Department of Information Technology Broadband Strategic Plan Update

August 27, 2020

Prepared for:

New Mexico Legislative Finance Committee (LFC)

Presented by:

John L. Salazar, Cabinet Secretary and State CIO

NM DEPARTMENT OF INFORMATION TECHNOLOGY

Criticality of Broadband

Economics

Education

Health

Public Service

Political and Civil Engagement

Public Safety

Telework

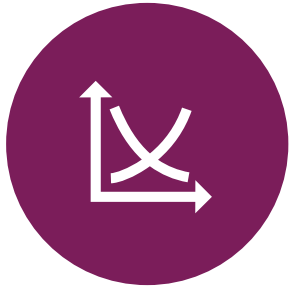
COVID-19 Response

National 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 New Mexico K-12 Students Qualifying for Free/Reduced Meals:
    - 71.27% Before COVID-19 (236,177 students)
    - 76.26% As of May 31, 2020 (252,713 students)

National Challenges Attracting Broadband Infrastructure Investment



Economics Simply Do Not Exist

Private Sector Will Not Build Costly Infrastructure in Low-Density Areas Because Return on Investment is Insufficient to Justify Investment

Same Dynamics Apply to Roads, Highways, Water, Electricity, and Other Utilities

Issues are Starker Because Broadband is Traditionally Thought of as an Area of Private Rather than Public Investment

Purpose of DoIT Rural Broadband Assessment

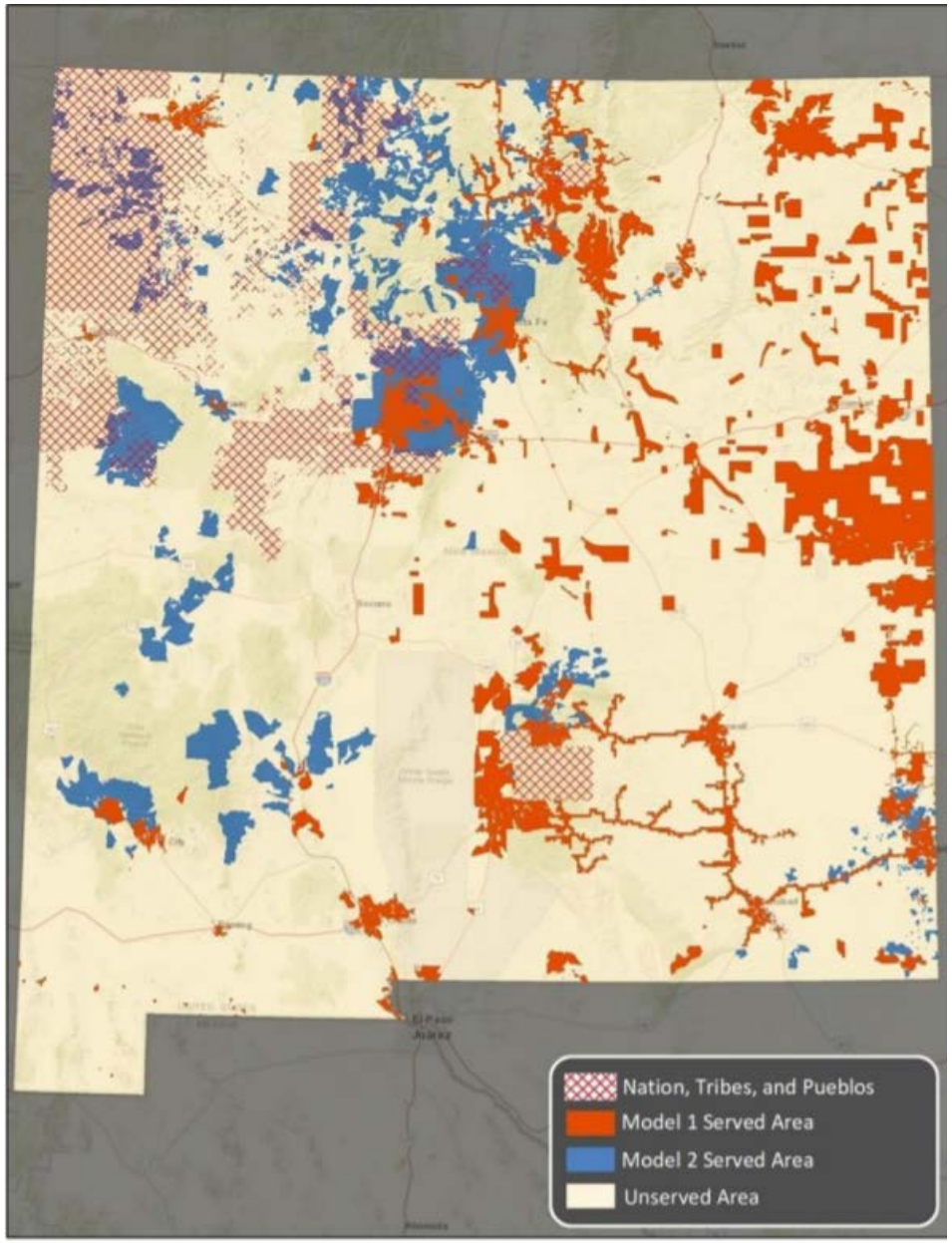
1. Update Six-Year Old State Broadband Strategic Plan
2. Identify Unserved Residents and Businesses
3. Generate Professionally Engineered Statewide Broadband Solutions
4. Recommend Technology
5. Estimate Costs
6. Identify Critical Broadband Projects
7. Outline Best Practices to Enhance Support Capabilities
8. Define State and Federal Funding Opportunities

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

Methodology 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



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.

$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	

Best Case Assumptions

Assume a Build-Out Led by Incumbent Providers

Using Existing Space on Utility Poles and Existing Pathways

Fixed Wireless and Existing Towers

Recommendation:

Pursue Model 2 - Hybrid (Model 2-H)

Target Fiber to the Premises in the Relatively Closely Clustered Areas

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

Address Most Widely Spread-Out Areas in a Future Stage, Potentially Using Satellite or Other Emerging Technology

Costs of Unserved Passings in Low-Density Areas by County

For All Counties	
High Estimate	**Low Estimate**
$5 Billion	$2 Billion

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

Cost Prohibitive
To Run Fiber to Non-Clustered Areas

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

Recommendations

Include Broadband Considerations in All COVID-19 Recovery Planning

Support Companies and Communities with Technical Assistance

Prepare Now to Leverage Existing and Future Federal Funds via Legislation and Procurement Measures

Support Anchor Institutions, Including Libraries and Healthcare Facilities, to Plan Collaboratively and to Aggregate Demand

Update the Digital Equity Plan to Complement the Strategic Plan

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

FCC RDOF - Rural Digital Opportunity Fund
- Applications Due in July for Phase 1 October Auction

USDA Reconnect Program
- Next Application Window Estimated December

FCC E-rate for Schools and Libraries Program
- Applications Typically Due in March of Every Year

FCC Healthcare Connect Program
- Application Typically Due in June of Every Year

USDA Community Connect Program
- Next Application Window Yet to be Announced

Best Practices for Grant Programs

- Fund Future Proof Infrastructure that is Scalable to Meet Bandwidth Needs
- Require Collaborations Between Local Officials and the Full Range of Potential Providers Including Electric Utilities and Non-Profits
- Allow Local Authorities to Leverage Access to State Funds in Negotiations with Existing and Potential New Service Providers
- Position State Programs to Work Synergistically with Federal Funding Opportunities to Leverage State Funds to Attract Federal Grants
- Support Local and Regional Efforts to Put Projects and Applications Together for State and Federal Broadband Funding Opportunities
- Engage Small and Medium Providers to Encourage and Broaden Participation
- Create a Predicable Flow of Funding and Develop a Pipeline of Potential Applicants

Recommendation:
Enabling Legislation for the Department of IT's Office of Broadband

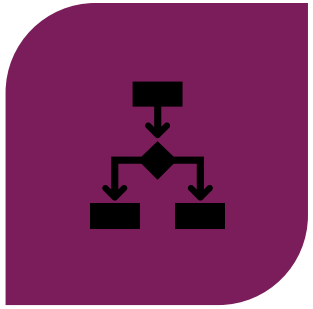
Formalize the Office of Broadband
- Paint a Clear Vision of Expectations and Provide the Means to be Successful

Provide Recurring Operational Funds for Adequate Staffing and Other Resources

Add Accountability and Oversight

Create a State Grant Program to Use Funds as "Seed" Money for Federally Funded Broadband Projects

Strategy for Moving Forward



Increase Office of Broadband Support Capabilities

Establish Standard Procurement Methodology

Develop Quality Assurance Process for Validation

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

Office of Broadband Support Methodology

Working with Our Stakeholders – The Public, Internet Service Providers, State Agencies, Counties, Cities, Towns, Entrepreneurs, Public Schools, Libraries, Tribal Communities, etc.

- Digital Equity Training and Resources
- Outreach and Capacity Building
- Infrastructure/Upgrade Planning Support
- Technical Assistance
- Broadband Funding Guidance
- Grant Writing Assistance
- Mapping Resources

Enhance Support Capabilities

By Hiring Two Broadband Project Managers

- Promoting, Coordinating, and Supporting the Development of Cost-Effective Model 2-H Broadband Projects
- Performing Outreach and Broadband Development Training and Support for Communities and Collaborating with Stakeholders Across Sectors
- Working with PED to Prioritize Projects that Directly Support Unserved Students in Model 2-H Rural Locations
- Helping Entities Leverage Funding and Support Opportunities
- Removing Obstacles for Upgrade/Infrastructure Projects

Procurement Methodology

- Leverage Procurement Expertise via Contract
- Create a Statewide Price Agreement to Include Fiber, Fixed Wireless, Technical Planning, and Grant Writing Services (Estimated March 2021 Completion)
- Offer Contracts to Include Project, Deliverable, Federal Funding, and Quality Assurance Requirements
- Enabling Legislation to Most Efficiently Grant Funds

Proposed RFP Selection Criteria

- Eligible Entities Include: Local and Tribal Governments, Internet Service Providers, and Electric Co-Ops
- Applicant, Key Personnel, and Partner Experience
- Local Support from Residential, Business, and Local Interests within the Proposed Service Areas
- Readiness to Build
- Willingness to Participate in Federal and State Grant Programs
- Network, Services and Pricing Proposed

Quality Assurance

Ensure Project Safeguards

- Federal Oversight Protections

Validate Work

- Ensure Fiber or Other Equipment is Installed

Verify Outcomes

- Confirm Adequate Customer Base, Take Rate, and Competitive Pricing

Ensure No Duplication of Government Funds

Targeting Support for Tangible Results

These are Projects with Strong Potential Employment Impact

Using NM Based Companies to Support Economic Development

No. 1: Clustered Fiber Projects

- Long-term Fiber Solution for Densely Populated Unserved Rural Areas for the Best Return on Investment

No. 2: Fixed Wireless Projects

- Most Cost-Effective Broadband Solution for Less Populated Unserved Rural Areas

No. 3: Pilot Discussions with Potential Vendors

- Researching and Testing Advanced Broadband Technologies for the Most Widely Spread-Out Unserved Rural Locations

Targeted Clustered Fiber Project Costs

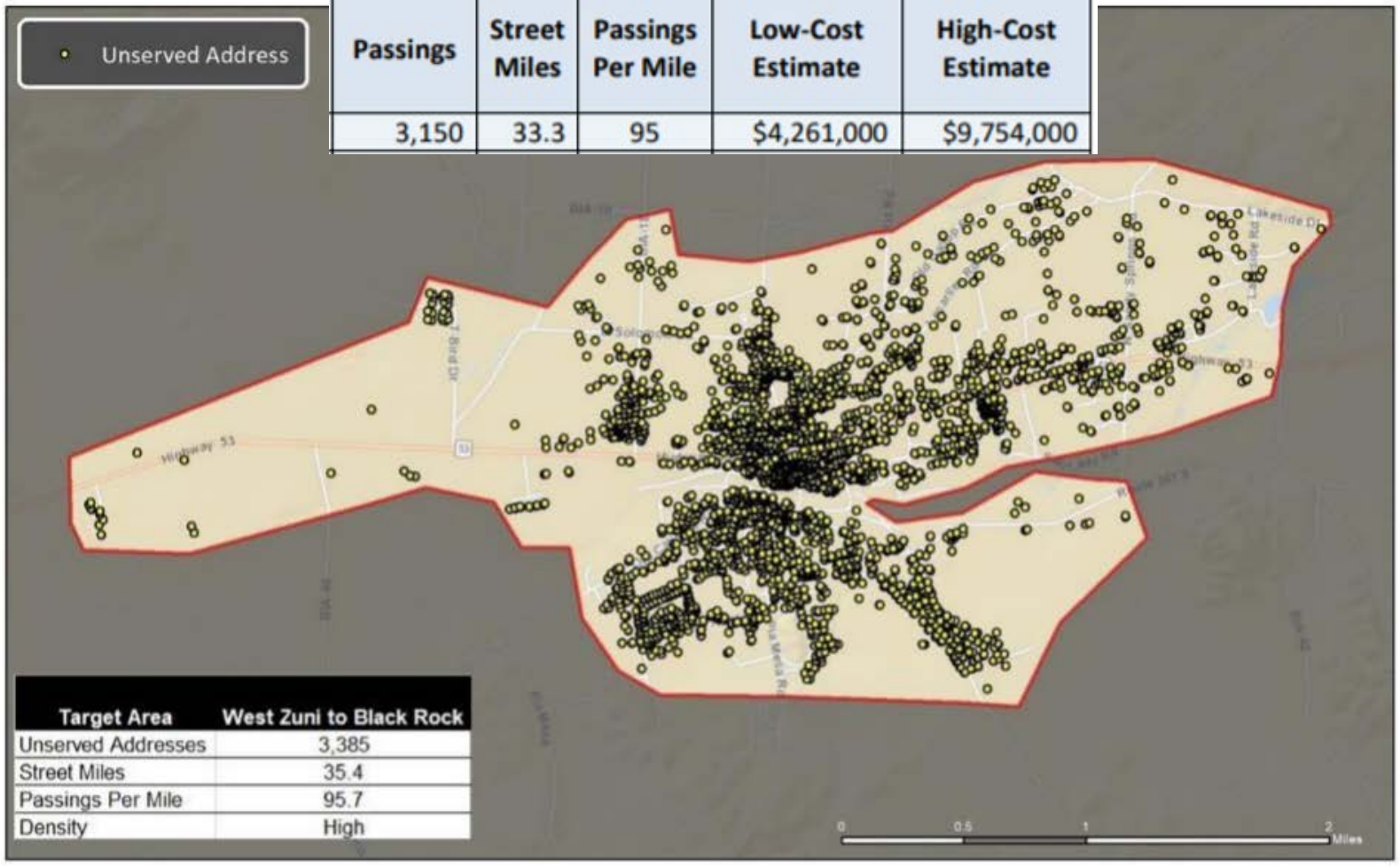
For All Targeted Clustered Fiber Projects	
Low-Cost Estimate	**High-Cost Estimate**
$240 Million	$580 Million

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

West Zuni to Black Rock Project Example

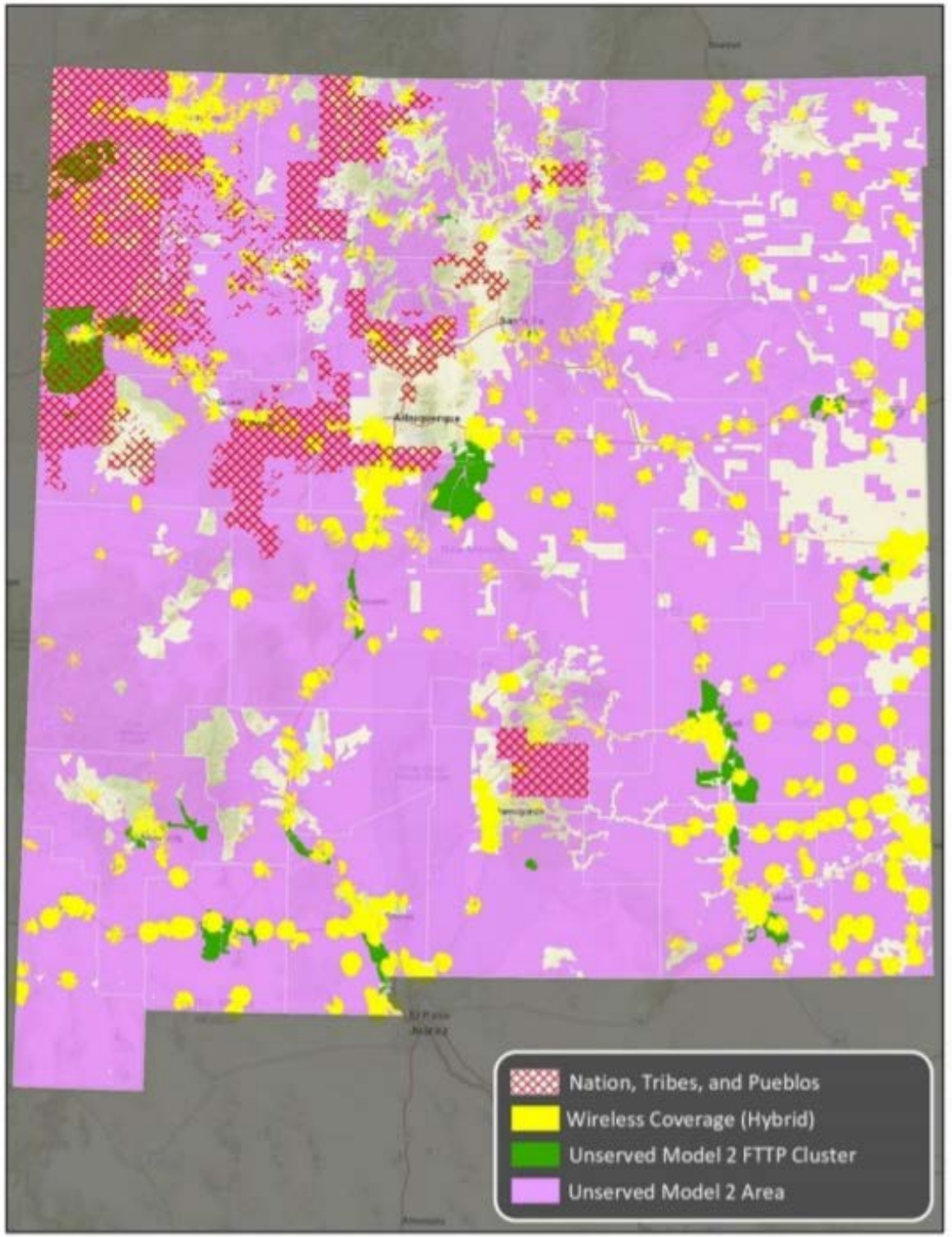
High-Density Unserved Area

Passings	Street Miles	Passings Per Mile	Low-Cost Estimate	High-Cost Estimate
3,150	33.3	95	$4,261,000	$9,754,000



Target Area	West Zuni to Black Rock
Unserved Addresses	3,385
Street Miles	35.4
Passings Per Mile	95.7
Density	High

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



Coverage Serving 44,447 Locations via 638 Towers

Questions?

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