

Department of Information Technology Broadband Update

August 17, 2020

Prepared for:

New Mexico Science Technology and Telecommunications Committee (STTC)

Presented by:

John Salazar, Cabinet Secretary and State CIO

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NM DEPARTMENT OF

INFORMATION
TECHNOLOGY



Agenda

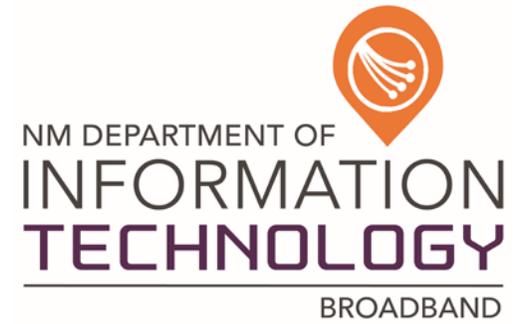
Overview

Rural Broadband
Assessment

Mapping

Strategy

DoIT Rural Broadband Assessment and State Broadband Strategic Plan Report:
https://www.doit.state.nm.us/broadband/reports/nmbbp_strategic20200616Rev2Final.pdf



Presentation Overview

Criticality of Broadband



Economics



Education



Health



Public Service



Political and Civil
Engagement



Public Safety



Telework



COVID-19
Response

Rural Broadband Challenges

- ▶ **Availability** of Broadband in Unserved Rural Areas
 - New Mexico Requires Federal Funding to Expand Broadband Infrastructure
- ▶ **Affordability** of Broadband at Home for Students
 - Percentage of K-12 Students Qualifying for Free and Reduced Meals in Public Schools:
 - Before COVID-19: 71.27%
 - As of May 31, 2020: 76.26%

Upcoming Broadband Projects

Estimated \$154.2 Million



\$58.2 Million in Developing DoIT Projects: Navajo Nation Federal E-rate Project (PED Partner), Sierra County Federal USDA Reconnect Project, and Pueblo of Cochiti State Fiber Project



\$23 Million in Federal USDA Reconnect Funds Awarded in May 2020 to: Plateau (Clovis), Penasco Valley Telecommunications (Artesia), and Pueblo of Acoma



\$5 Million Per Year in Public Regulation Commission Infrastructure Grants (Awards Forthcoming in December 2020)

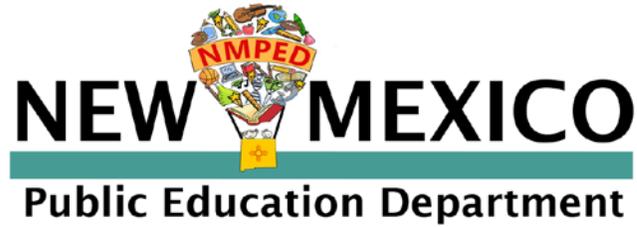


\$68 Million in Navajo Nation Federal CARES ACT Funding Approved for Various Broadband Projects

NM Homework Gap Team

*Supporting Home Connectivity
for Students*

NM Broadband Program Map:
<https://nmbbmapping.org/mapping/>



Hot Spots: Acquiring and Mapping
Public Wi-Fi Hot Spot Locations



Mapping Pilot: Identifying Unserved
Students at Home



Devices: Purchasing and Distributing
Devices to Students

DoIT's Response to COVID-19

Customer Focused



Added COVID-19 Focus to Broadband Strategy



Enabled Teleworking for State Employees:
Purchased and Deployed Thousands of Devices
and Provided New Software Products



Increased Network Bandwidth Capacity



Implemented a New Contact Tracing System



Provided Call Center Functionality



Rural Broadband Assessment

Completed June 2020

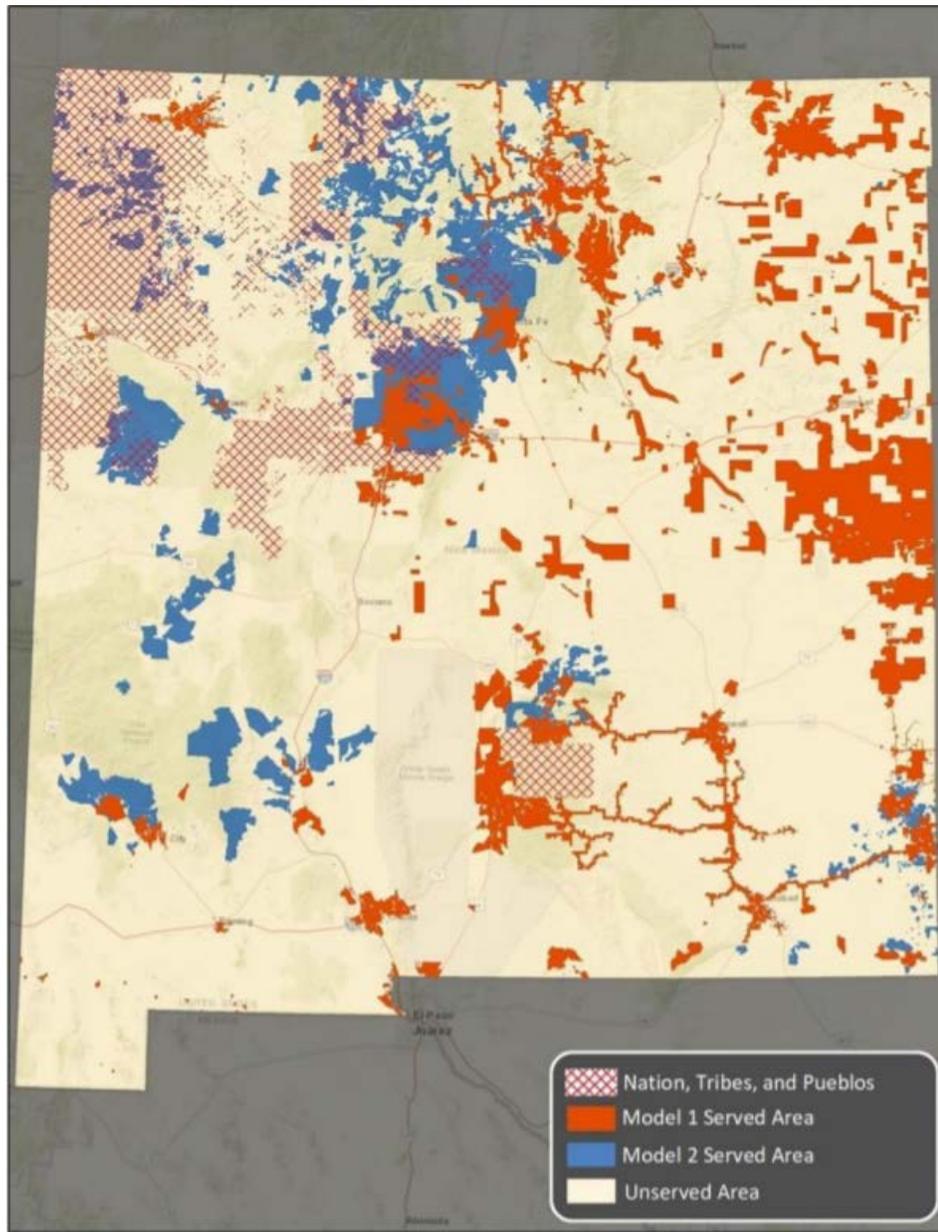
DoIT Office of Broadband

High Level Findings

Between 13% to 20% of NM Homes and Businesses Do Not Have Broadband Available

Model 1: This model suggests 196,000 locations are unserved and excludes fixed wireless and copper phone line DSL technologies.

Model 2: This model suggests 126,000 locations are unserved and includes fixed wireless and DSL despite their technical challenges.



Strategy for Identifying Unserved Residents and Businesses



Overlaid Agency Internet Service Provider, E-911, and Population Density Data with Federal Form 477 Data



Used Machine Learning and Expert Engineering Analysis to Predict Expansion Needs

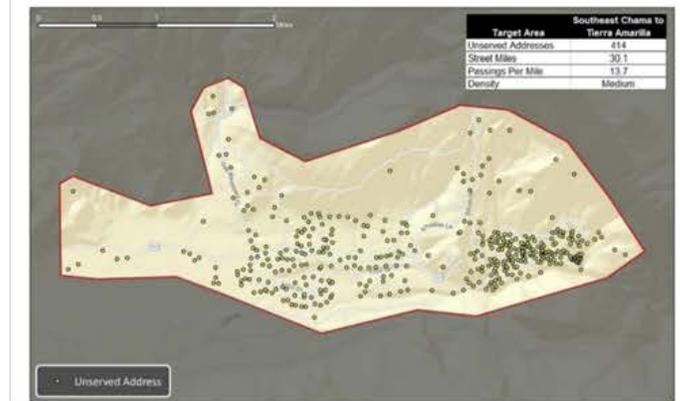
Clustered Analysis

Figure 24: Example of a Low-Density Unserved Model 1 Area—South Greater Tucumcari



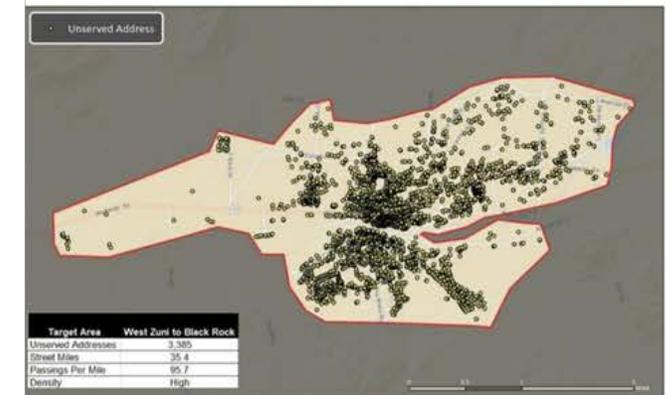
Low-Density

Figure 23: Example of a Medium-Density Unserved Model 1 Area—Southeast Chama to Tierra Amarilla



Medium-Density

Figure 22: Example of a High-Density Unserved Model 1 Area—West Zuni to Black Rock



High-Density

Costs of Unserved Passings in Low-Density Areas by County

Models 1 and 2

Slide 1 of 2

County	Unserved Passings Outside Target Areas	Street Miles	Passings Per Mile	High Estimate	Low Estimate
Bernalillo	4,491	931.5	4.8	\$102,316,467	\$41,438,561
Catron	5,298	2,760.2	1.9	\$286,827,000	\$115,335,000
Chaves	577	1,485.1	0.4	\$149,683,000	\$59,939,000
Cibola	5,135	2,540.1	2.0	\$264,489,000	\$106,381,000
Colfax	6,045	931.5	4.8	\$132,375,000	\$53,639,000
Curry	375	2760.2	1.9	\$19,569,000	\$7,870,000
De Baca	393	1485.1	0.4	\$88,779,000	\$35,557,000
Doña Ana	8,031	2540.1	2.0	\$140,485,000	\$57,110,000
Eddy	1,555	1200.4	5.0	\$117,278,000	\$47,089,000
Grant	1,762	188.0	2.0	\$96,984,000	\$38,994,000
Guadalupe	658	879.8	0.4	\$95,136,000	\$38,129,000
Harding	190	1241.0	6.5	\$46,272,000	\$18,530,000

Costs of Unserved Passings in Low-Density Areas by County

Models 1 and 2

Slide 2 of 2

County	Unserved Passings Outside Target Areas	Street Miles	Passings Per Mile	High Estimate	Low Estimate
Hidalgo	1,185	1141.1	1.4	\$102,975,000	\$41,325,000
Lea	2,061	933.9	1.9	\$153,712,000	\$61,720,000
Lincoln	1,789	937.9	0.7	\$105,641,000	\$42,460,000
Los Alamos	388	458.8	0.4	\$9,354,000	\$3,786,000
Luna	1,895	1005.6	1.2	\$181,240,000	\$72,712,000
McKinley	4,458	1495.1	1.4	\$150,241,000	\$60,605,000
Mora	741	1019.9	1.8	\$38,551,000	\$15,505,000
Otero	3,075	85.6	4.5	\$225,883,000	\$90,704,000
Quay	555	1773.7	1.1	\$51,274,000	\$20,573,000
Rio Arriba	2,795	1411.5	3.2	\$161,174,000	\$64,788,000
Roosevelt	763	370.4	2.0	\$104,704,000	\$41,969,000
San Juan	9,009	2196.1	1.4	\$156,867,000	\$63,774,000
San Miguel	9,945	501.4	1.1	\$152,265,000	\$62,040,000
Sandoval	11,440	1554.7	1.8	\$311,600,000	\$125,944,000
Santa Fe	11,490	1031.5	0.7	\$161,240,000	\$65,806,000
Sierra	2,990	1384.9	6.5	\$119,695,000	\$48,219,000
Socorro	2,861	1319.8	7.5	\$224,828,000	\$90,258,000
Taos	514	2882.6	4.0	\$41,018,000	\$16,466,000
Torrance	1,833	1378.0	8.3	\$103,326,000	\$41,540,000
Union	961	1136.0	2.6	\$112,475,000	\$45,100,000
Valencia	4,269	2189.9	1.3	\$99,678,000	\$40,358,000

\$2-\$5 Billion Model (Fiber Optics)

To All Unserved Locations

Unserved Model00	Density of Locations	Number of Locations	Total Cost by Density	Total Cost
Model 1 (196,000 unserved)	Fiber to clustered premises	87,000	\$332 million – \$806 million	\$1.9 billion – \$5.1 billion
	Fiber or fixed wireless to widely spread-out premises	109,000	\$1.6 billion – \$4.3 billion	
Model 2 (126,000 unserved)	Fiber to clustered premises	50,000	\$236 million – \$576 million	\$1.7 billion – \$4.3 billion
	Fiber or fixed wireless to widely spread-out premises	76,000	\$1.5 billion – \$3.7 billion	

\$1 Billion Hybrid Model (Fiber/Fixed Wireless)

To Most Unserved Locations

Unserved Model	Technology Approach	Number of Locations	Total Cost by Technology	Total Cost
Model 1 (196,000 unserved)	Fiber to clustered premises	87,000	\$330 million – \$800 million	\$490 million – \$1 billion
	Fixed wireless to areas outside clusters with towers	67,000	\$155 million – \$185 million	
	Future technology	42,000	TBD	
Model 2 (126,000 unserved)	Fiber to clustered premises	50,000	\$240 million – \$580 million	\$400 million – \$780 million
	Fixed wireless to areas outside clusters with towers	45,000	\$165 million – \$200 million	
	Future technology	31,000	TBD	

Key Assessment Recommendations



Fiber to the Premises in the Relatively Closely Clustered Areas



Fixed Wireless Outside those Clusters on Existing Towers that can Serve Five or More Premises



Addressing Most Widely Spread-Out Areas in a Future Stage, Potentially Using Satellite or Other Emerging Methods of Broadband Delivery

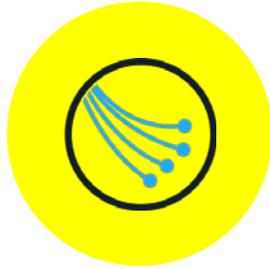


Fund and Enhance Support Capabilities within the Office of Broadband



Create a State Grant Program and Support Federal Funding Opportunities

Prioritize Long-Term Technologies



Fiber-Based Rural Solutions for
Longevity, Impact, and Long-Term Value
for Money



New Fiber and Wireless Networks
Over Ongoing Support for Legacy
Copper Networks

Federal Broadband Programs Have Mixed Results in New Mexico



Due to Flaws in FCC
Programs and Mapping



Better Results When DoIT
had Opportunity to Develop
Strategy

Federal Funding Opportunities to Leverage

In Order of Magnitude

DoIT 2020 Funding Guide: URL:
https://www.doit.state.nm.us/broadband/reports/federal_broadband_funding_guide-202006.pdf

CARES ACT

FCC RDOF - Rural Digital Opportunity Fund

USDA Reconnect Program

FCC E-rate for Schools and Libraries Program

FCC Healthcare Connect Program

USDA Community Connect Program



Broadband Mapping

Office of Geospatial Technology

NM Broadband Program Mapping

Availability: By
Technology Type and
Provider

Community Anchor
Site Assessment:
Public Facilities

Structures: Address
Points

Telecom Resources:
Towers

Boundaries: County
and Tribal

Tools: Map Maker,
Map Measure and
Speed Tester

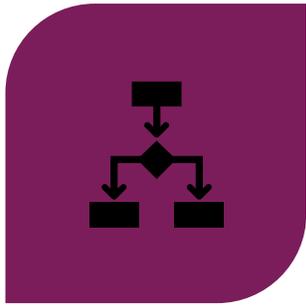
Software Demo: <https://nmbbmapping.org/mapping/>



Strategy

DoIT Office of Broadband

Next Steps



Increase Office of
Broadband Support
Capabilities



Pursue Model 2 Hybrid
with Fiber/Fixed Wireless
– Most Affordable and
Realistic



Establish Standard
Procurement
Methodology



Develop Quality
Assurance Process for
Validation

Total Coverage Using Existing Towers for Wireless Unserved Model 2 (Hybrid)

*Coverage Serving 44,447
Locations via 638 Towers*



Targeted Clustered Fiber Project Costs

Target Area	Passings	Street Miles	Passings Per Mile	Low-Cost Estimate	High-Cost Estimate
West Zuni to Black Rock	3,150	33.3	95	\$4,261,000	\$9,754,000
East Zuni to Black Rock	783	11.4	69	\$1,185,000	\$2,739,000
West Southwest of ABQ	122	3.0	41	\$233,000	\$547,000
South Socorro to Escondida	4,007	102.9	39	\$7,843,000	\$18,465,000
North Chama to Tierra Amarilla	608	16.7	36	\$1,232,000	\$2,906,000
East Pecos	1,455	41.0	36	\$2,992,000	\$7,064,000
Gallina	42	1.3	33	\$90,000	\$213,000
Cedar Hill North	172	5.5	31	\$380,000	\$901,000
Lordsburg	1,733	65.4	27	\$4,227,000	\$10,073,000
West Pecos	803	34.3	23	\$2,120,000	\$5,071,000
South of Las Cruces	1,469	68.6	21	\$4,108,000	\$9,852,000
North South of Las Cruces	4,448	210.9	21	\$12,571,000	\$30,160,000
East Southwest of ABQ	452	22.6	20	\$1,326,000	\$3,187,000
Cedar Hill South	523	27.6	19	\$1,589,000	\$3,823,000
East Greater Silver City	268	15.4	17	\$867,000	\$2,090,000
South Oasis to Hatch	1,770	103.2	17	\$5,775,000	\$13,934,000
East Central Greater Silver City	80	4.9	16	\$269,000	\$651,000
North McCartys to New Laguna	1,254	79.8	16	\$4,359,000	\$10,541,000

Targeted Clustered Fiber Project Costs

Continued...

Target Area	Passings	Street Miles	Passings Per Mile	Low-Cost Estimate	High-Cost Estimate
South Central Chama to Tierra Amarilla	159	10.4	15	\$563,000	\$1,363,000
Abeytas	1,794	121.2	15	\$6,518,000	\$15,784,000
West Central Greater Silver City	139	9.7	14	\$515,000	\$1,249,000
South Cannon AFB	283	19.9	14	\$1,061,000	\$2,571,000
South McCartys to New Laguna	1,088	78.4	14	\$4,147,000	\$10,057,000
North Espanola to Medanales	264	19.2	14	\$1,013,000	\$2,458,000
North Hanover Faywood Mimbres	923	72.7	13	\$3,767,000	\$9,154,000
North Greater Deming	917	77.4	12	\$3,951,000	\$9,615,000
Southeast Dulce	31	2.6	12	\$134,000	\$327,000
San Antonio	583	50.4	12	\$2,557,000	\$6,226,000
South Cuba to Regina	163	14.9	11	\$746,000	\$1,818,000
North Greater Gallup	2,988	284.9	10	\$14,174,000	\$34,584,000
South Greater Gallup	2,676	256.7	10	\$12,755,000	\$31,125,000
North Socorro to Escondida	854	84.9	10	\$4,192,000	\$10,236,000
West Greater Tucumcari	357	40.1	9	\$1,935,000	\$4,735,000
Southwest Cannon AFB	545	61.9	9	\$2,983,000	\$7,303,000
North Oasis to Hatch	745	85.2	9	\$4,102,000	\$10,043,000
North McIntosh Estancia Torreon	1,289	160.9	8	\$7,637,000	\$18,724,000
South Hanover Faywood Mimbres	180	23.5	8	\$1,108,000	\$2,719,000
South Greater Tucumcari	46	6.0	8	\$284,000	\$696,000
Central McIntosh Estancia Torreon	1,047	138.2	8	\$6,502,000	\$15,956,000
North Cuba to Regina	39	5.2	8	\$242,000	\$595,000
North of Ruidoso	28	3.7	8	\$174,000	\$428,000
Southwest Greater Silver City	309	41.6	7	\$1,950,000	\$4,788,000
Northwest Roswell to Artesia	288	40.0	7	\$1,867,000	\$4,586,000
Southeast Chama to Tierra Amarilla	79	11.5	7	\$533,000	\$1,310,000
Timberon	764	119.3	6	\$5,482,000	\$13,486,000
South Roswell to Artesia	321	50.6	6	\$2,322,000	\$5,714,000
Central Cannon AFB	283	48.0	6	\$2,182,000	\$5,374,000
East Greater Tucumcari	257	47.1	5	\$2,124,000	\$5,236,000
South Greater Deming	1,918	386.6	5	\$17,248,000	\$42,573,000
Southeast Carlsbad	507	104.1	5	\$4,636,000	\$11,446,000
South McIntosh Estancia Torreon	895	190.2	5	\$8,441,000	\$20,848,000
West McIntosh Estancia Torreon	646	151.8	4	\$6,672,000	\$16,495,000
Northeast Roswell to Artesia	179	43.3	4	\$1,899,000	\$4,695,000
East Greater Deming	1,077	282.9	4	\$12,317,000	\$30,484,000
North Roswell to Artesia	363	98.2	4	\$4,266,000	\$10,561,000
Central Roswell to Artesia	383	106.0	4	\$4,597,000	\$11,382,000
Southwest Carlsbad	45	16.8	3	\$715,000	\$1,776,000

Office of Broadband Support Methodology

*With a Focus on Leveraging
Federal Funds*



Digital Equity



Outreach and Capacity Building



Infrastructure/Upgrade Planning Support



Technical Assistance



Broadband Funding Guidance



Grant Writing Assistance



Mapping Resources

Thank You!



Questions?

