to have their

services delivered to individual businesses and households – cover the costs of ongoing operations and network financing, while generating earnings for the digital infrastructure network. Third-party retail providers have the opportunity to market and sell their internet services at competitive rates on top of the wholesale fees. For example, retail providers may sell 100 Mbps internet service for \$60 per month. After paying a wholesale fee of \$45 (for a 100 Mbps internet service; higher speed services have higher wholesale fees), this leaves them a margin of \$15 with no upfront network investment. They also incur very few costs other than their own sales, marketing and customer service, and billing costs. Such price levels are very

THE CURRENT STATE OF U.S. BROADBAND

In broadband assessments of 10 states, SNG has shown that the majority of the almost 19,500 U.S. cities, towns and villages (incorporated places) in the United States are, at least in part, unserved, underserved or overcharged for broadband services. Many areas across the United States claim to be served with the FCC's definition of broadband (25/3 Mbps). However, SNG's 2020 research in the Oregon Broadband Study showed that

- 25/3 Mbps is a minimum threshold that will not drive local economic competitiveness and community vitality. Instead, broadband investments should achieve a minimum of 100/100 Mbps to be relevant assets that provide steady, long-term returns on future investments (think COVID-19 and network usage demand spikes).
- Broadband coverage reported by internet service providers often is overstated.



- There are issues with reliability and service quality within areas that the FCC considers served with broadband.
- Demand is high for better broadband. For example, in Oregon, 80 percent of businesses want better

broadband, 48.5 percent report they want better internet service now, and another 31.4 percent are ready to consider options other than their current service. Eighty-six percent of households want better broadband.

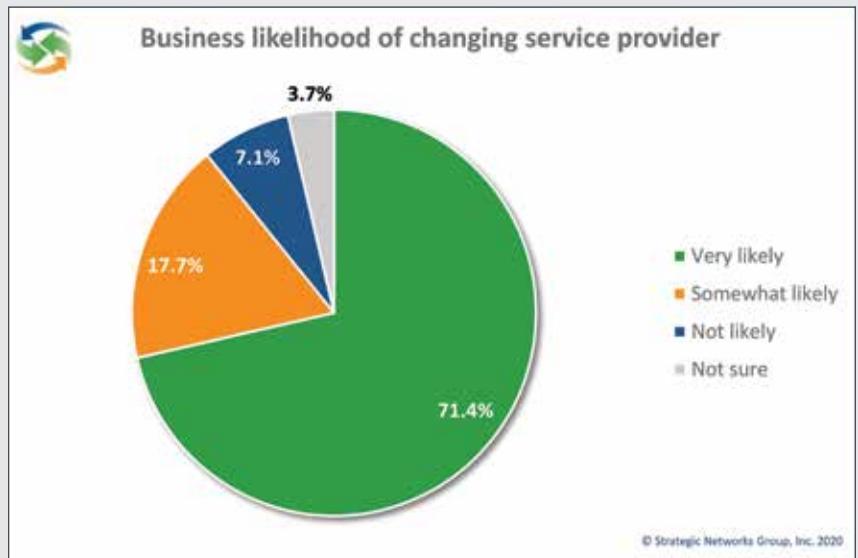
GROWING LOCAL ECONOMIES AND NETWORK DEMAND

An economic case for broadband must assess whether there is sufficient network demand from local economic growth to sustain a solid cash flow from a digital infrastructure investment. A market demand assessment should include

- Current and potential network demand for broadband services
- Services for local utilities, anchor institutions (schools, municipal and county facilities, hospitals)
- Dark fiber connections for larger enterprises
- Potential demand for broadband and value-added services from underutilization of online practices by local businesses and households
- Additional and new revenue streams from backhaul for long-term evolution (LTE) and future 5G deployments

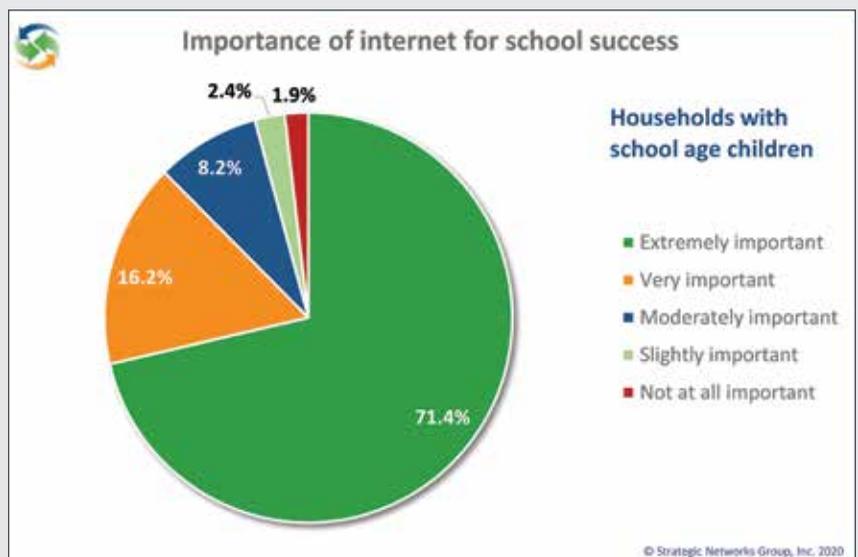
Growing local network demand and community benefits that support the economic case include

- Economic growth and increased local GDP from increased local business competitiveness through business innovation, business attraction and retention, increased productivity, and businesses accessing new markets
- Cost reductions from spending on internet and telecommunications for existing and planned municipal/county facilities and community anchor institutions, such as schools and libraries
- Retaining and growing the tax base through telework and home businesses, new employment opportunities, enhanced labor force skills, new income opportunities, and more
- Broadband and telecommunication cost savings for households, which has a consumer surplus impact on local spending
- Quality of life benefits from telework, distance learning and telemedicine
- Smart-community service benefits and cost savings (facility management, smart grid, traffic and parking management, etc.).



To understand broadband's market potential, it's necessary to benchmark a community's demand data. This helps assess broadband gaps and use of online practices. For example, when 77 percent of households (pre-COVID-19) indicate that broadband is extremely or very important for school success, demand for broadband is high because it is critical to the community. Imagine now, in the COVID-19 era, how many more households see broadband as critical.

Through data gathering and community engagement, a community gains a clear understanding of how investment in digital infrastructure can be leveraged to achieve digital transformations that



create new job opportunities and other community benefits. Local community engagement and digital transformation activities are essential to define and prepare for the required digital infrastructure

investment and to lay the groundwork to fully leverage the benefits from those investments for individuals, businesses and communities at large.

competitive for 100 Mbps service, and prices could go even lower with increased competition through an open-access model.

ADDITIONAL NETWORK REVENUE OPPORTUNITIES

Community digital infrastructure projects have other opportunities to drive new revenues from the network operations.

- Value-added services, such as automated network backup, reselling services (VoIP, home security, productivity tools, etc.)
- Cloud services for businesses
- Smart-community services, such as crime prevention, smart-traffic management, energy management, etc.
- Remote education, training and certification
- Telemedicine, such as remote diagnostics, aging in place, etc.
- Increased market share and high-value subscriptions from digital transformation efforts

Additional revenues from value-added services can reach as much as 30 percent of total revenue over time when the market starts to mature. A large portion of additional revenue comes from dark fiber leases, backhaul leases for long-term evolution (LTE) that will increase even more with 5G fiber backhaul, and smart-community services. A community digital infrastructure network becomes a platform for a community to deliver value-added and smart-community services without the need to negotiate with multiple network providers or build another independent delivery platform.

Specific value-added services and smart-community services must be

selected based on demand data from end users. For example, SNG uses its proprietary Broadband Impact and Market Assessment and local economic returns from broadband investments to assess current and potential demand. Service mixes evolve over time based on community engagement and in response to demand and changes in interests and needs.

The competitive advantages of community digital infrastructure include the following:

- Local businesses and households have faster and more reliable services for the same or better price than currently available in areas of a community that are unserved, underserved or overcharged.
- Competition between multiple retail service providers and greater choice of offerings. Subscribers appreciate not being locked into one service provider that owns the network connection and exerts market power, which often results in higher prices and lower service quality. They like more-flexible service options and the ability to select or change services and providers at will. Benefits to local businesses include better pricing and improved services over time through competition.
- Reduced competitive threat to the investment. Retail service providers do not have to invest capital in digital infrastructure to serve local businesses and households.

SUMMARY

With private capital, communities can build, own and operate community digital infrastructure projects across the United States to provide communitywide fiber and broadband

services. Building an economic case for private capital investment combines digital infrastructure and digital transformation to drive utilization. That grows local economies and customer bases, and growth in new subscribers, value-added services and network demand grows network revenues.

Investing in digital infrastructure in communities is a low-risk impact investment with steady returns. Furthermore, the coronavirus pandemic shows how critical digital infrastructure is to the viability and resilience of communities in areas that are unserved, underserved or overcharged for broadband.

An economic case for investing in digital infrastructure is what communities and the broadband industry have been waiting for – and now it's time to execute. The COVID-19 pandemic sharpened the argument that the case for broadband is not just economic but also existential. Elected officials, local decision-makers, and community leaders must understand the need for fast, dependable, affordable broadband is real and growing and action cannot be delayed, especially in light of the pandemic's exposure of striking gaps in broadband access, quality and affordability.

Communities seeking better broadband need solutions now. Investors are looking for steady returns. Digital infrastructure offers a new way of bringing them together. ❖

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