2023 REPORT ON SCHOOL CONNECTIVITY
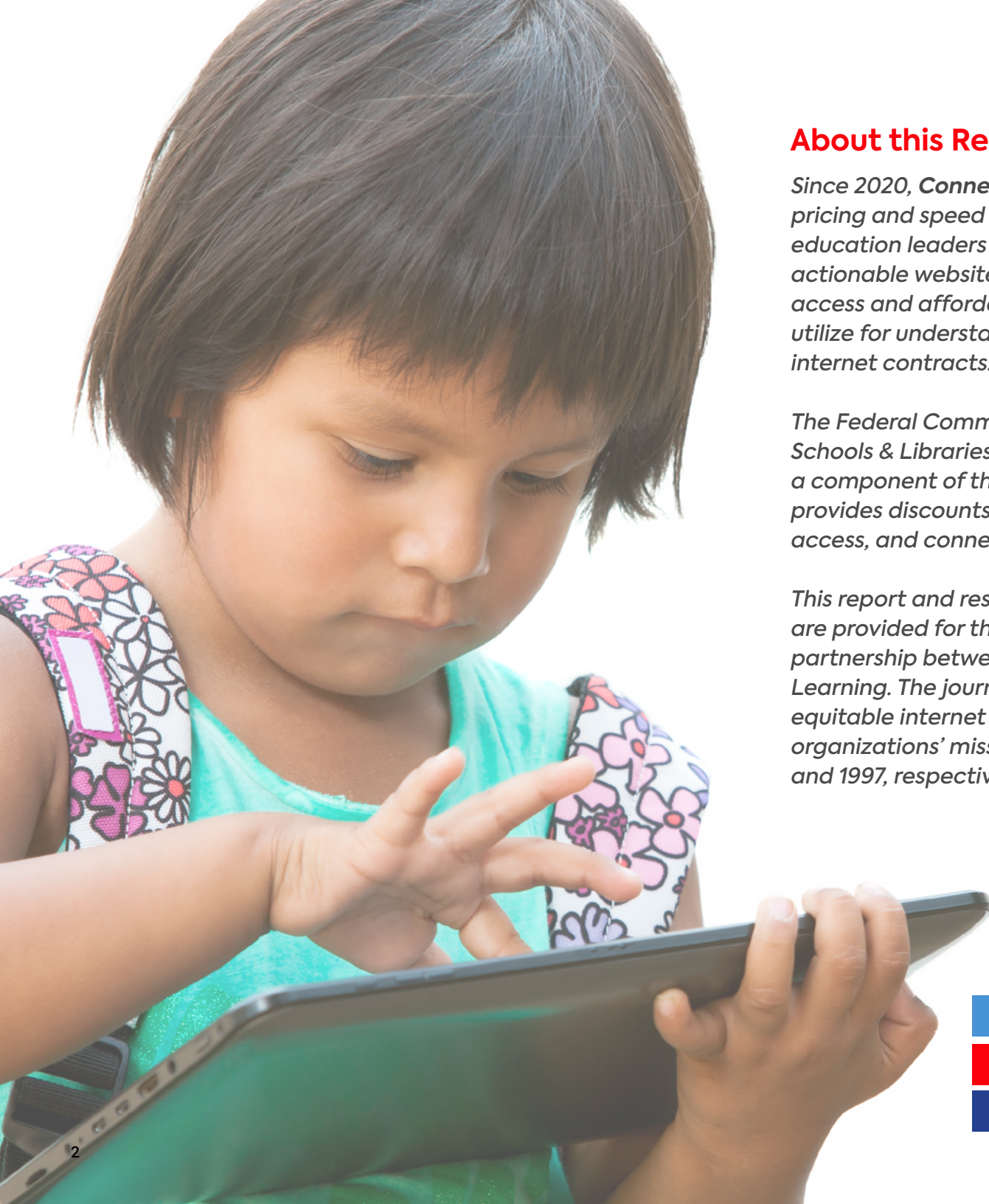
Equipping school leaders with the insight they need to enable immersive digital learning opportunities in **every classroom, every day**

CONNECT K•12

CONNECTED NATION

FUNDS FOR LEARNING
YOUR E-RATE GUIDES

About this Report

*Since 2020, **Connect K-12** has provided a free internet pricing and speed transparency resource for K-12 state education leaders across the United States. It is an actionable website that uses open E-rate data to provide access and affordability insights that school leaders can utilize for understanding the market when negotiating new internet contracts.*

The Federal Communications Commission's (FCC) Schools & Libraries Program, commonly called E-rate, is a component of the federal Universal Service Fund that provides discounts for telecommunications, internet access, and connectivity to eligible schools and libraries.

*This report and resources available at **ConnectK12.org** are provided for the public benefit at no cost through a partnership between Connected Nation and Funds For Learning. The journey to providing K-12 students with equitable internet access has been at the forefront of both organizations' missions since they were founded in 2001 and 1997, respectively.*

2

INTRODUCTION

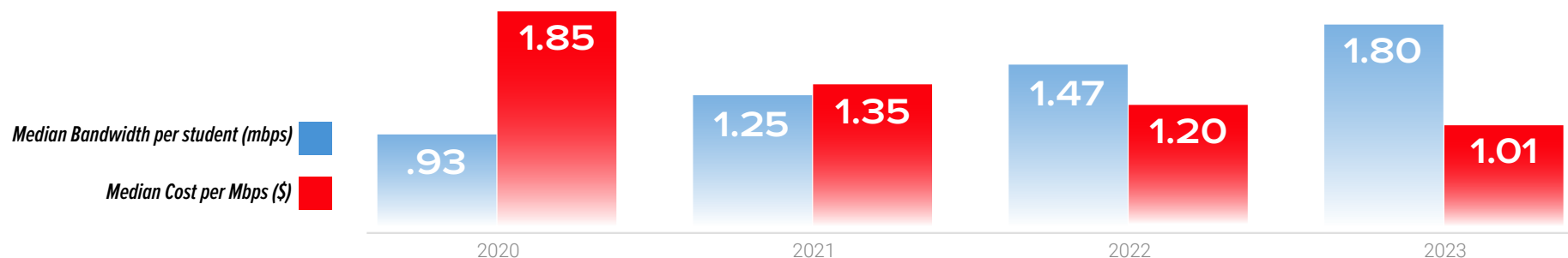## Celebrating remarkable progress during unprecedented times

The past decade has been marked by unprecendented challenges and opportunites for digital transformation in K–12 education. Today, the broadband landscape continues to thrive for education and the impact is inspiring. From virtual classrooms to interactive simulations, connectivity has provided opportunities for K–12 students across the nation.

The global pandemic tested the resilience of K–12 teachers, and administrators, and they emerged stronger even in the face of adversity. The pandemic not only transformed teaching; it also strengthened the need for school–to–home connectivity. We commend the school district and state leaders who have made the commitment to provide the access necessary to prepare America's students for our changing economy and digital ecosystem.

Today, over 9,500 public school districts across the nation are making the investment to provide students and teachers with *robust* internet connectivity. **This means that 74% of all districts are now meeting or exceeding the FCC's recommended bandwidth goal of 1 Mbps per student — an increase of 57.4% since 2020.**

We celebrate this remarkable progress because it means that 27.1 milion students now have the access necessary to participate in immersive digital learning opportunities in their classrooms every day.

Moreover, since 2020, trends show a steady increase in the median bandwidth per student achieved, alongside a steady decrease in the median cost per megabit (see graph below).

Median Bandwidth per student (mbps)
Median Cost per Mbps ($)

Year	2020	2021	2022	2023
Median Bandwidth per student (mbps)	.93	1.25	1.47	1.80
Median Cost per Mbps ($)	1.85	1.35	1.20	1.01

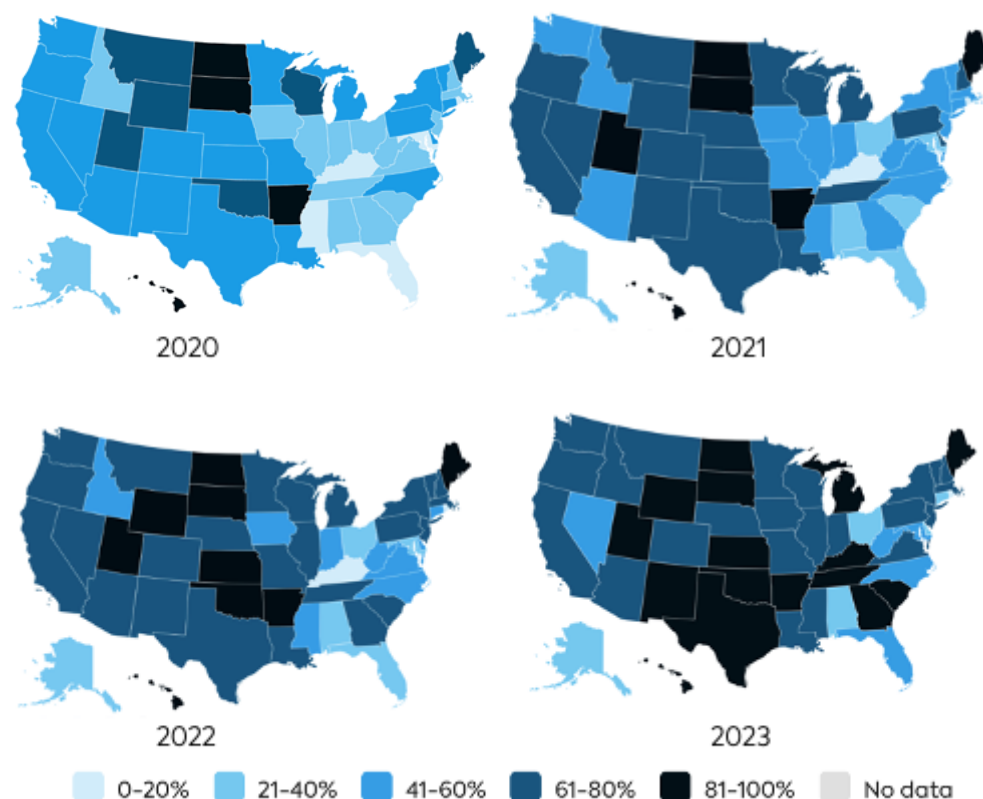# FCC recommended bandwidth of 1 Mbps per student

A review of the data on a state-by-state basis shows that **almost three-fourths of the school districts in 27 states are now meeting the FCC recommended bandwidth goal of 1 Mbps per student**. Sixteen of those states exceed that metric, with between 81% and 100% of their districts at or above 1 Mbps per student.

It's evident that state and school district leaders have prioritized increases in school bandwidth as digital learning technologies and applications have become more critical to classroom pedagogy. This inspiring progress should be celebrated!

Percentage of Districts by State Meeting the FCC's Bandwidth Per Student Goal, 2020–2023

2020

2021

2022

2023

0–20%   21–40%   41–60%   61–80%   81–100%   No data

A promising future for school connectivity

Looking ahead, we are energized by the prioritization of broadband access and affordability more broadly as a result of the passage of the bi-partisan Infrastructure Law. Under the Broadband Equity, Access, and Deployment (BEAD) Program alone, $42.45 billion will be invested to enhance broadband infrastructure across all 50 states and the five U.S. territories.

While BEAD will focus primarily on "last-mile" deployments to unserved and underserved locations, the broader telecom ecosystem (including transport and non-mass market services) will necessarily be enhanced as well. This is important because we know that bandwidth demand will continue to grow alongside technology adoption.

The COVID-19 pandemic has transformed our learning landscape, and it's imperative that high-bandwidth connectivity enables the ability to reach students no matter where they are—both figuratively and literally.

While there has been an increased emphasis in off-campus learning since the pandemic, the mobile learning devices that make it possible (e.g., Chromebooks, iPads, etc.) have also resulted in an increased demand on network utilization when those devices are at school. This has highlighted the need to continually improve school bandwidth. In today's classrooms, either virtual or in-person, teachers are using media-rich technology and platforms that require at least 1 Mbps per student.

While fewer than 3,330 of the nation's 12,911 districts are not yet meeting the FCC's student bandwidth goal, that number continues to decrease each year. We are confident that state and school district leaders will continue to make strides toward addressing these critical bandwidth needs, just as Kentucky and several other states have done in the past year.

With sincere gratitude

As we celebrate these achievements in K–12 school connectivity, Connect K–12's work will be coming to an end with the publication of this year's data. We deeply appreciate the funding support provided by EducationSuperHighway as a continuation of their legacy work in this space, and we are thrilled to have had the opportunity to assist so many states and districts in their journey toward better connectivity. Although we will no longer produce an official report, the ConnectK12.org website will remain live through the close of the Funding Year 2024 filing window, and connectivity and cost data will continue to be available for free on Funds For Learning's website.

In closing, we encourage you to embrace the power of connectivity in K–12 education, ensuring that every student is equipped with the tools they need to reach their potential. Connectivity enables a world of learning opportunities that previous generations could only imagine. Connected Nation is proud to be an advocate for learners everywhere, and though this program is ending, our efforts will continue in other ways. We invite you to join us on that journey as we work to achieve a brighter, more connected futre for all.

Respectfully,

Emily Jordan
Vice President Education Initiatives, Connected Nation
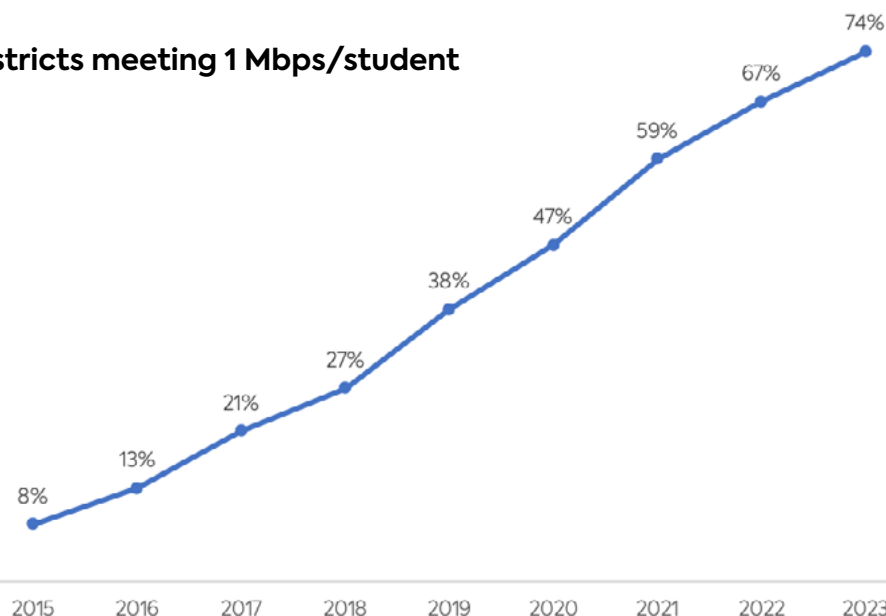
The race to 1 Mbps per student

74% of districts are now meeting the FCC's 1 Mbps goal — a 7 percentage point increase since 2022, when 67% of districts were meeting the goal. This equates to a 10% increase.

More impressively, the number of students impacted in districts that upgraded to 1 Mbps per student since 2022 increased by 34%.

In total, 9,573 districts are now providing adequate bandwidth to their classrooms every day — impacting 27.1 million students. **That's an increase of over 5 million students since 2022!**

But with approximately 54 million students in public schools nationwide, approximately half of them still lack adequate bandwidth to ensure they can access all available digital learning opportunities.

Districts meeting 1 Mbps/student

Values: 2015: 8%, 2016: 13%, 2017: 21%, 2018: 27%, 2019: 38%, 2020: 47%, 2021: 59%, 2022: 67%, 2023: 74%

Students meeting 1 Mbps/student

Values: 2015: 1.65M, 2016: 3.11M, 2017: 5.38M, 2018: 8.00M, 2019: 11.59M, 2020: 15.37M, 2021: 18.18M, 2022: 21.31M, 2023: 27.13M
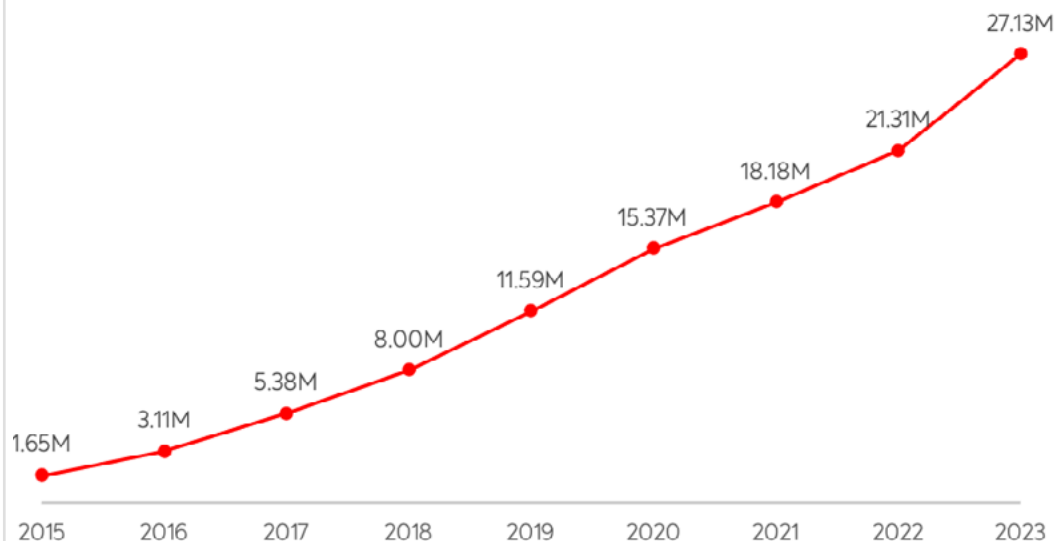
Prices continue to decrease, making upgrades more affordable.

The median cost per megabit across all schools has continued to drop to just $1.01. That's a 16% reduction in the median cost since the last E-rate cycle concluded in 2022, and represents less than a third of the median cost that districts were paying just five years ago in 2018.

School districts meeting or exceeding the FCC's 1 Mbps per student goal continue to pay less (on a per megabit basis) than districts not meeting the goal. **This year, the national median cost per megabit for districts meeting or exceeding the goal dropped to just $0.85**.

Districts that are not meeting the goal are paying well above that median price, at $1.55 per megabit.

Median cost per Mbps

2015	2016	2017	2018	2019	2020	2021	2022	2023
$11.70	$7.08	$4.80	$3.30	$2.26	$1.85	$1.35	$1.19	$1.01
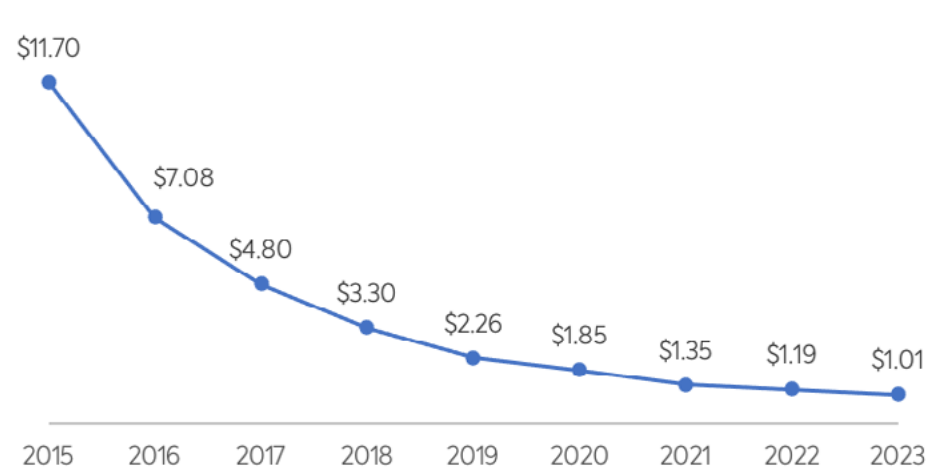
Meeting vs. not meeting 1Mbps/student

	2020	2021	2022	2023
not meeting 1 Mbps/student	$2.69	$2.00	$1.80	$1.55
meeting 1 Mbps/student	$1.19	$1.05	$0.97	$0.85
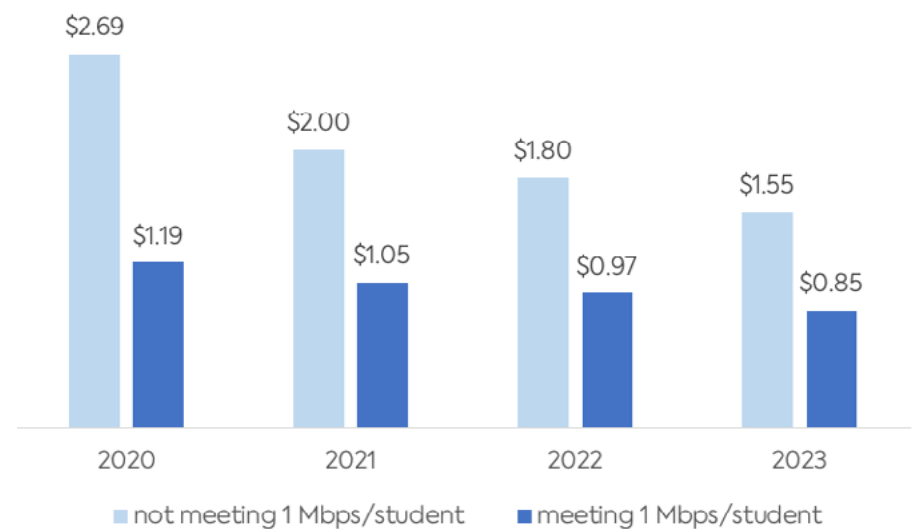
State by state progress.

In 2022, only nine states had achieved the delivery of at least 1 Mbps per student to at least 80% of their districts. Today, 16 states have attained that status—including the Commonwealth of Kentucky, which jumped from being ranked 49th of 50 states in 2022 to 5th in the country in 2023, with 97% of dsitricts now having access to bandwidth of at least 1 Mbps.

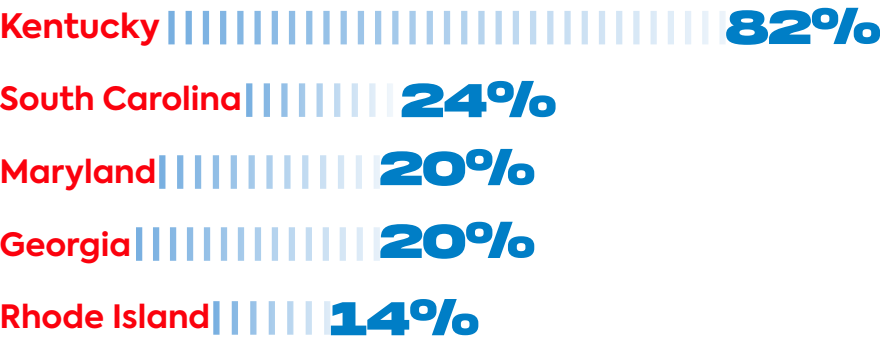Overall, the states to the right made the most significant progress toward achieving the delivery of 1 Mbps per student since Connect K–12's first reporting year in 2020.
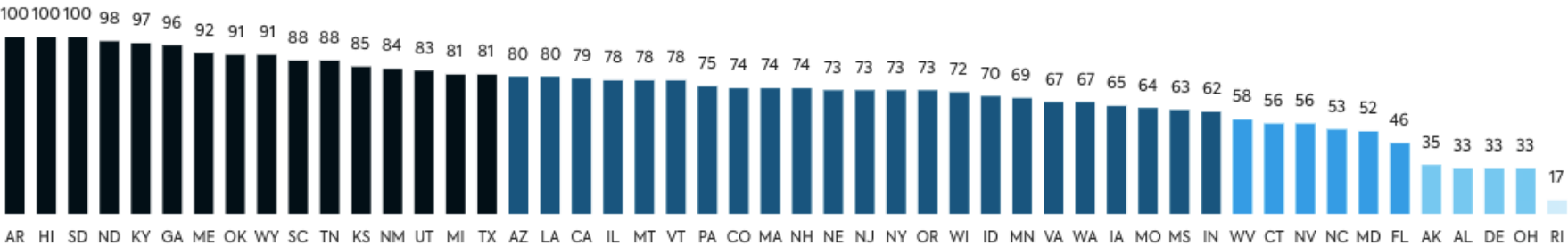
States that made the most progress

Kentucky **82%**

South Carolina **24%**

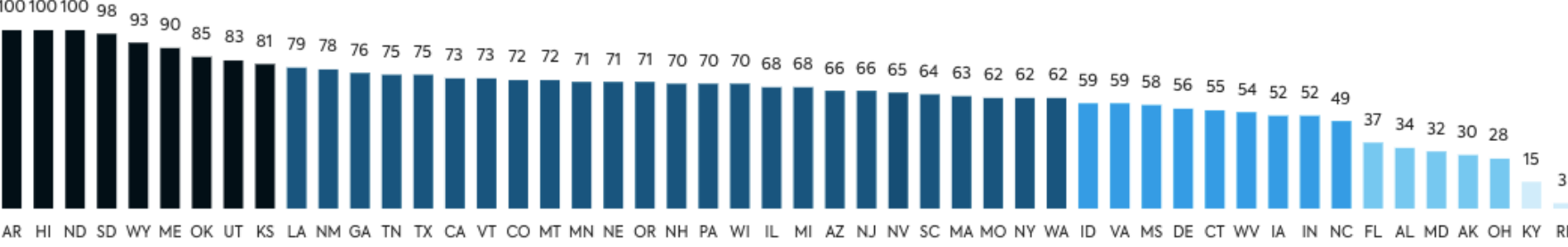Maryland **20%**

Georgia **20%**

Rhode Island **14%**

These percentages reflect the growth in the number of districts meeting the FCC's 1 Mbps goal since 2020.

Percentage of districts being served by at least 1 Mbps/student, ranked by state

2023

AR	HI	SD	ND	KY	GA	ME	OK	WY	SC	TN	KS	NM	UT	MI	TX	AZ	LA	CA	IL	MT	VT	PA	CO	MA	NH	NE	NJ	NY	OR	WI	ID	MN	VA	WA	IA	MO	MS	IN	WV	CT	NV	NC	MD	FL	AK	AL	DE	OH	RI
100	100	100	98	97	96	92	91	91	88	88	85	84	83	81	81	80	80	79	78	78	78	75	74	74	74	73	73	73	73	72	70	69	67	67	65	64	63	62	58	56	56	53	52	46	35	33	33	33	17

2022

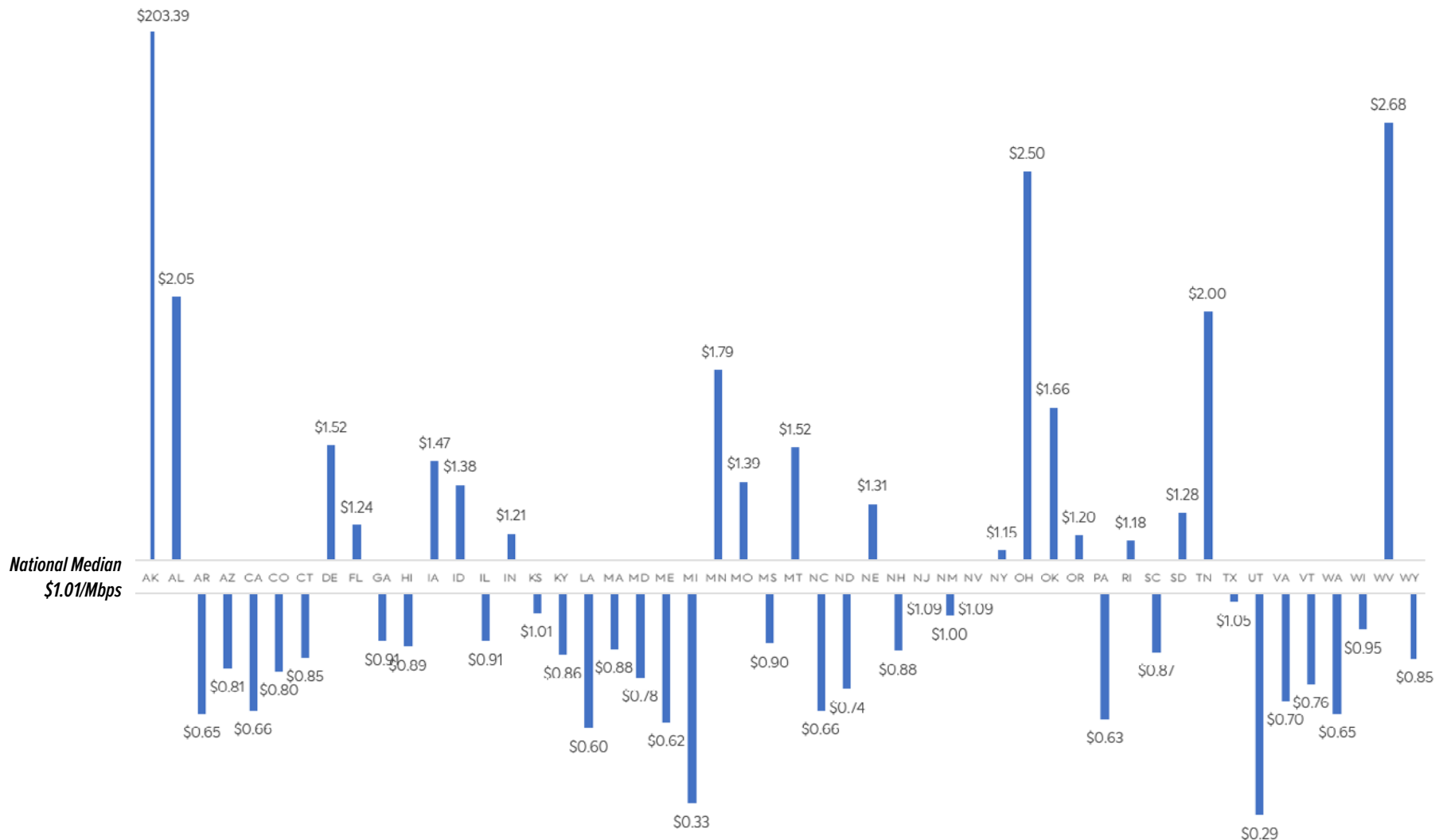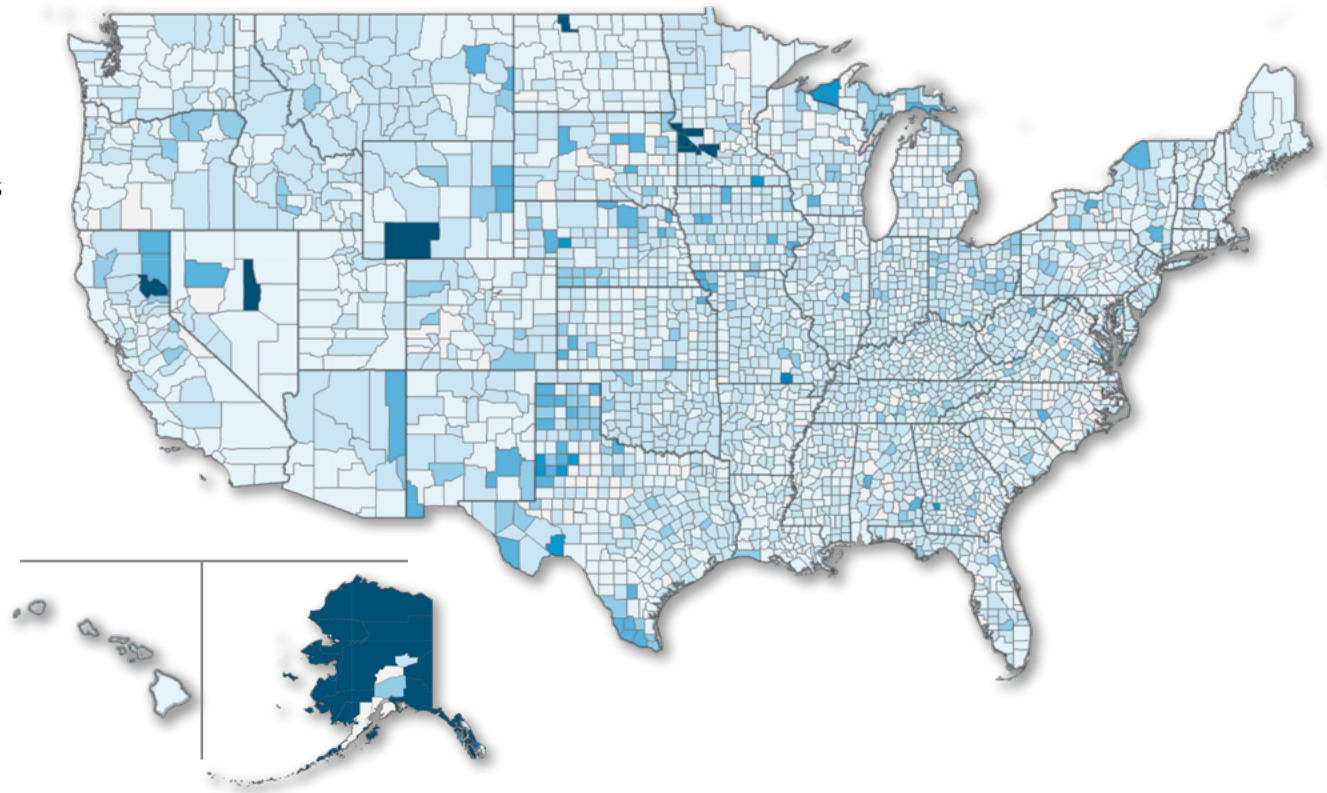| AR	HI	ND	SD	WY	ME	OK	UT	KS	LA	NM	GA	TN	TX	CA	VT	CO	MT	MN	NE	OR	NH	PA	WI	IL	MI	AZ	NJ	NV	SC	MA	MO	NY	WA	ID	VA	MS	DE	CT	WV	IA	IN	NC	FL	AL	MD	AK	OH	KY	RI
100	100	100	98	93	90	85	83	81	79	78	76	75	75	73	73	72	72	71	71	71	70	70	70	68	68	66	66	65	64	63	62	62	62	59	59	58	56	55	54	52	52	49	37	34	32	30	28	15	3

Yet cost varies widely across states and within states

Nationally, the price per megabit that school districts are paying for access varies greatly. On the high end, districts in Alaska pay a median $203.39 per megabit while in Utah, districts pay as low as $0.29 per megabit. This variance can be explained, in part, to the lack of competitive fiber-to-the-premises and fiber transport options.

Median cost per Mbps by state

National Median $1.01/Mbps

$203.39 (AK), $2.05 (AL), $0.65 (AR), $0.81 (AZ), $0.66 (CA), $0.80 (CO), $0.85 (CT), $1.52 (DE), $1.24 (FL), $0.91 (GA), $0.89 (HI), $1.47 (IA), $1.38 (ID), $0.91 (IL), $1.21 (IN), $1.01 (KS), $0.86 (KY), $0.60 (LA), $0.88 (MA), $0.78 (MD), $0.62 (ME), $0.33 (MI), $1.79 (MN), $1.39 (MO), $0.90 (MS), $1.52 (MT), $0.66 (NC), $0.74 (ND), $1.31 (NE), $0.88 (NH), $1.09 (NJ), $1.09 (NM), $1.00 (NV), $1.15 (NY), $2.50 (OH), $1.66 (OK), $1.20 (OR), $1.18 (PA), $0.63 (RI), $1.28 (SC), $0.87 (SD), $2.00 (TN), $1.05 (TX), $0.29 (UT), $0.70 (VA), $0.76 (VT), $0.65 (WA), $0.95 (WI), $2.68 (WV), $0.85 (WY)

Median cost per Megabit by county for district internet access

Legend:
- $20.00+
- $15.00 - $19.99
- $10.00 - $14.99
- $5.00 - $9.99
- $3.00 - $4.99
- $1.00 - $2.99
- $0.00 - $0.99

Highlighting the most costly areas for connectivity in the United States

Connect K–12's bandwidth and pricing data yields actionable intelligence not only for state and school district leaders, but also for policymakers at the state level to better understand how a lack of service competition and fiber transport infrastructure can broadly affect pricing.

Counties where school districts are paying significantly more than the national median cost per megabit are likely to have very limited fiber transport infrastructure and little last–mile competition. These are the areas where new federal broadband infrastructure dollars should be targeted.

The map above highlights the "hot spots" in the country where the price per megabit at the county level is significantly higher than the national median—indicating more widespread regional problems in relation to fiber competition, affordability, and network resiliency. The darker a county is shaded, the more costly connectivity is for that county's school districts (and likely, others). Areas such as the Texas panhandle, Michigan's Upper Peninsula, and certain pockets of the Upper Great Plains and Mountain West are among the most costly areas for connectivity today. Interestingly, costs have dropped significantly in the southeastern United States over the past few years.

About the report

The Report on School Connectivity tracks national progress toward the long-term K–12 student bandwidth goals established by the FCC in its 2014 E-rate Modernization Orders — namely, access of at least 1 Mbps per student (or 1 Gbps per 1,000 students). The report, published annually through 2023, highlights national and state trends related to school district internet bandwidth and pricing, with the goal of inspiring action at the state and local levels to drive upgrades that enable robust, engaging digital learning opportunities in every classroom, every day.

About the data

The figures and analysis in this report are based on 2023 application data from the FCC's School and Libraries Program (E-rate). It includes data from 12,911 public school districts that serve 54.9 million students across all 50 states.

$1.69 billion in funding from the E-rate program was requested on behalf of these 12,911 school districts in 2023. All E-rate applications are subject to review before funds are distributed, which ensures that school districts have accurately reflected their requested services. As a result, this data represents the best national source of current information on school district connectivity; specifically, what broadband services schools are buying, and how much they are paying for these services.

About CN & FFL

Connected Nation (CN) and Funds For Learning (FFL) partnered to lead and administer Connect K–12 in 2020.

CN is a nonprofit that, for 22 years, has been dedicated to improving lives by providing innovative solutions that expand access, adoption, and usage of high-speed internet and its related technology to all people. CN works with state leaders to identify and support school districts that need to upgrade their connectivity to meet the FCC's 1 Mbps per student bandwidth goal by 2024.

Funds For Learning® is a professional firm specializing in the federal E-rate funding program. FFL manages the technology platform and ensures that data in Connect K–12 is accurate and updated annually.

In October 2022, FFL launched E-rate Manager for Applicants, a free resource available to all E-rate stakeholders. Updated daily with the latest funding request data, E-rate Manager empowers E-rate coordinators and other decision-makers to easily view their organizations' complete funding history, monitor the status of current year applications and forms, and stay on top of important program deadlines. Applicants can register for instant access **here**.

Connect K–12 was created by EducationSuperHighway, a national nonprofit with the mission to close the digital divide for the 17 million households that have access to the internet but can't afford to connect. It focuses on America's most unconnected communities, where more than 25% of people don't have internet access.

CONNECTED NATION

FUNDS FOR LEARNING
YOUR E-RATE GUIDES

CONNECT K•12