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Investing in Texas: Evaluating Prospects for Expanding Broadband Access

May 3, 2022

Roughly 2.5 million Texans still do not have access to the internet in their homes, particularly in deep rural areas and low-income households. Add in those lacking broadband, or high-speed internet, this number grows to nearly 7.4 million.

As state leaders search for innovative ways to bring these families online, the second report by the Center for Public Finance at Rice University's Baker Institute of Public Policy for Texas 2036's sponsored series *Investing in Texas* examines the benefits – and challenges – that come with expanding broadband to connect the millions of Texans currently unable to access this critical resource.

PROVIDER	HOW IT WORKS	PROS AND CONS
Digital Subscriber Line (DSL)	A digital subscriber line, or DSL, connects via a traditional copper telephone network	<ul style="list-style-type: none"> + Provides internet to customers who have telephone access + Uses existing established infrastructure - Operates at a slower speed for more remote customers - Transmits data over copper wires unintended for broadband speeds
Fiber	Fiber-optic lines consisting of hundreds of small strands of glass or plastic cables transmit data using pulses of light close to light speed	<ul style="list-style-type: none"> + Provides high-speed internet, aka broadband + Includes providers such as cable companies and electric cooperatives + Does not rely on electricity for fiber signals - Increased costs for expansion
Cable	Coaxial cables provide broadband service through the same method that delivers sound and video to television subscribers	<ul style="list-style-type: none"> + Provides service to customers with existing cable infrastructure + Positioned for cable companies to expand services - Delivers varying speeds depending on the type of cable modem, network and traffic load
Wireless	Data transmits wirelessly using radio waves and airwaves, such as connecting to a mobile cellular tower to a fixed location	<ul style="list-style-type: none"> + Offers broadband without having to connect lines to every house individually - Requires a line of sight of the transmission towers with unimpeded views without large hills or mountains
Satellites	Satellites, including geostationary high-orbit and low-Earth orbit devices, deliver internet access from more than 22,000 miles away or as close as 200 to 800 miles above earth's surface	<ul style="list-style-type: none"> + Suited for areas where access to traditional land-based networks is hard to reach or not cost friendly + Does not require land-based infrastructure - May need numerous satellites in orbit to keep costs accessible - Materializing low-Earth orbit satellite industry and accompanying policy framework

To download a copy of the report, visit www.texas2036.org/investing-in-texas.

A Closer Look: Low-Earth Orbit Satellites

A network of low-Earth orbit satellites that beam broadband signals into areas where residents are cut off from land-based connections could provide a new model to finally get Texans, mostly in deep rural areas, high-speed internet. The technology is in its early stages and is expensive, but it is backed by global powerhouses like SpaceX and Amazon.

THE NEED	THE PLAYERS	THE CASE STUDY
25% of Texans do not have broadband at home, including 10% without any internet access. Viability of fiber networks as solutions for rural communities declines as population becomes sparser. Low-Earth satellite internet is an ideal alternative.	SpaceX has launched more than 2,000 of what could be 40,000 Starlink satellites into orbit about 200 miles above Earth. Other companies launching similar ventures include Telesat, OneWeb and Amazon. Starlink's 500-pound devices offer higher internet speeds than the heavier, higher orbit satellites.	Last year, the Ector County Independent School District and the Permian Strategic Partnership teamed up with SpaceX to provide free internet service to 90 families in a community south of Odessa that didn't have high-speed internet with hopes to expand.

Closing the Digital Divide: Affordability

While the capabilities of the internet continue to grow and become necessary for connections to work, learning and health care access for many Texans remains out of reach. Affordability must remain a priority along with investing in various types of providers.

Lifeline: Eligible households may receive discounts of \$9.25 per month off the cost of telephone, broadband or bundled services through this telecommunications subsidy program. Texas has one of the lowest estimated take-up rates at only 10% of eligible households.

Affordable Connectivity Program: This recently created broadband subsidy program offers an additional discount of up to \$30 towards broadband service and a one-time discount of \$100 for a laptop, desktop computer or tablet for eligible low-income households.

Increase Market Competition: By promoting greater competition, broadband prices might be reduced for all households, making high-speed internet more accessible to low-income households.

Closing the Digital Divide: By the Numbers

2.5 million Texans didn't have any at-home internet access in 2019	The 2020 national average monthly rate for broadband services was \$70	In 2020, 29% of Texas households didn't have broadband	\$500 million in federal funding is available for rural Texas broadband projects	10% of Texas households use a satellite internet service provider
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Closing the Digital Divide: Financing

The right solution for government involvement calls for careful consideration of local impacts. Any measurement of the long-term benefits of land-based broadband infrastructure investment in rural communities must be evaluated against the prospect of the growing satellite broadband industry.

Land-Based Technology: Government incentives can reduce the fixed cost of expanding into rural areas. Examples include tax credits, subsidies, grants, low-interest loans and public-private partnerships.

Satellite Technology: Consumer subsidies and rebates could be an efficient allocation of government resources to expand broadband access and meet demand.

Infrastructure: With large, fixed costs of establishing infrastructure, grants and tax policy could encourage expansion, while subsidies to connect homes to networks could be an incentive for broadband providers.