



**Student Access to Technology and the Internet  
During COVID-19**

**Partnering with New Mexico's communities to provide quality,  
sustainable school facilities for our students and educators.**

**01000010 01110010 01101111 01100001 01100100 01100010**  
**01100001 01101110 01100100** 00100000 01101001 01110011  
00100000 01100001 00100000 01110100 01110010 01100001  
01101110 01110011 01101101 01101001 01110011 01110011  
01101001 01101111 01101110 00100000 01110100 01100101  
01100011 01101000 01101110 01101001 01110001 01110101  
01100101 00101110



SB 159 (2014) - Education Technology Infrastructure

SB 64 (2017) – Public School Capital Outlay Time Periods

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.

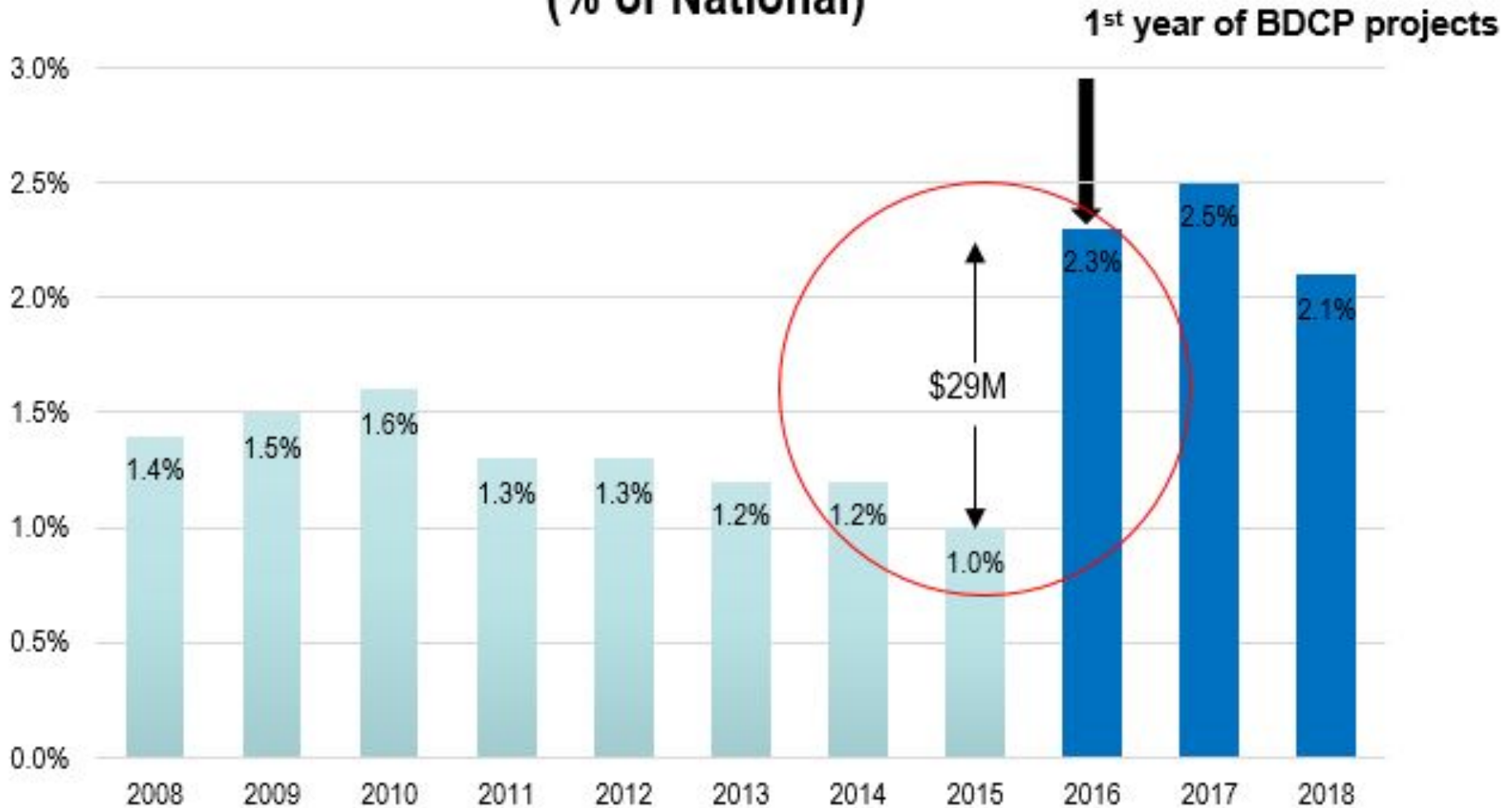


# Full Support

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



## NM Approved E-rate Funding (% of National)



Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



**270 (2016 - 2020)**

**~\$100M / 88% E-rate**

**Top 5**

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# 5 X

## Schools have adequate IA

7 Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



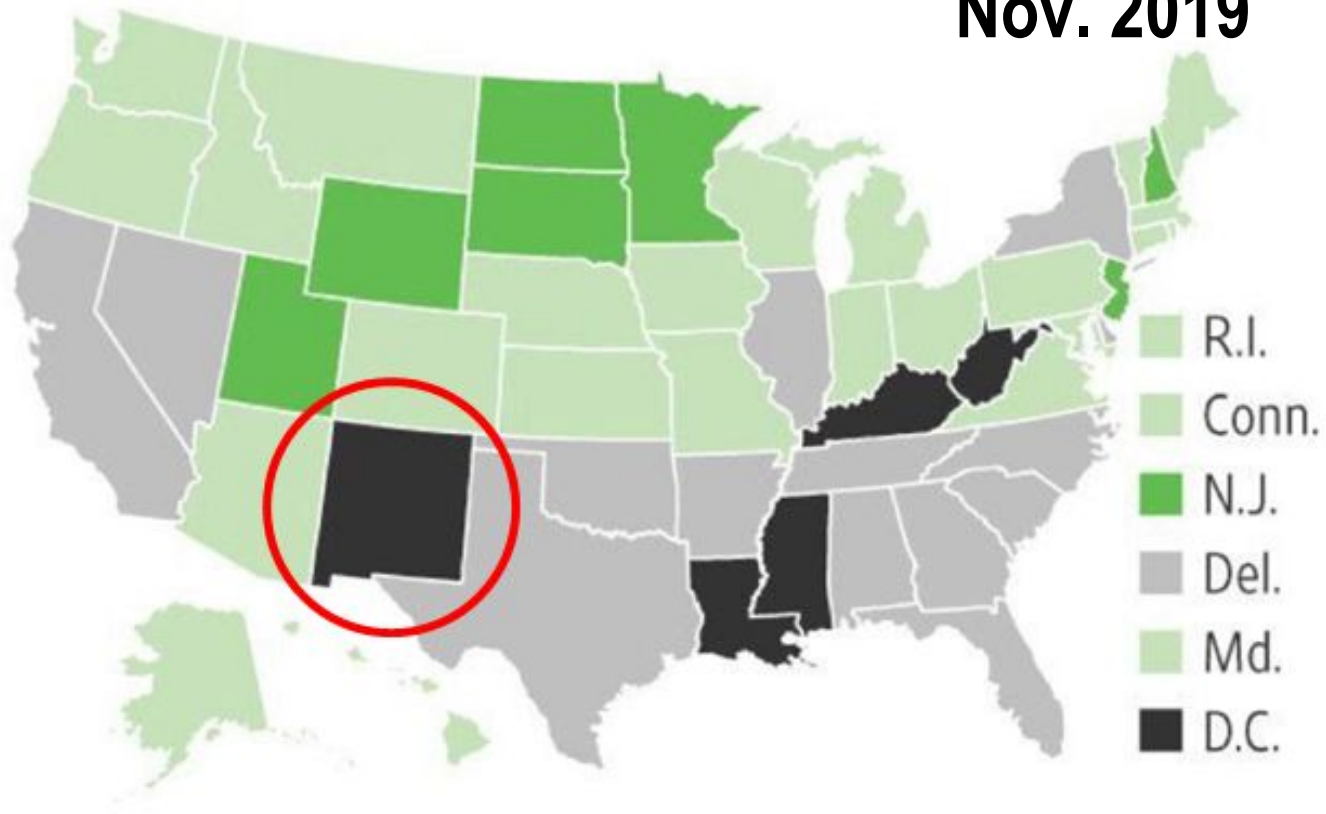
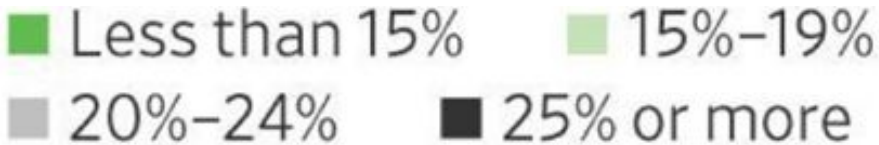
# Did not win the war

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.





# NM - 49th: LFC Broadband Report Nov. 2019



Source: EducationSuperHighway

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Technology



Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.

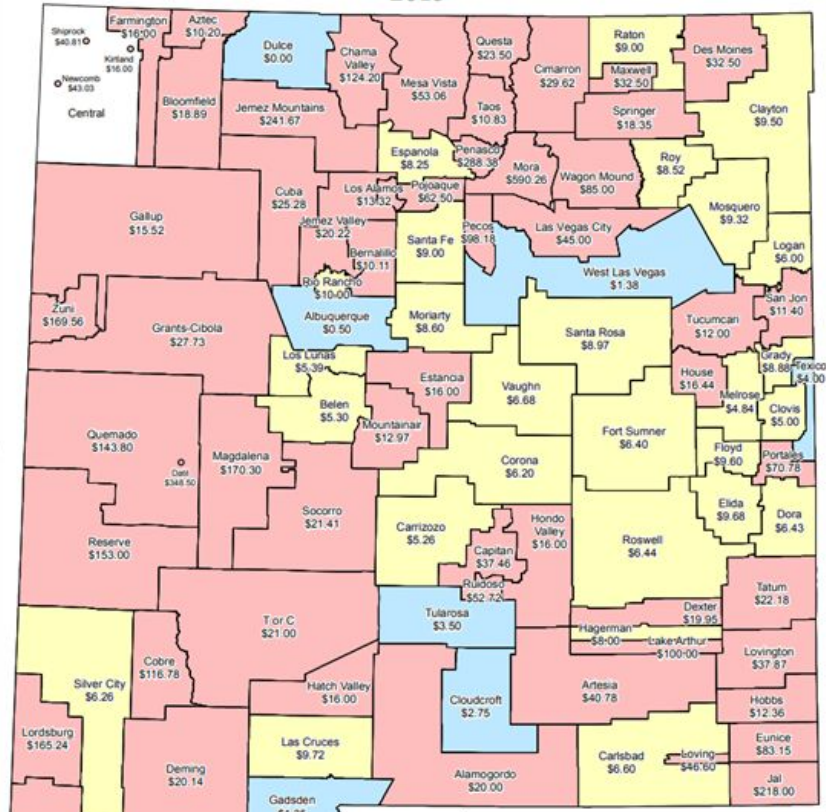


# Regional / Statewide Collaboration

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# ISP Cost by MBPS Per Month 2015



**School Districts**

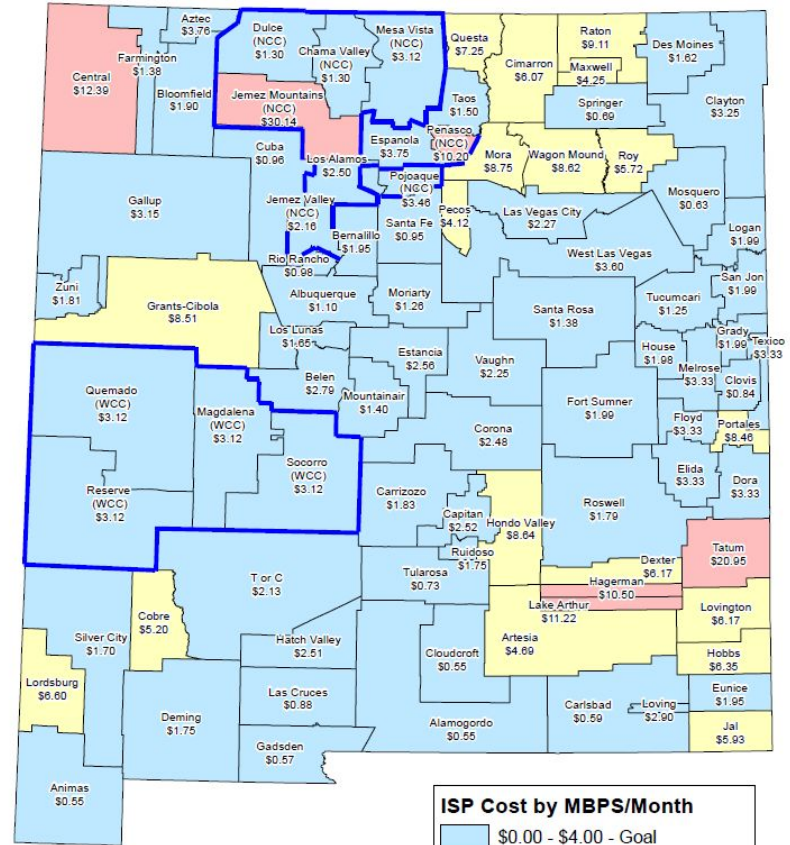
**ISP Cost by MBPS/month**

Blue	\$0.00 - \$4.00 - Goal
Yellow	\$4.01 - \$10.00 - Acceptable
Red	\$10.01 - \$591.00 - Unacceptable

**DRAFT**

Created 12/28/15  
By AM PSFA  
Sources: PSFA & BDCP

# ISP Cost By MBPS Per Month 2020



**ISP Cost by MBPS/Month**

Blue	\$0.00 - \$4.00 - Goal
Yellow	\$4.01 - \$10.00 - Acceptable
Red	\$10.01 - \$30.14 - Unacceptable

Created 5/25/20  
By AM PSFA  
Sources: BDCP

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Current and Future Challenges of Systemic Distance Learning

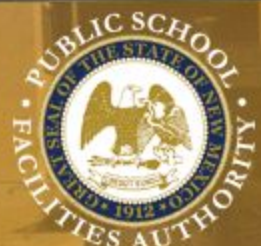


**Paul A. Romero**

Executive Director of Information Technology  
Rio Rancho Public Schools



Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Current and Future Challenges of Systemic Distance Learning

## Rio Rancho's Preparation and Response

### Pre-Pandemic

- Already working towards a “Future Ready” environment
- Working towards 1:1 technology deployment
- Already using distance learning tools (Google Classroom)
- Teachers and students familiar with the tools

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Current and Future Challenges of Systemic Distance Learning

## Rio Rancho's Preparation and Response

### Pandemic

- Data
  - Identify need vs want - access/devices
- More than 600 homes with inadequate or no internet access, varying access to devices, 1½ weeks to resolve
  - Sparklight internet service
  - Mobile hotspots (T-Mobile) for remote areas
  - Identify “one-offs”

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Current and Future Challenges of Systemic Distance Learning

## Key Factors

- Accessibility/Connectivity
- Sustainability
  - Funding 1:1 implementations
  - Device management and life cycle
- Ongoing technical support
  - Change from ticket based system to help desk staffed during non-business hours
  - Increased online resources (internal and external)

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.





# Current and Future Challenges of Systemic Distance Learning

## Key Factors

- Equity
  - Device and connectivity equity
- Working with all educational services
  - C&I, SPED, Health, Transportation, Food Service
- Social and emotional support
  - We are all human and learning can't happen if we are not safe, secure, and supported
- Privacy and security
  - External attacks increased 300%

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Current and Future Challenges of Systemic Distance Learning

## Common High Level Considerations

- Social Emotional Supports
- Data Security/PII - Cloud Filtering (LMS, Video Conferencing, etc.)
  - Staff/Student Preparedness
- Policy Considerations
- Educational services that are not conducive to distance learning (Special Education, etc.)
- Continuing delivery/provisioning of non-educational services

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.

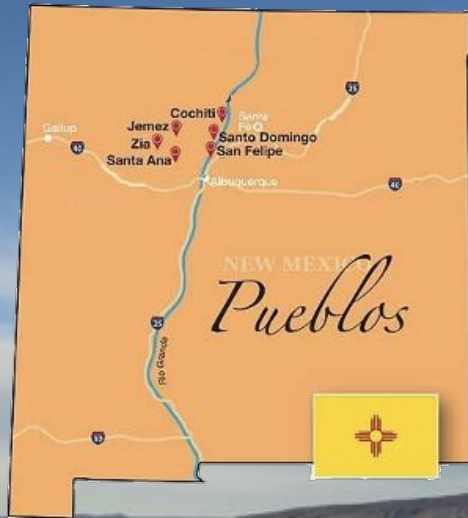


# State of Internet Service on Tribal Lands



- **People:** 41% of people living on tribal lands lack access to broadband, with the deficit jumping to 68% for those living in rural areas. (FCC, 2016)
- **Homes:** 65% of Home Internet rely on cell phones. (ASU, 2019)
- **Schools:** Bureau of Indian Education schools can pay significantly more than non-BIE schools in the same locations.  
*Ch'ooshgai Community School \$20,750/mo. vs. NM PED School District \$6,005/mo.*
- **Tribes:** In 2020, some tribal governments in New Mexico still connect with T1s (1.5 Mbps), or about 10% of a single LTE cell phone
  - Largely an issue of incumbent providers not building out on tribal land
- **The Digital Divide is now the Digital Chasm**

# Building on Previous Tribal Efforts



Middle Rio Grande Pueblo Tribal Consortium  
Jemez-Zia Pueblo Tribal Consortium

# 2015 Pueblo Beginnings



- Schools & Libraries: Very slow and expensive connections
- Tribal Libraries as critical community computing centers
- Only 1/2 Tribes had IT Departments
- Few Tribal libraries applying for E-Rate discounts



T1/Satellite

*San Felipe Library*  
*Santo Domingo Library*  
*T'siya Elementary School*  
*Jemez Day School*  
*Jemez Walatowa High School*



DSL

*Jemez Tribal Library*  
*Zia Tribal Library (Ethernet)*  
*San Diego Riverside*



LTE

**MY iPHONE**

*Cochiti Tribal Library*



Microwave

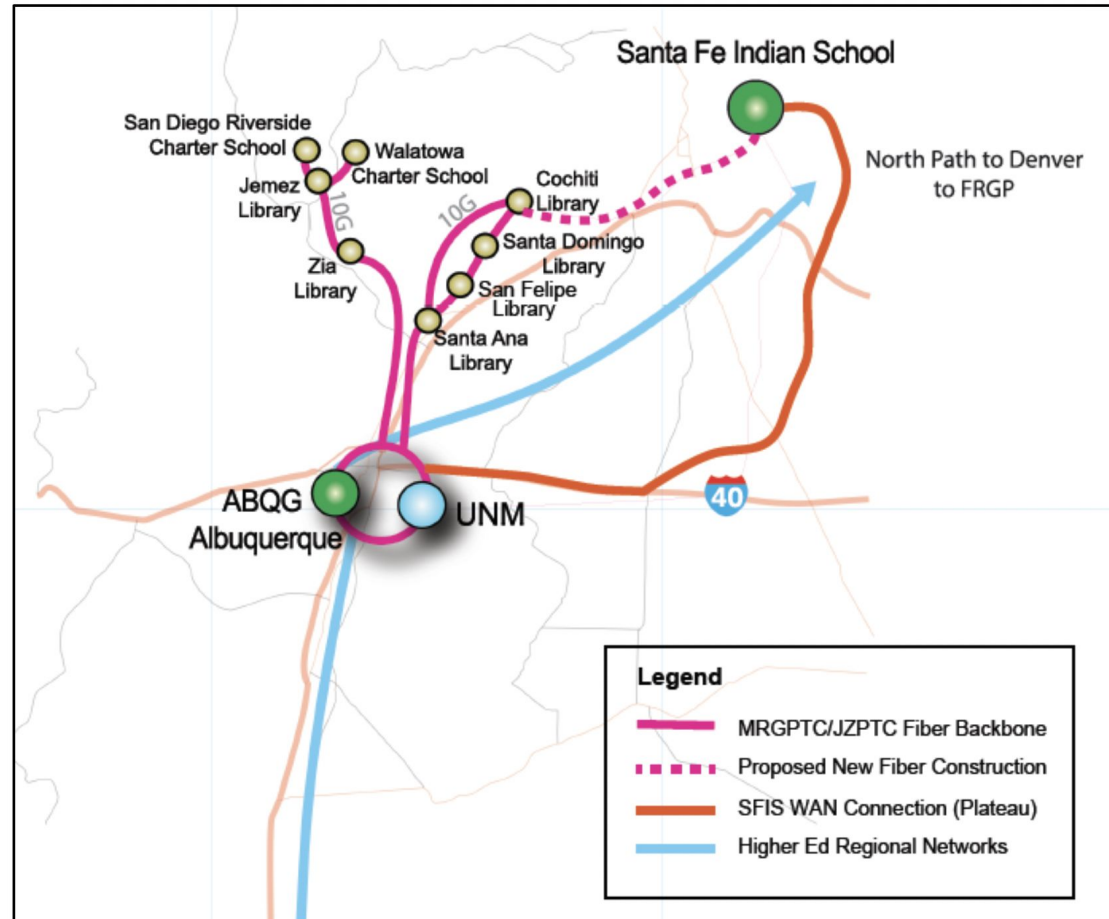
Shared w/Tribal Government

*Santa Ana Tribal Library*

# Project Approach



- Consortium- includes all school & libraries in a geographic area
- Aggregates Demand
- Economies of Scale
- Network Design: Aims for ABQG at 505 Marquette
- The ask: 95% E-rate Discount on \$8 million projects



# 2019 Project Outcomes



- With E-Rate: 30 Cents/Mbps
- Over 3000% faster/Up to 96% Cheaper
- Scalable: Can grow as needed
- Benefits of ABQG: Peering and Caching, Internet2
- Increased collaboration between schools and libraries
- 23 States have K-20 Education Networks but not NM
- ***New Tribal Investments to connect to Tribal Homes***

## New Speed per School/Library



# But that was before COVID-19.



- COVID-19 revealed the existing fault lines and put a face to the discrimination against students that aren't connected.
  - Lack of connectivity in homes is biggest student challenge
  - School-issued Chromebooks don't help w/o Internet
- LFC Report, "Learning Loss Due to COVID-19 Pandemic" (6/10/20)

Low income schools, students suffer most

- Internet factor
- Low-income schools underperform without established technology-rich teaching pedagogy and experience mobile technology

Figure XX. Average Months of Learning Lost if Schools Resume In-Class Schooling in January, 2021





# 2020 COVID-19 Tribal Responses



- Short-term, Mid-term, Long-term Actions
  - Federal funding focuses on hotspots and devices
- Short term - Rapid Response address urgent needs for students with Cellular Hotspots, Chromebooks
- Pro: Quick Fix
- Con: Very Expensive Band-aids



## Tribal Connectivity During COVID-19

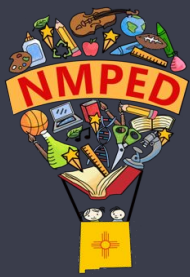
- Mid term -- Tribal WiFi hotspots at Libraries and Chapter houses. Emergency wireless network planning
- Pros: Can serve many students, reasonable cost/deployment time
- Cons: Hot/cold cars, transportation



## Tribal Connectivity During COVID-19

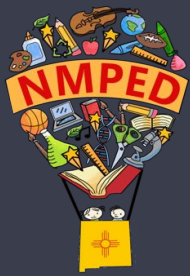
### COVID-19 Notwithstanding

- Long term – Residential Internet access through the creation of permanent tribal networks that utilize the fiber backhaul
- Addressing connectivity for all tribal schools, including BIE controlled schools
- State Education Network



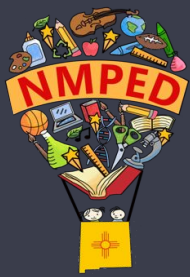
# Addressing Navajo Broadband

- E-Rate application for fiber in two states to create unified network for Dine Education
- 380 new miles of fiber with DoIT providing a state match of 5% for the \$47 million E-Rate build
- Working on ensuring fiber connectivity for BIE controlled schools
- Collaboration between multiple groups including PED, SFIS, DoIT, and IAD



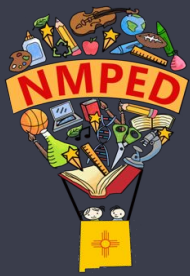
# Addressing the Homework Gap

- Mobile hotspots
- Chromebooks
- WiFi hotspots using cellular technology
- Service providers have stepped up all around the state



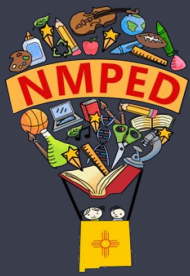
# Addressing the Homework Gap

- Free WiFi spots have been mapped
- Still need better home access for students and teachers
- We still have urban connectivity deserts in areas of our urban areas
- Local Exchange Carriers are leading the way to provide better coverage, including fiber to the home



# Need for technology planning

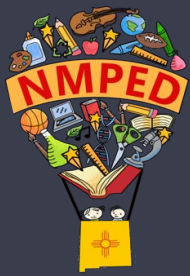
- More than broadband and devices
- Engage teachers, administrators, parents, and community
- Provide professional development for teachers to make the best use of technology
- Technology planning such as Future Ready is also about changing the culture in schools to adapt to change



# Collecting data

- The Council of Chief State School Officers (CCSSO) partnered with EducationSuperHighway, a national nonprofit, and the State Educational Technology Directors Association to develop guidelines for Digital Equity Data Collection
- This is a blueprint for state education leaders about how to conduct a high-quality, student-level data collection in assessing the state's digital divide.





# Collecting data

- Establishing a set of standards for the collection of student home access data will provide districts, and in turn the state, the ability to identify whether:
  - A student has access to connectivity or a device at home;
  - Is the connectivity the sufficient enough to allow the student to be engaged in online learning.
- Data points include devices, device ownership, and if devices are shared in a household
  - This data can help PED, districts, and charter schools identify and target students in of need support

# Obstacles:

- Low population density
- Lack of existing infrastructure
- **Deficit of Expertise**
- Lack of Funding

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Windows of Opportunity

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Path Forward:

- State vision
- Leadership
- Clear Goals
- Dedicated / specialized staff
- Some funding
- Accountability

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



# Final takeaway

## Statewide Broadband and (Ed)Tech Deficiencies Correction Program

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.

