CORNING

Rural Reality Check

Building the Best Broadband Network Possible

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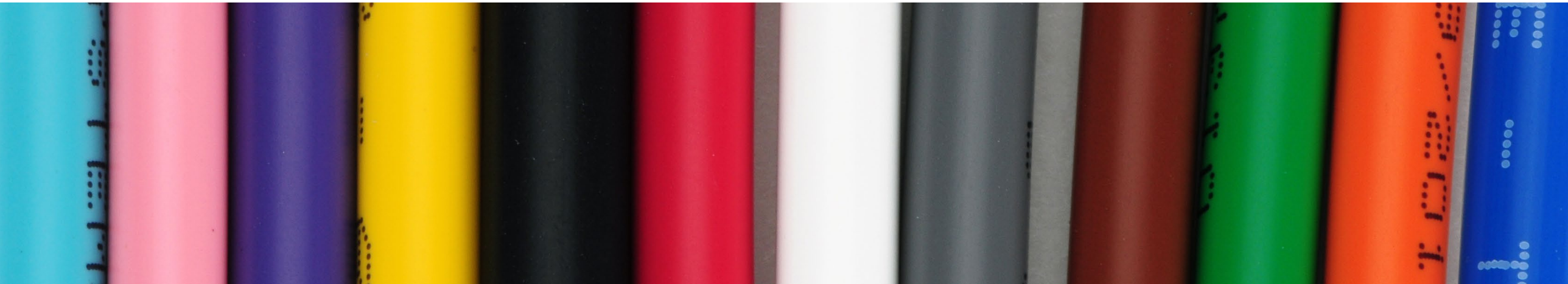


Realities of Today’s Rural Broadband Environment

Pandemic Impact

The global COVID-19 pandemic has exposed the essential nature of broadband. Access to good quality broadband is critical and anyone without that access is at an unfair disadvantage. Rural and low-income unserved and underserved populations are more at risk of falling behind, as the pandemic has accelerated society's digital transformation.

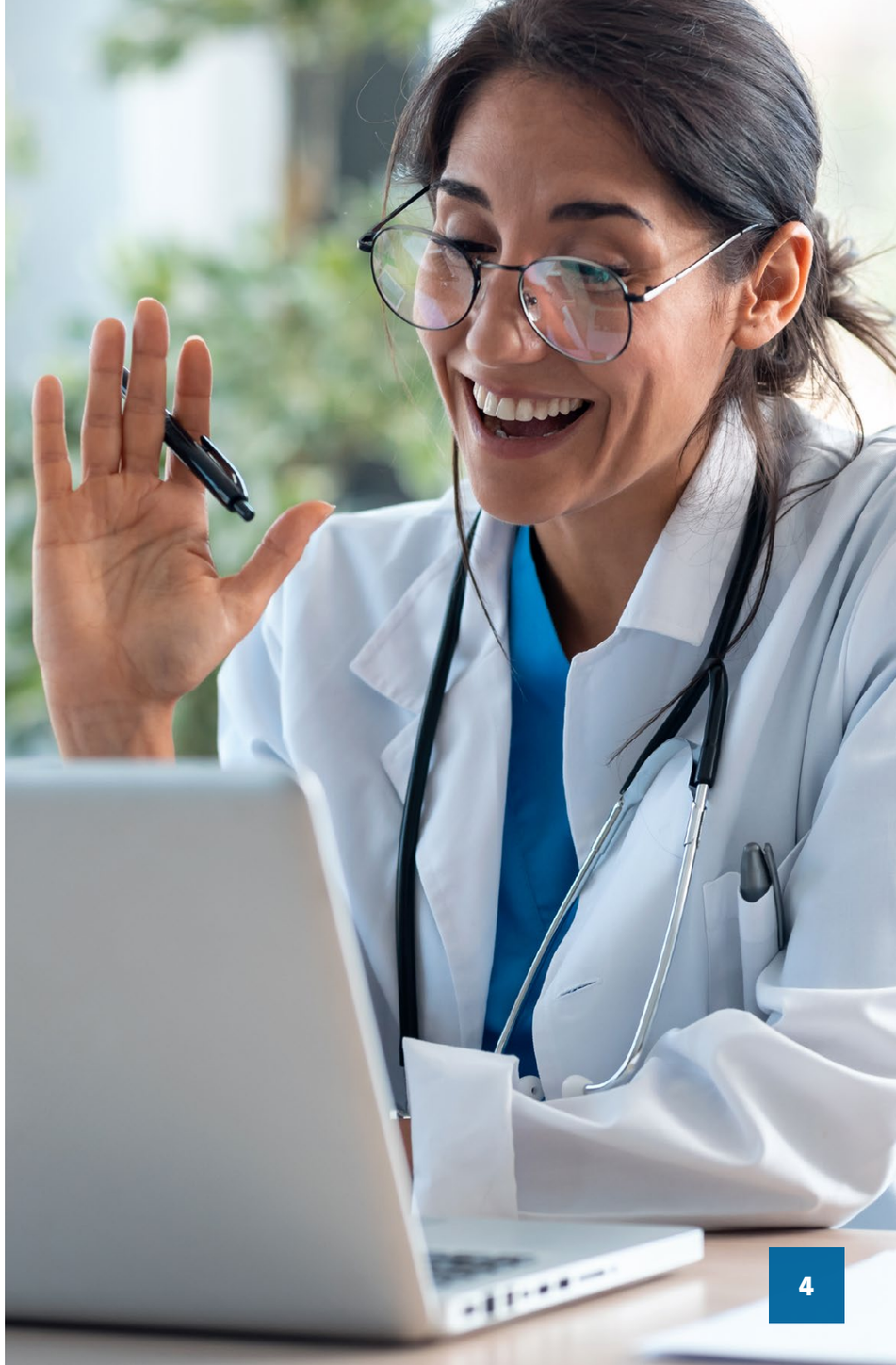
In August 2020, **39%** of incoming college students indicated they would prefer to stay at home and take all classes online, compared to **30%** who would prefer to return to campus.[1]

Frost & Sullivan forecasts a sevenfold growth in telehealth by 2025 – a five-year compound annual growth rate of **38.2%**.[2]

During the COVID-19 pandemic, **29%** of U.S. seniors ages 65 and older have used video conferencing services, **27%** have used telehealth/ remote consultation services, **22%** have used a grocery store delivery or pick-up service.[3]

With more U.S. consumers working at home, streaming consumption now accounts for **68%** of TV viewing vs. **28%** for traditional TV viewing.[4]

The mission of ensuring access to high-quality broadband service for everyone, regardless of where they live or what they earn, has never been more important.



Historic Opportunity

Policymakers at all levels now recognize the urgency of the moment. A historic broadband funding cycle is now underway at the local, state, and national levels. There is a growing bipartisan call for even more broadband infrastructure funding. Significantly more. As broadband service providers and individual communities look to leverage these opportunities for broadband access expansion, they should consider these important factors:

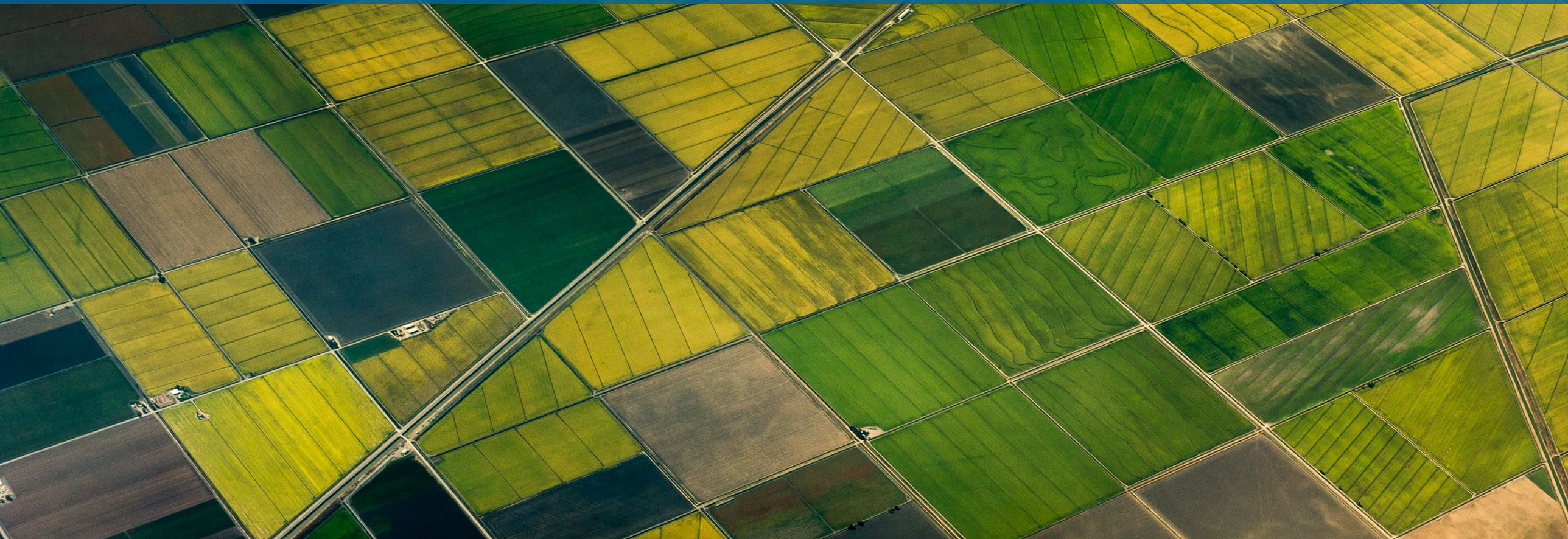
New proposed legislation accelerates the deployment plans while increasing the funding and upping the speed requirements. There will be more funding to come, including from state-run programs which offer better stewardship of the funds and more opportunities for local providers.

Think of these new broadband networks in terms of a **50 to 100** year investment. Building the right network now will save you from having to rebuild it again in **10 to 15** years.

Legislative actions are removing barriers on municipal networks and creating a resurgence in state broadband offices to better organize statewide broadband planning.

The broadband industry has a historic opportunity over the next ten years to lay the foundation for a technology infrastructure that can deliver high-quality broadband to everyone for the next 50 to 100 years. But only if we're smart with our investments and build for the long term.

Network Planning Considerations



Network Planning Considerations

There are important network planning considerations for service providers and communities. Building the network correctly is critical for long-term success. That success is best achieved through fiber broadband. Most of the cost of building a fiber network is the labor – up to 60%. So it's important to get it right the first time. It's essential to take all of these considerations seriously, as they can help ensure the appropriate network is being built in the most efficient way possible.
Other key considerations include:

Assess what you currently have before getting too far ahead. Having a comprehensive understanding of your current assets will serve you well to determine your true needs for the future.

- Assess your current network assets, including capacity, floor space, rights-of-way, ductwork, huts, substations, towers, trucks and other existing network elements. Understand what you currently have so you know what you need.
- Assess your stakeholder commitments and their level of desired involvement for planning and building the network of the future. Stakeholder commitment and involvement makes a difference in successful network planning and build-out.
- Assess your labor pool availability and skill set. Skilled labor for fiber broadband network construction and operation is scarce and at a premium.

Think big. Don't limit your planning to only what your current funding may support.

- Consider using government funding as foundational investment, complemented with private capital to build the right network that gives you the option to expand when the time is right.
- Don't box yourself in based on what you think you can afford. There are growing numbers of funding opportunities, so design the best network possible and find the funding for it.

Network Planning Considerations (continued)

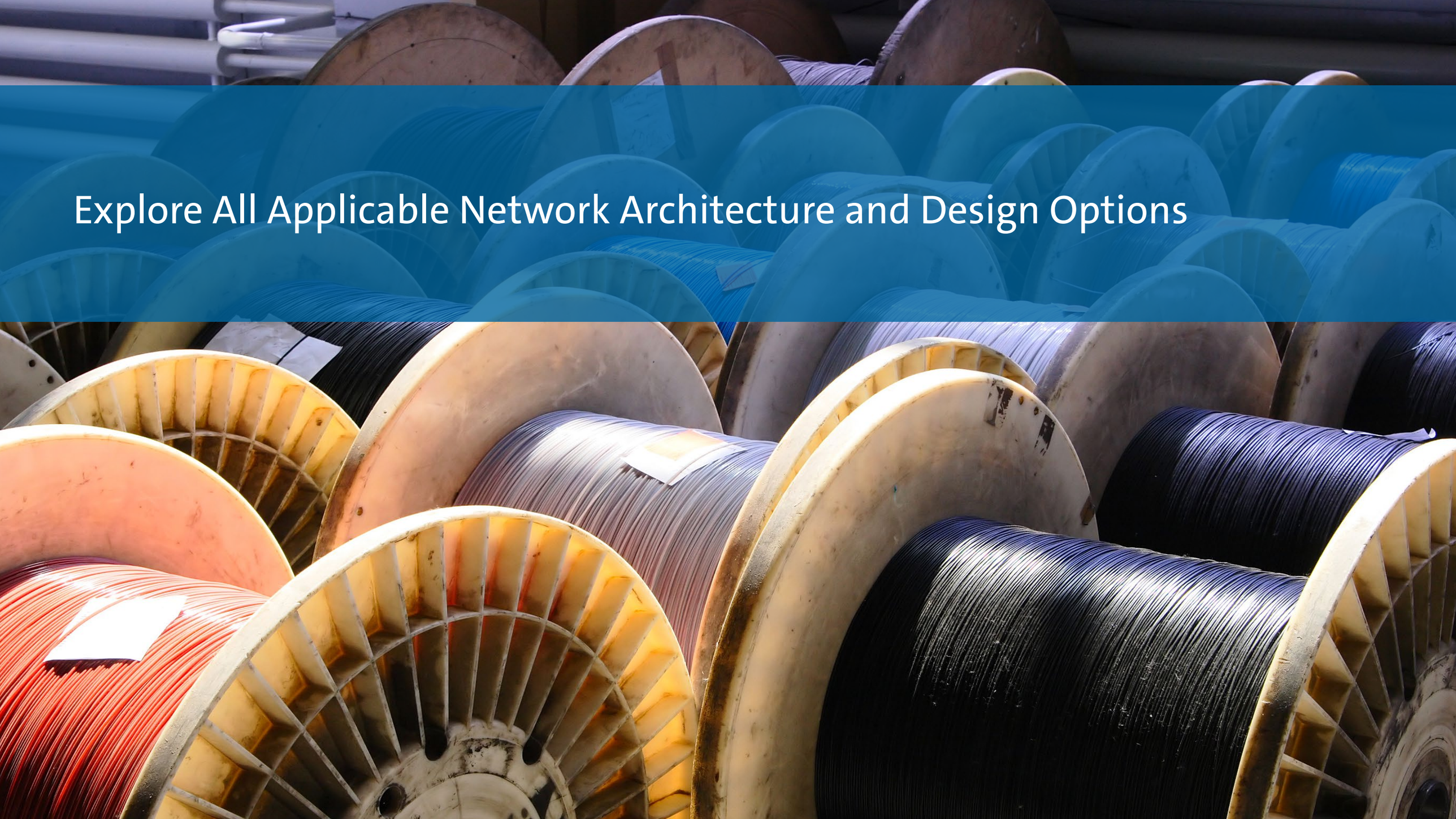
Determine the needs of the community to help shape the capabilities of the network.

- Different customer segments have different needs. Understanding your residential, business, and enterprise/wholesale customer segment needs will help determine the right capabilities for your network.
- Build the infrastructure that will support important community technology imperatives, including 5G, community Wi-Fi, and fixed wireless access for hard-to-reach locations.

Build your network with the customer experience (CX) in mind.

- The trend for faster speeds is accelerating with symmetrical gigabit now becoming the standard. Operators should strive to meet it.
- Building fast-and-cheap networks will often sacrifice the CX, with challenges in delivering what customers now expect from broadband.
- Customers will ultimately determine the success or failure of your network investment. Delivering the best CX helps the equation lean towards success.

Explore All Applicable Network Architecture and Design Options



Explore All Applicable Network Architecture and Design Options

There are a range of fiber network design and architecture options from which to choose, based on individual circumstances. Be aware of all of them.

Home run design is utopia – every home has its own strand. But is not the most practical in most rural deployments or affordable in all instances.

- Alternative architectures include:
  - Centralized split architecture is common and offers **1x16 or 1x32** splits at the fiber distribution point.
  - Distributed split architecture further splits fiber cables with a **1x4 or 1X8** split at the fiber terminal. This is an option where low take rates are expected, or very little growth is expected.
  - Distributed tap architecture uses unbalanced splitters, allowing operators to allocate power and capacity to locations along a single fiber. Good for very low density markets or landlocked locations.

Explore all product options and techniques.

- Research all your fiber cable options including loose fiber, ribbon cable, ADSS and others to meet your requirements. It's not a one-size-fits-all scenario. Know your options.
- Explore all techniques, including microtrenching and using microducts to improve your network build efficiency.
- The use of plug-and-play options featuring preconnectorized cables can save you time and help reduce the need for high-cost skilled labor.

Conclusion

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The confluence of the pandemic and the existing digital divide has led to a historic opportunity for the rural broadband industry. Closing the digital divide has become a priority with actual funding now being allocated to seriously address the issue once and for all. Rural broadband operators and rural communities should now plan to accomplish the task through building networks that will stand the test of time and enable the digital transformation that is now underway for everyone, regardless of where they live.

Sources

[1] Online Education Statistics, https://educationdata.org/online-education-statistics

[2] Telehealth set for 'tsunami of growth,' says Frost & Sullivan, https://www.healthcareitnews.com/news/telehealth-set-tsunami-growth-says-frost-sullivan

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[4] New Survey Shows 27 Percent of U.S. Households Plan to Cut Cable TV Subscriptions in 2021, https://www.businesswire.com/news/home/20210112005291/en/New-Survey-Shows-27-Percent-of[%E2%80%A6]U.S.-Households-Plan-to-Cut-Cable-TV-Subscriptions-in-2021


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