

Pagosa Springs Broadband Project 2018 and Beyond

Developed by the LINDBLAD GROUP and ECHO IT Consulting, Pagosa Springs, Colorado

October 23rd, 2018

Broadband as an Unregulated Utility

The New York Times | <https://nyti.ms/298F4FN>

ARCHIVES | 1994

U.S. Begins Privatizing Internet's Operations

By **PETER H. LEWIS** OCT. 24, 1994

Having succeeded beyond its wildest dreams in nurturing the Internet computer web into a vital national communications system, the Federal Government has begun turning over to the private sector the job of operating and maintaining the network's major arteries.

Some experts say the Government's planned withdrawal from Internet management -- ending nearly a decade of oversight and an estimated \$12 million in annual subsidies -- is the best way to bring marketplace efficiencies to the increasingly commercial global network.

But pessimists worry that this critical part of the emerging electronic web could become a patchwork of private roads, perhaps isolating some users. Some people are also concerned that the private system may not be able to cope with the billions of packets of information that traverse the network each month. The transition is already behind schedule as a result of technical and administrative delays.

But the optimists and gloom-mongers agree on at least one thing: the Government's plan to phase out subsidies will lead to fundamental changes in the economics and use of the computer network.

It remains unclear what effect, if any, these changes may have on pricing for the Internet, which already has millions of computer users and is doubling in size each year. The users most likely to be affected are the more than 2,000 universities, research organizations and Government agencies that are the main beneficiaries of the Federal subsidies.

Presentation Outline

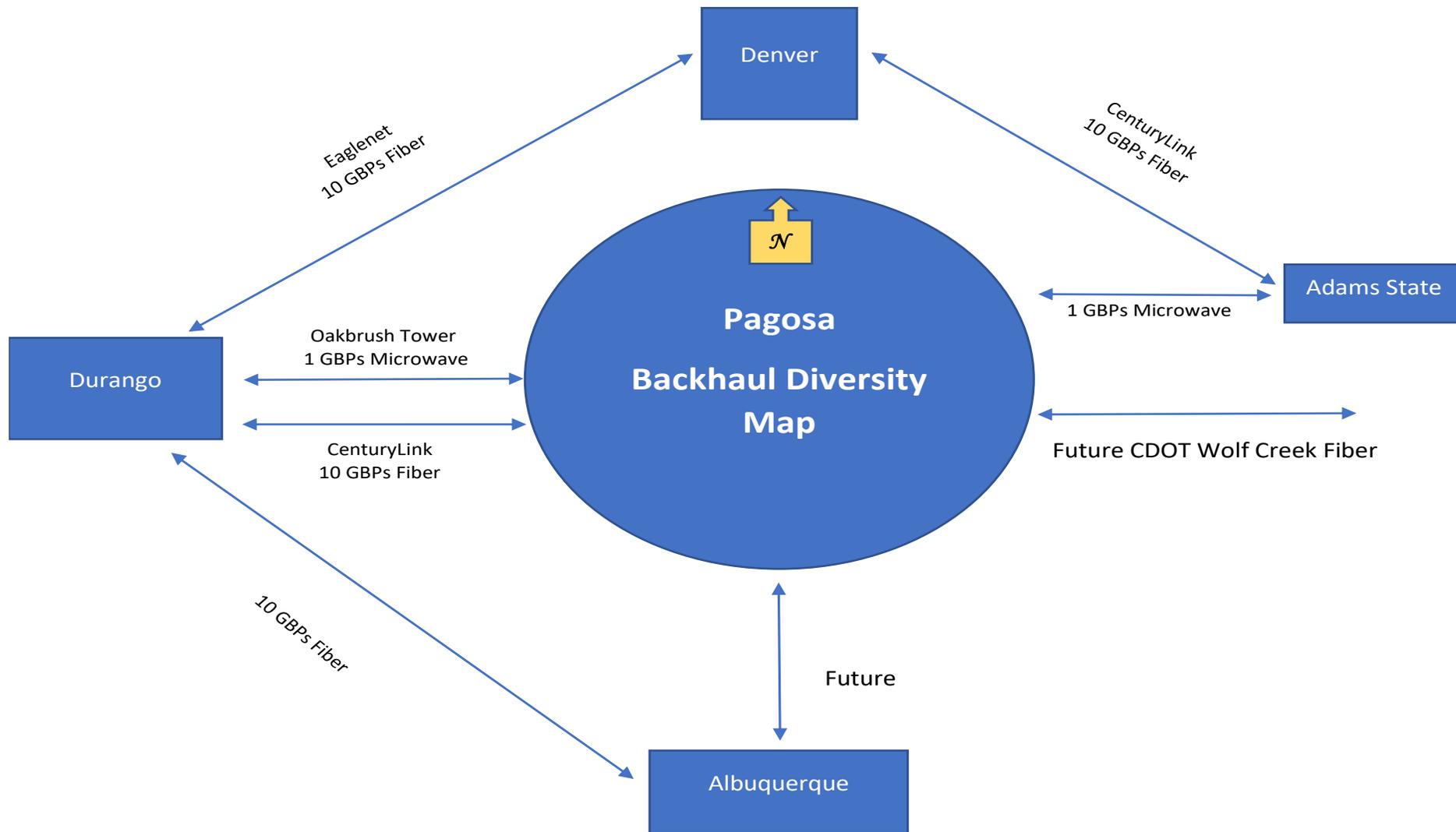
- Key Terms to Understand
- The Internet Today
- Backhaul (As It Applies to Us)
- Pagosa's Internet Today
- The Architectural Plan utilizing ViewShed
- Cost Buildout
- Carrier Neutral Location
- The Role of a Broadband Services Manager
- Key Requirements
- How To Get To A "GO" Decision
- Next Steps

Key Terms to Understand

- Open Architecture
- Backbone
- (ISP) Internet Service Provider
- Carrier Neutral Location (CNL)
- Backhaul
- Middle Mile
- Last Mile
- Dark/Lit Fiber



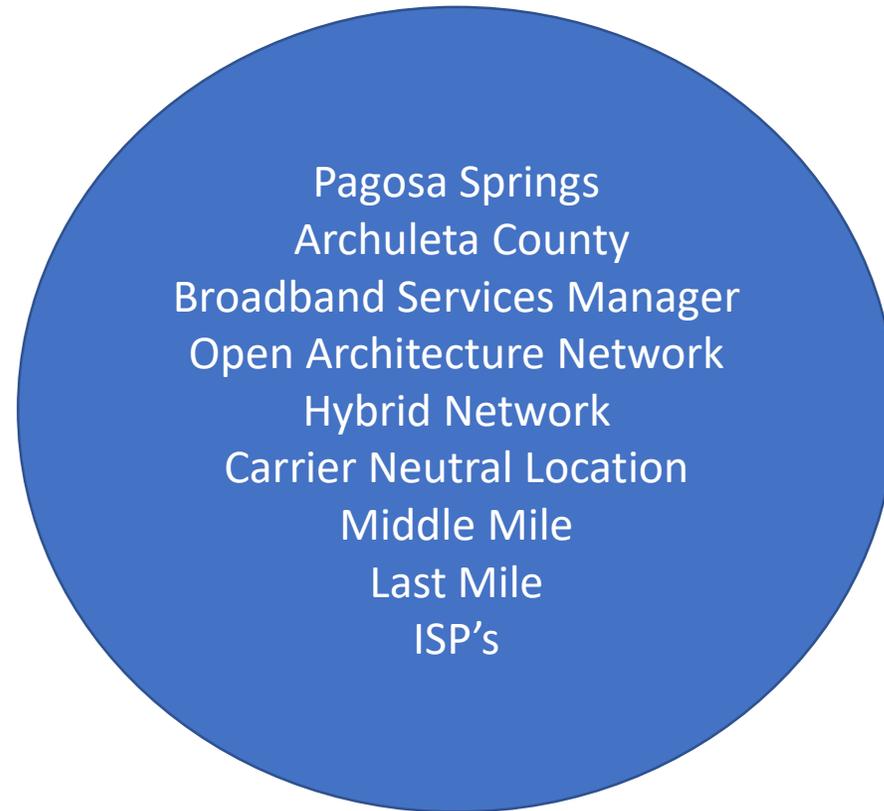
Mammoth Loop

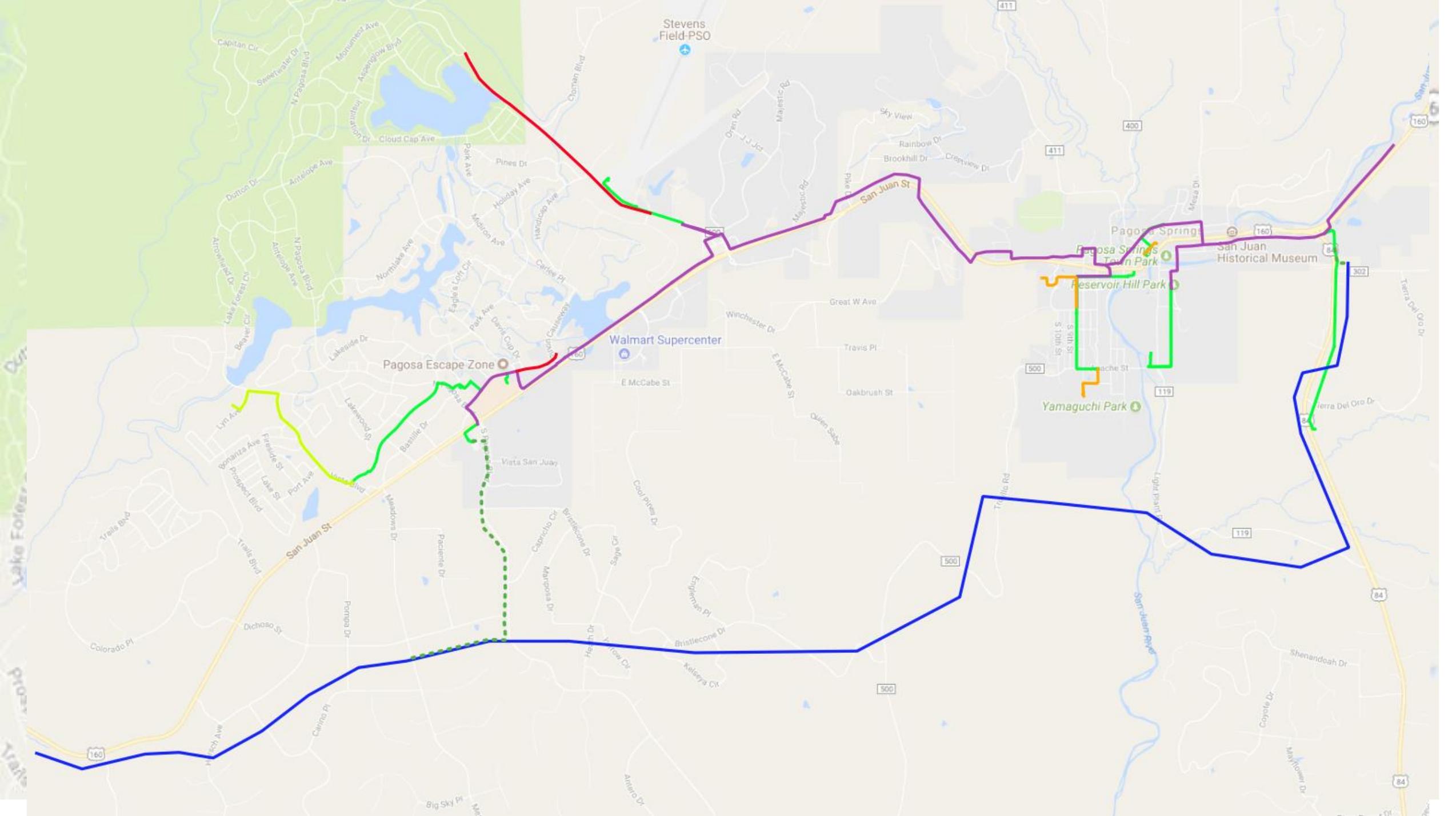


Availability: 99.999% Of the Time

10/10/2018

What's in the Circle?





Stevens
Field-PSO

Pagosa Escape Zone

Walmart Supercenter

Pagosa Springs
Town Park

Reservoir Hill Park

Yamaguchi Park

San Juan
Historical Museum

160

500

500

411

400

160

160

84

302

119

119

84

84

Capitan Cir
Sweetwater Dr
N Pagosa Blvd
Monument Ave
Aspenwood Blvd
Cloud Cap Ave

Durton Dr
Antelope Ave
Aronson Dr
Lakes Forest Cir
Beaver Cir
N Pagosa Blvd
Aurora Ave

Pines Dr
Holiday Ave
Midton Ave
Handloop Ave
Carley Pl
Eagles Con Cir
Park Ave
Dennis Cup Dr
San Juan Gateway

Lyn Ave
Ignarita Ave
Firestone St
Prospect Blvd
Lakes St
Port Ave

Lakeside Dr
Lakeswood St
Banille Dr
S 10th St
S 11th St
S 12th St

Vista San Juan
Capricho Cir
Bristlecone Dr
Mangos Dr
High Dr
Hollow Cir
Kelserra Cir

Winchester Dr
Great W Ave
Travis Pl
Oakbrush St
Queen Sabé

San Juan St
Majestic Dr
Mayestic Rd
Pine Dr
Sky View
Rainbow Dr
Brookhill Dr
Creeview Dr

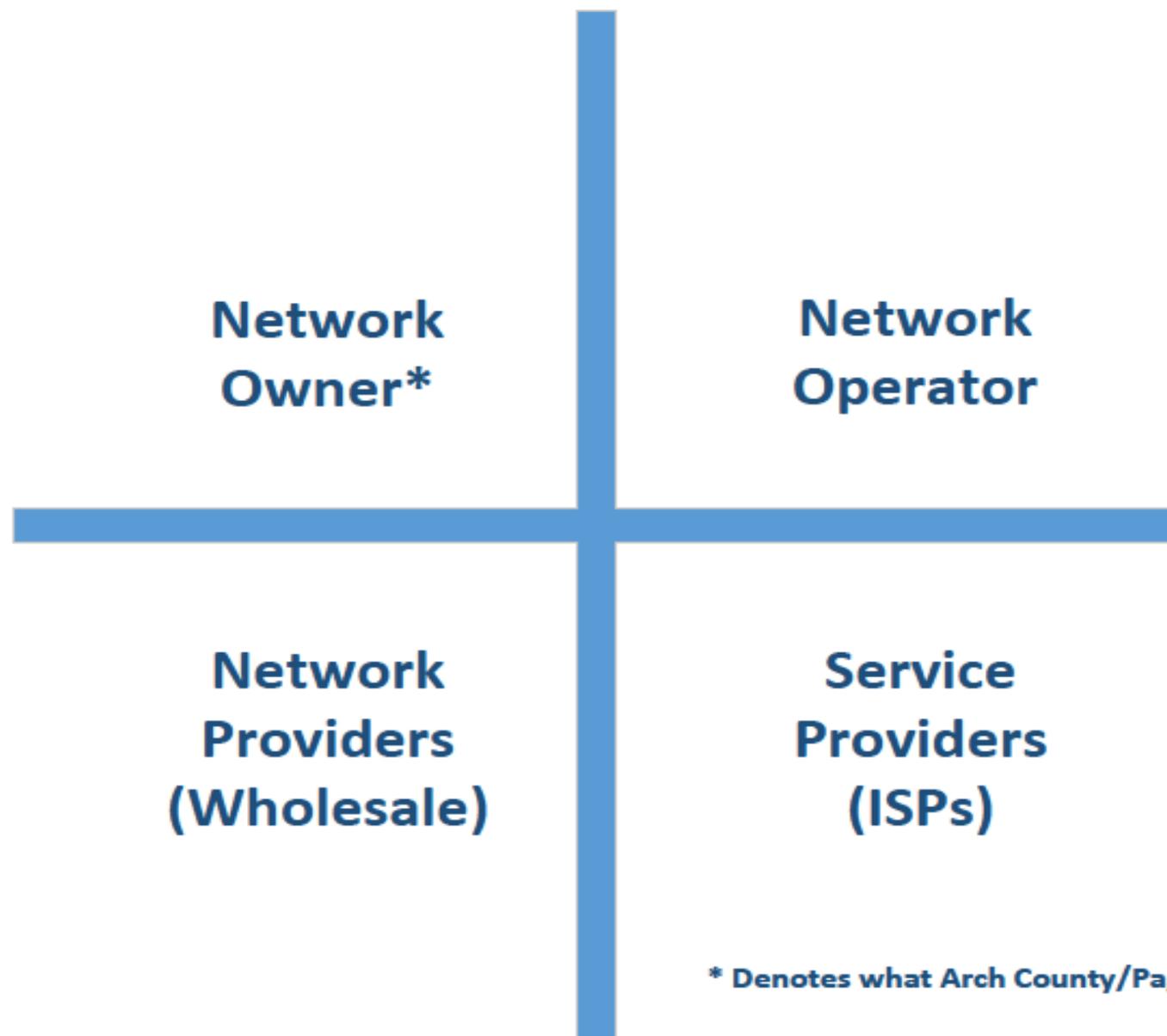
Yamaguchi Park
S 10th St
S 11th St
S 12th St
Cache St

Reservoir Hill Park
Mesa Dr
Pagosa Springs
Town Park

San Juan Historical Museum
Tierra Del Oro Dr
Yamaguchi Park

Tierra Del Oro Dr
Shenandoah Dr
Coyote Dr
Mangos Dr

The 4 Necessary Components of a Municipal Network



* Denotes what Arch County/Pagosa want to be

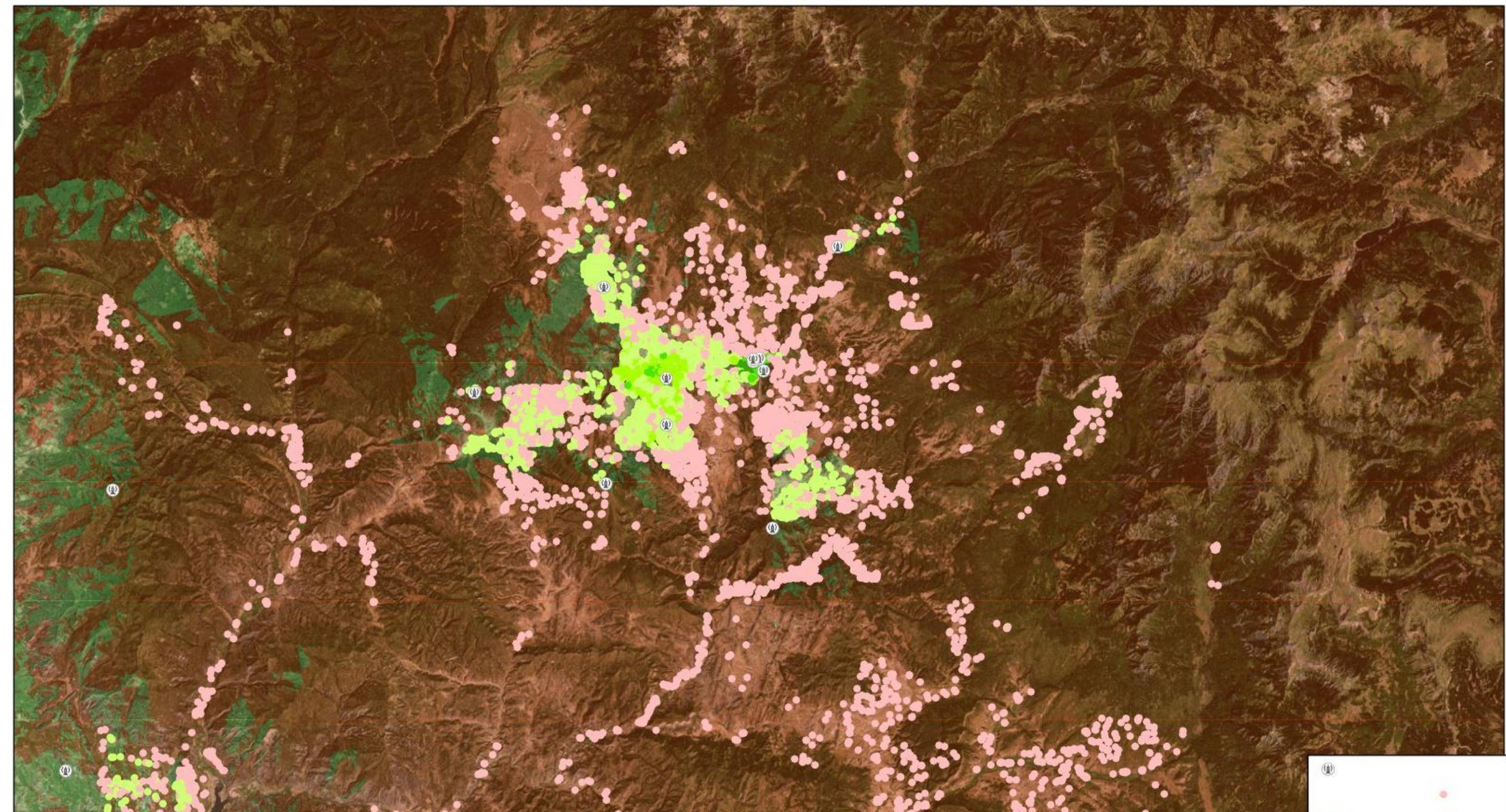
The Challenge

- How to design a Broadband service that has the capacity to serve more business/resident locations on a limited budget

The Solution

- Design a simpler more cost effective integrated hybrid network that can overcome some of the issues of a topologically challenged and widely dispersed community

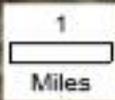
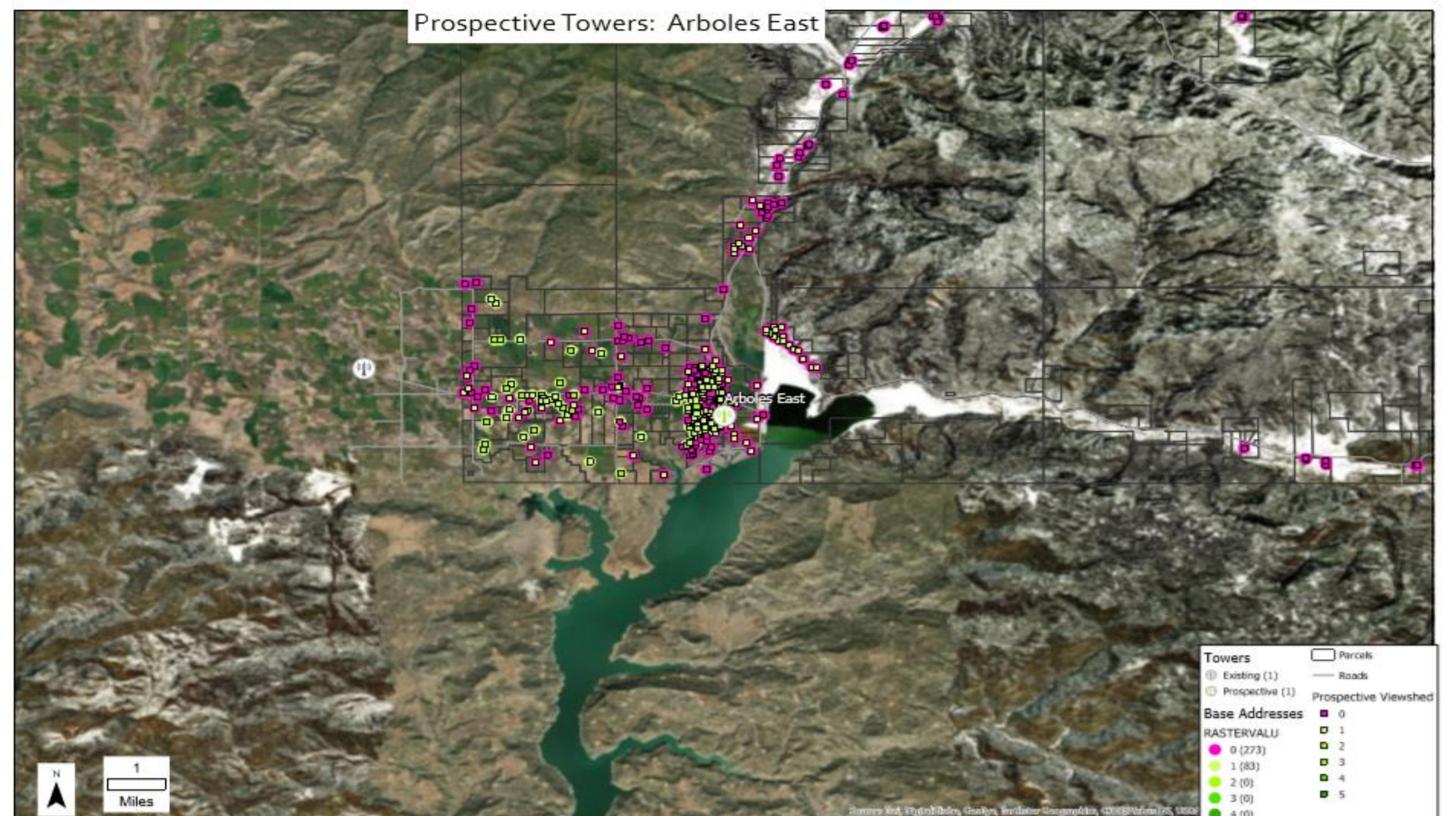
- ViewShed Solution



Design Impact

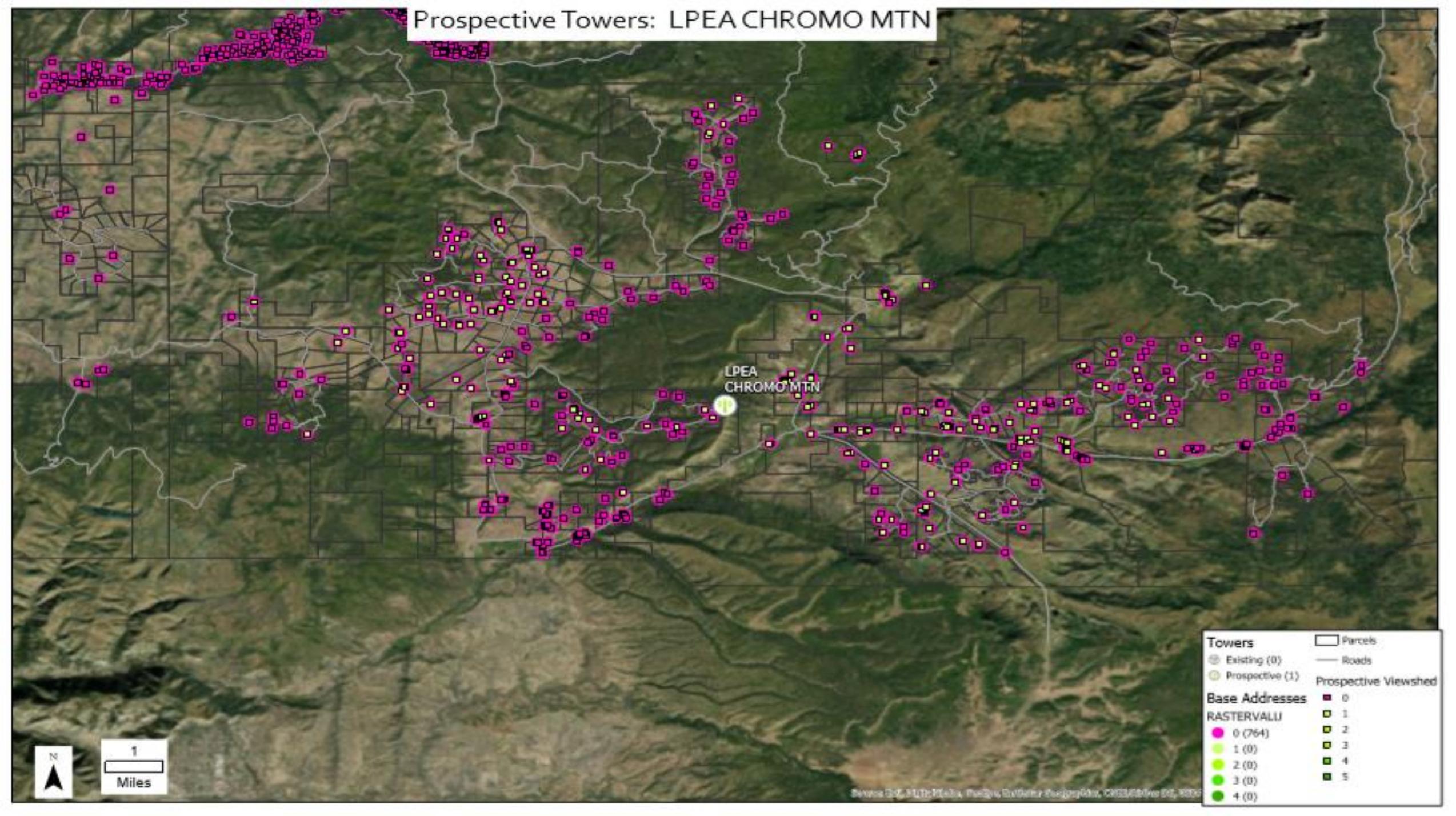
- Baseline represents 5,989 resident/business locations served
- New design represents 7,053 resident/business locations served
- 1,064 **NEW** resident/business locations served
- At 2.5 residents/location=2,660 potential new broadband users
- 18% increase in coverage

Prospective Towers: Arboles East



Towers		Parcels
⊙ Existing (1)		▭ Parcels
⊙ Prospective (1)		— Roads
Base Addresses		Prospective Viewshed
● 0 (273)	■ 0	
● 1 (83)	■ 1	
● 2 (0)	■ 2	
● 3 (0)	■ 3	
● 4 (0)	■ 4	
	■ 5	

Prospective Towers: LPEA CHROMO MTN



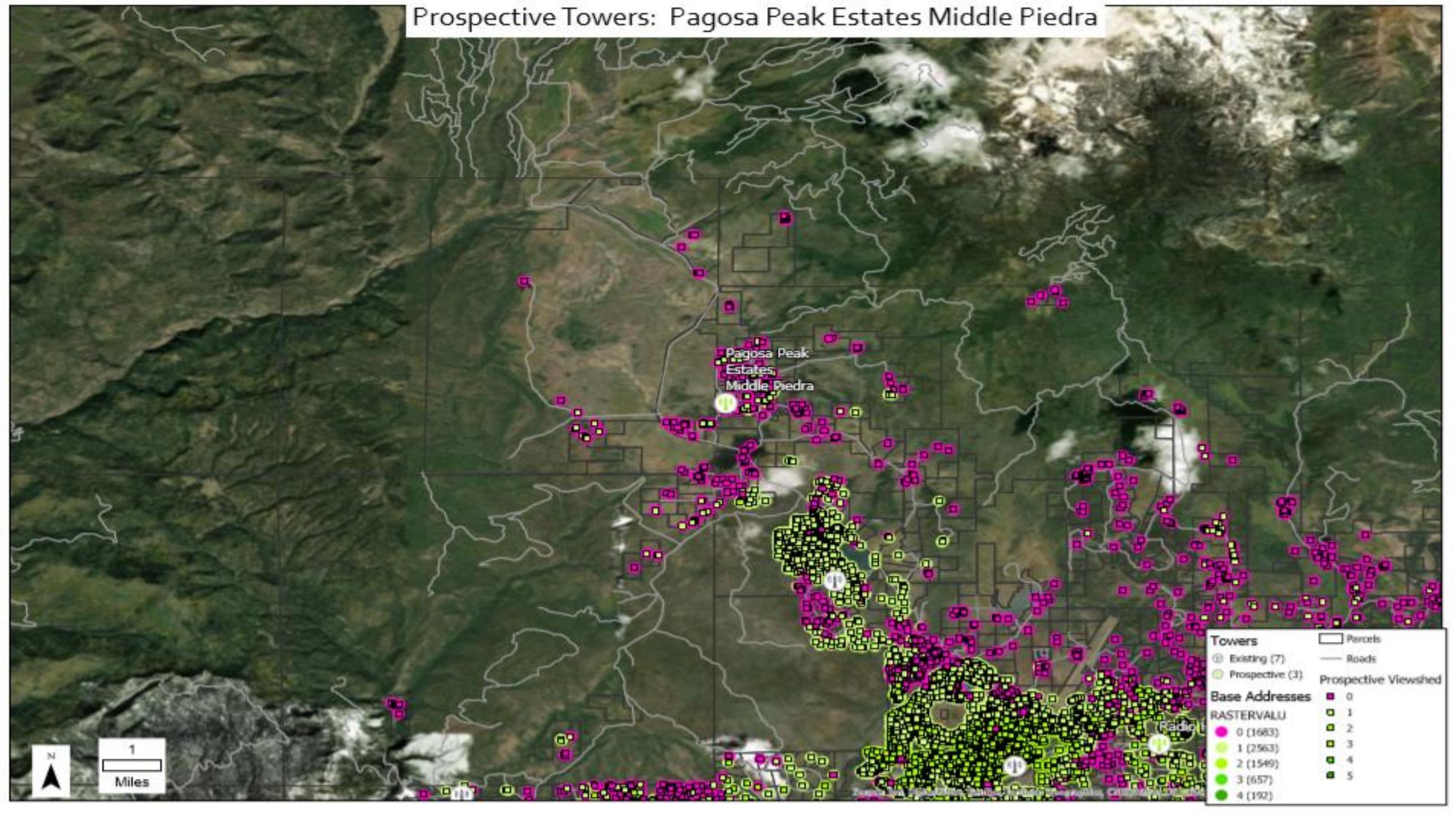
LPEA
CHROMO MTN

Towers	Parcels
Existing (0)	Roads
Prospective (1)	Prospective Viewshed
Base Addresses	0
RASTERVALU	1
0 (764)	2
1 (0)	3
2 (0)	4
3 (0)	5
4 (0)	

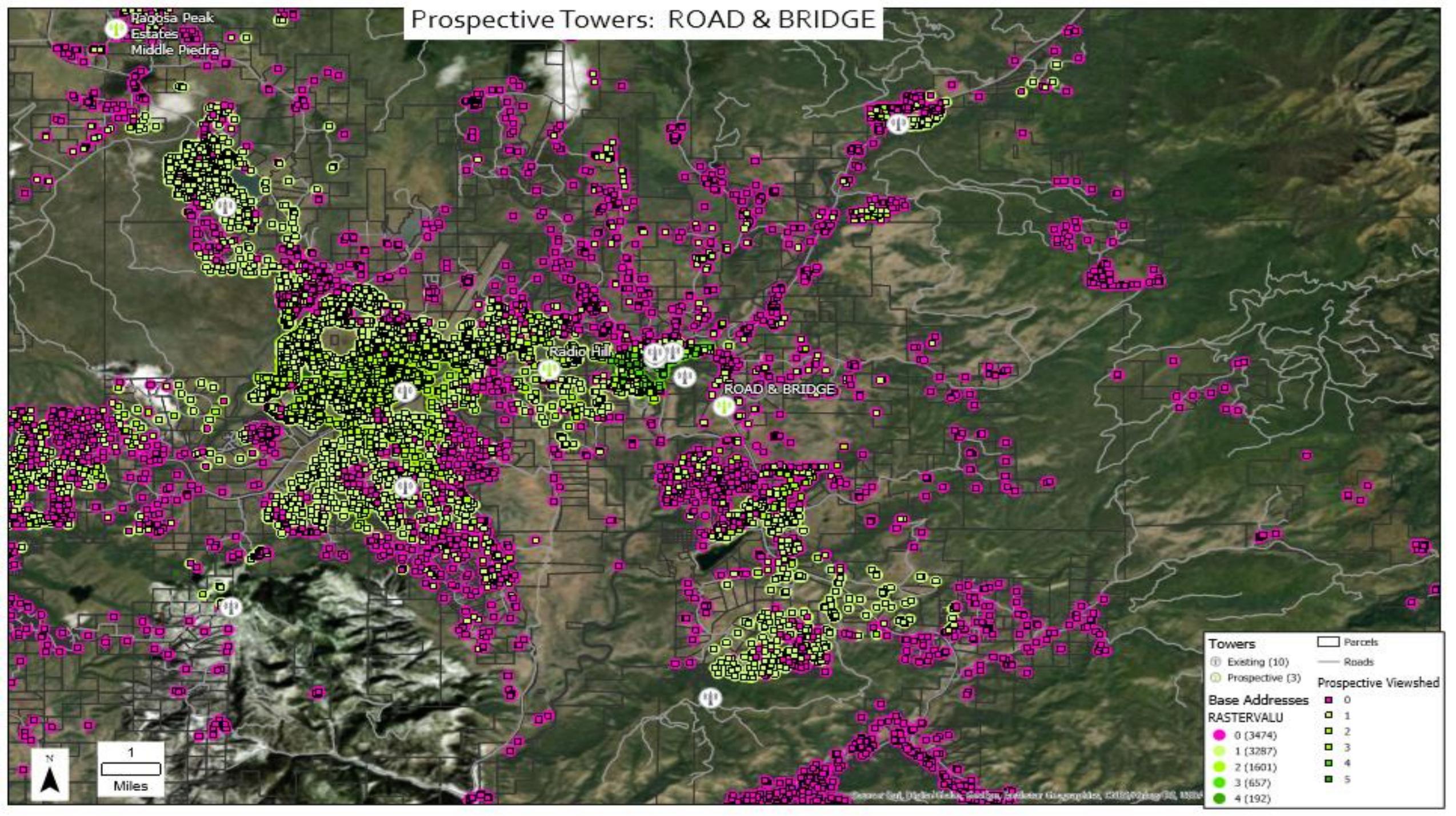


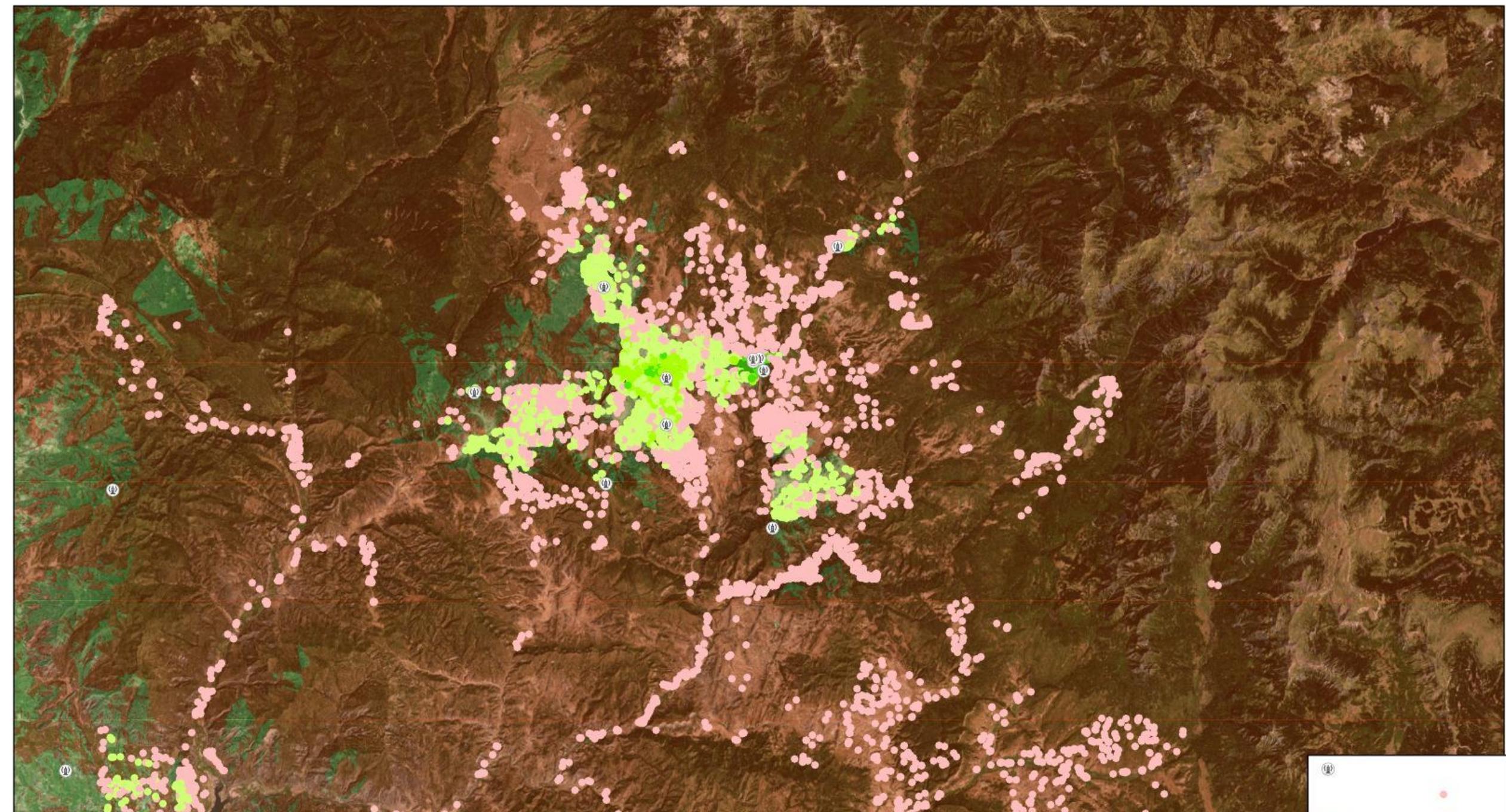
1
Miles

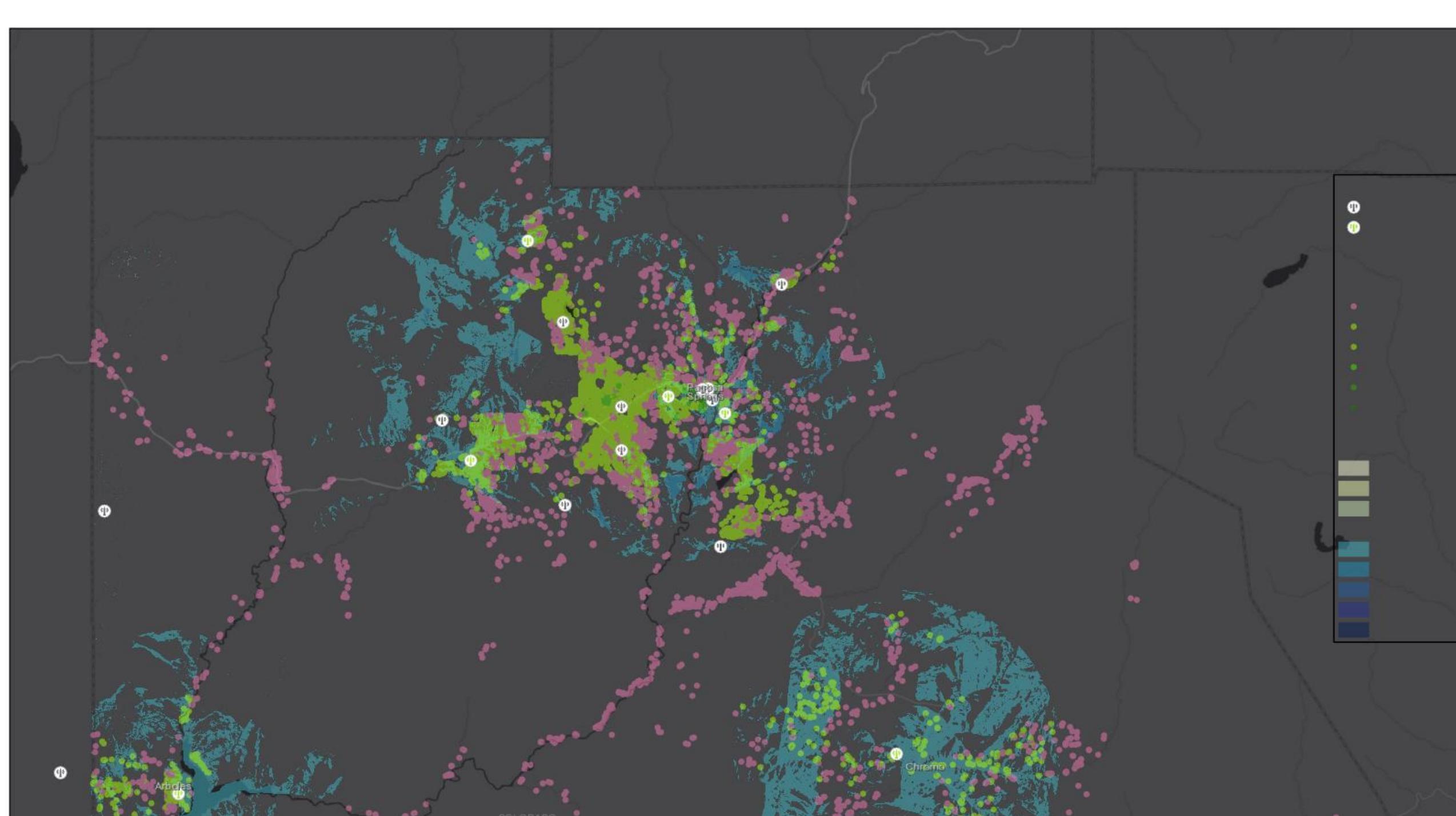
Prospective Towers: Pagosa Peak Estates Middle Piedra



Prospective Towers: ROAD & BRIDGE







2018 Pagosa Springs Broadband Infrastructure Funds Projections

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
Phase 1 Cloman	\$51,570	DORA 75%/\$12,892	\$12,892
Nxt Gen MM Wave Fixed Wireless Towne Hall	Skywerx		\$0
Nxt Gen MM Wave Fixed Wireless School (fiber)	Skywerx		\$0
Grant Writer	\$1,000		\$1,000
TOTALS	\$52,570	\$38,678	\$13,892

2019 Pagosa Springs Broadband Infrastructure Funds Projections

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
Jacks Pasture Tower 70 ‘/HOA	\$35,000 Skywerx	DORA 75%/\$26,250	\$8,750
Arboles 60’ POD	\$45,000 Skywerx	DORA 75%/\$33,750	\$11,250
Chromo LaPlata Tower	\$25,000 Skywerx	DORA 75%/\$18,750	\$6,250
Radio Tower Hill 45’ POD Solar	\$60,000 Skywerx	DORA 75%/\$45,000	\$15,000
8 Mile Mesa Upgrade	\$20,000 Skywerx	DORA 75%/\$15,000	\$5,000
Road/Bridge 60’ Tower	\$20,000 Skywerx	DORA 75%\$15,000	\$5,000
Carrier Neutral Building Space	\$25,000	No	\$25,000
Broadband Manager	\$75,000	No	\$75,000
Grant Writer	\$2500		\$2,500
TOTALS	\$307,500	\$153,750	\$153,750

2020 Pagosa Springs Broadband Infrastructure Funds Projections

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
Phase 2 Cloman Fiber Ind. Rd	\$35,046 USA Comm.	DORA 75%/\$26,285	\$8,762
Fiber Mapping Tool	\$10,000	NO	\$10,000
Broadband Services Manager	\$75,000	NO	\$75,000
SCAN Fiber Overlay 144	\$77,728 USA Comm.	DORA 75%/\$58,296	\$19,432
SCAN Fiber GIS Find	\$2,000	NO	\$2,000
DB Tech SCAN Fiber Color Align	\$10,000	NO	\$10,000
Speed Performance Testing Devices	\$2,000	NO	\$2,000
Grant Writer	\$1,000		\$1,000
TOTALS	\$212,774	\$84,581	\$128,194

2021 Pagosa Springs Broadband Infrastructure Funds Projection

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
FastTrack 72 East End (estimated)	\$15,840 FastTrack	NO	\$15,840
Broadband Manager	\$75,000	NO	\$75,000
LaPlata Substation Interconnect (estimated)	\$66,000 FastTrack	NO	\$66,000
Upper/Lower Blanco (estimated)	\$75,000 Skywerx	DORA 75%/\$56,250	\$18,750
Grant Writer	\$1,000		
TOTALS	\$232,840	\$56,250	\$176,590

Carrier Neutral Location (CNL)



The Role of The Broadband Services Manager

- Reports directly to the CDC and is salaried
- Will manage, utilizing a software based tracking system the inventory of all fiber facilities
- Will oversee the monetary collection for all leased fiber
- Will track network, last mile and ISP service performance and report those measures on a regular basis
- Will be responsible for mapping/analyzing network buildout requirements as part of a long term strategic plan
- Will work across all local service utilities to ensure that broadband services conduit is included in future trenching considerations
- Will be the single point of contact to resolve issues that relate to broadband performance and ISP service issues
- Will conduct quarterly meetings with local ISP's to ensure customer service quality
- Will report regularly to the BOCC/and Town Council and provide local broadband performance statistics

Key Requirements

- Broadband Services Manager
- Pagosa Springs Broadband Services activity is a subset of the CDC
- Infuse \$200K+/year County/City Funding for 3 years minimum and work towards a net neutral cash flow position through fiber leasing
- Obtain Additional Middle Mile fiber assets and transfer existing Middle Mile fiber asset to Broadband Services organization
- Buildout Carrier Neutral Location facility
- Obtain fiber tracking software
- Contract closures with ISP's on deliverables

How to Get To a “GO” Decision

Establish Realistic Expectation for the project/community

The Community needs to have the political will to move the project forward

Create community engagement at the grassroots level

Be totally inclusive

Be prepared to show data that supports the importance of a broadband ready community from an economic impact perspective

Our elected officials are the support arm for a “Broadband Ready” dialog

Everybody needs to understand that without Broadband, businesses will leave and your community will die

Next Steps

- Work alongside Skywerx in meeting a January 15th grant submission date
- Hire Echo IT on an hourly basis until grant submission
- Be prepared to start grant application for second round of funding scheduled for July 15th, 2019 submission and distributed January 2020
- Develop/release RFP for Broadband Services Manager
- Hire and fund a Broadband Services Manager ASAP