

Pagosa Springs Broadband Project 2018 and Beyond

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

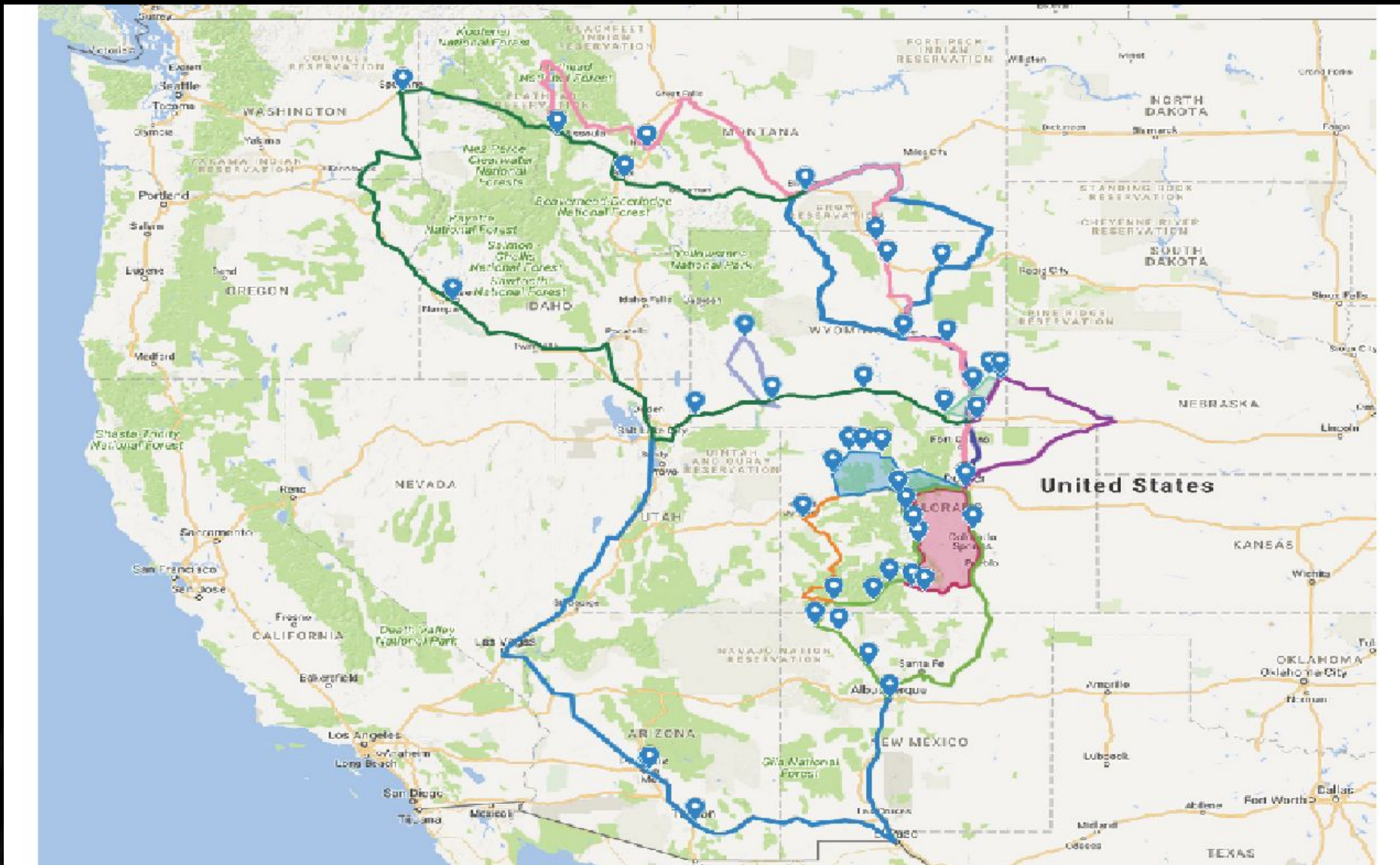
Further Edited for the Town/County Joint Budget Meeting by Eric Hittle

November 6, 2018

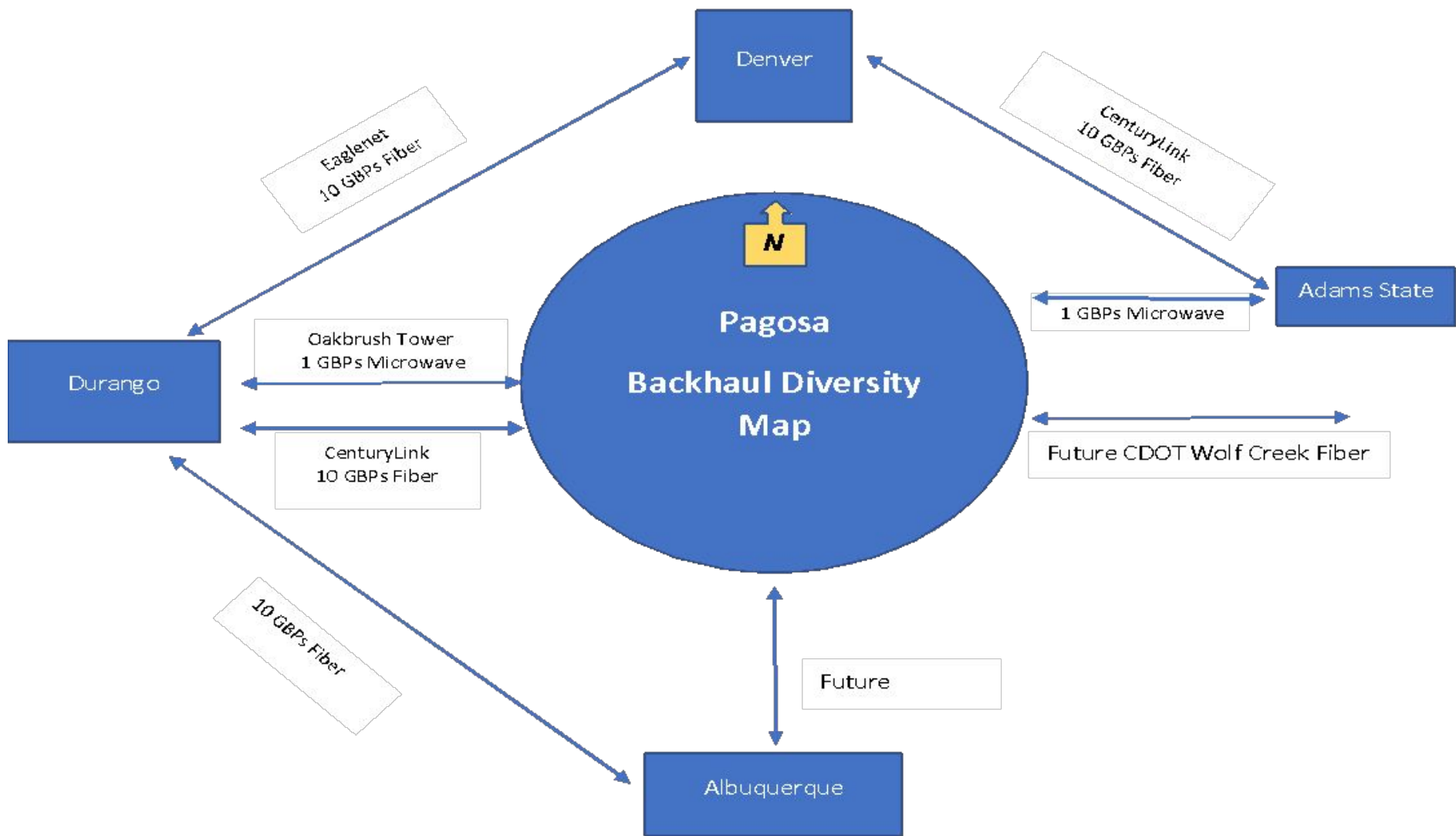
Key Terms to Understand

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





Mammoth Network Loop



Availability: 99.999% Of the Time

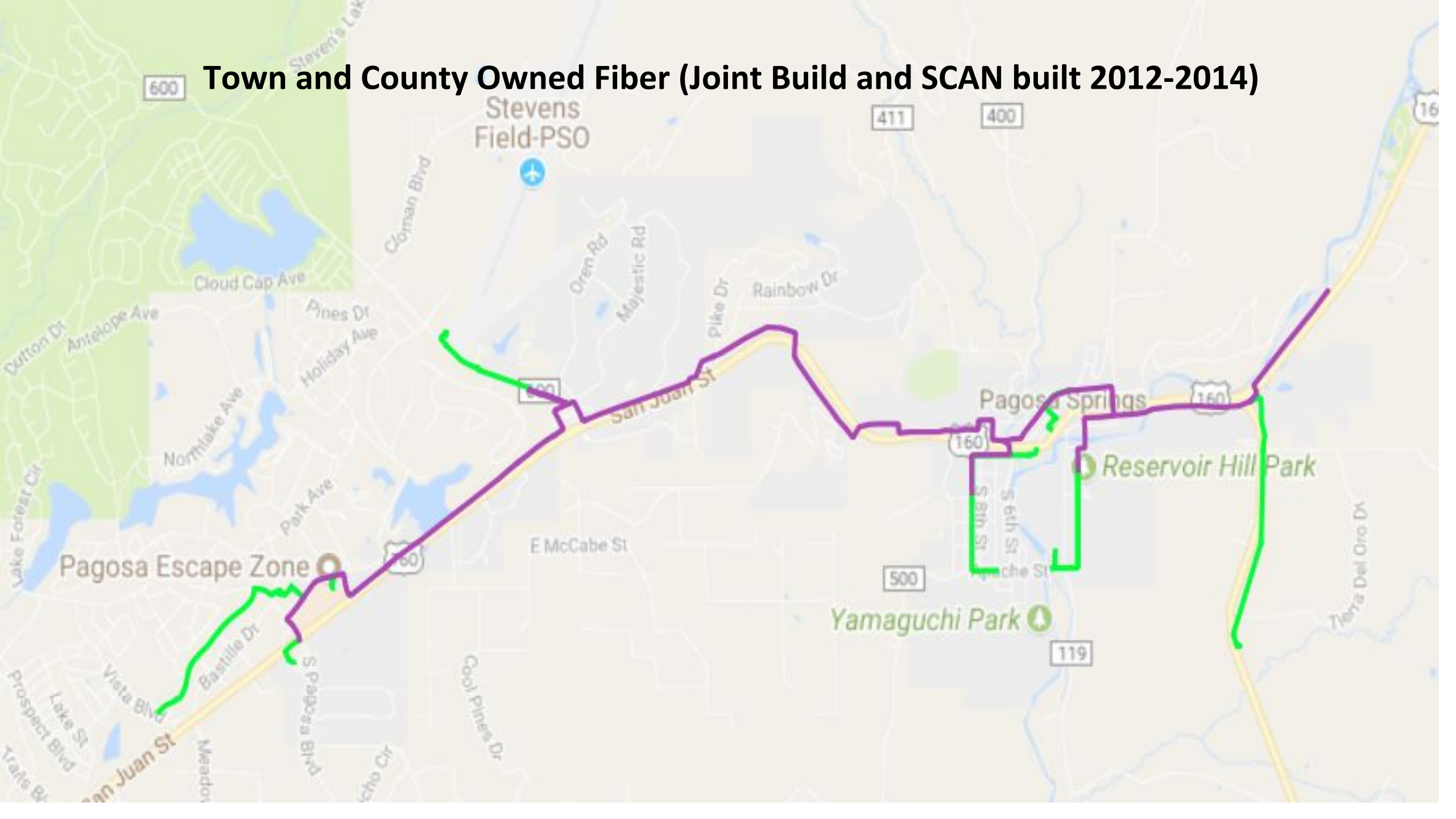
10/10/2018

What's in the Circle?

Pagosa Springs
Archuleta County
Broadband Services Manager
Open Architecture Network
Hybrid Network
Carrier Neutral Location
Middle Mile
Last Mile
ISPs



Town and County Owned Fiber (Joint Build and SCAN built 2012-2014)

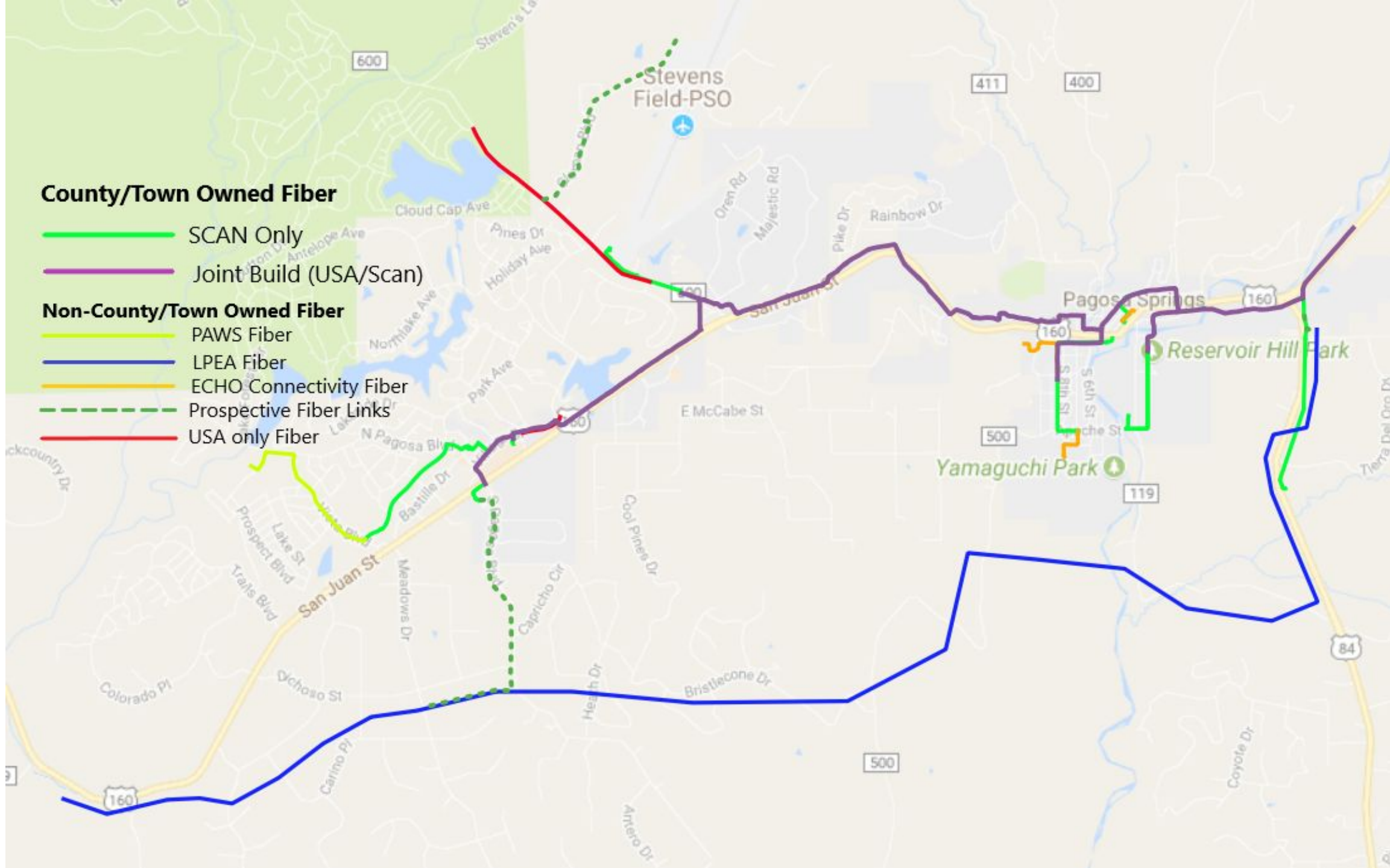


County/Town Owned Fiber

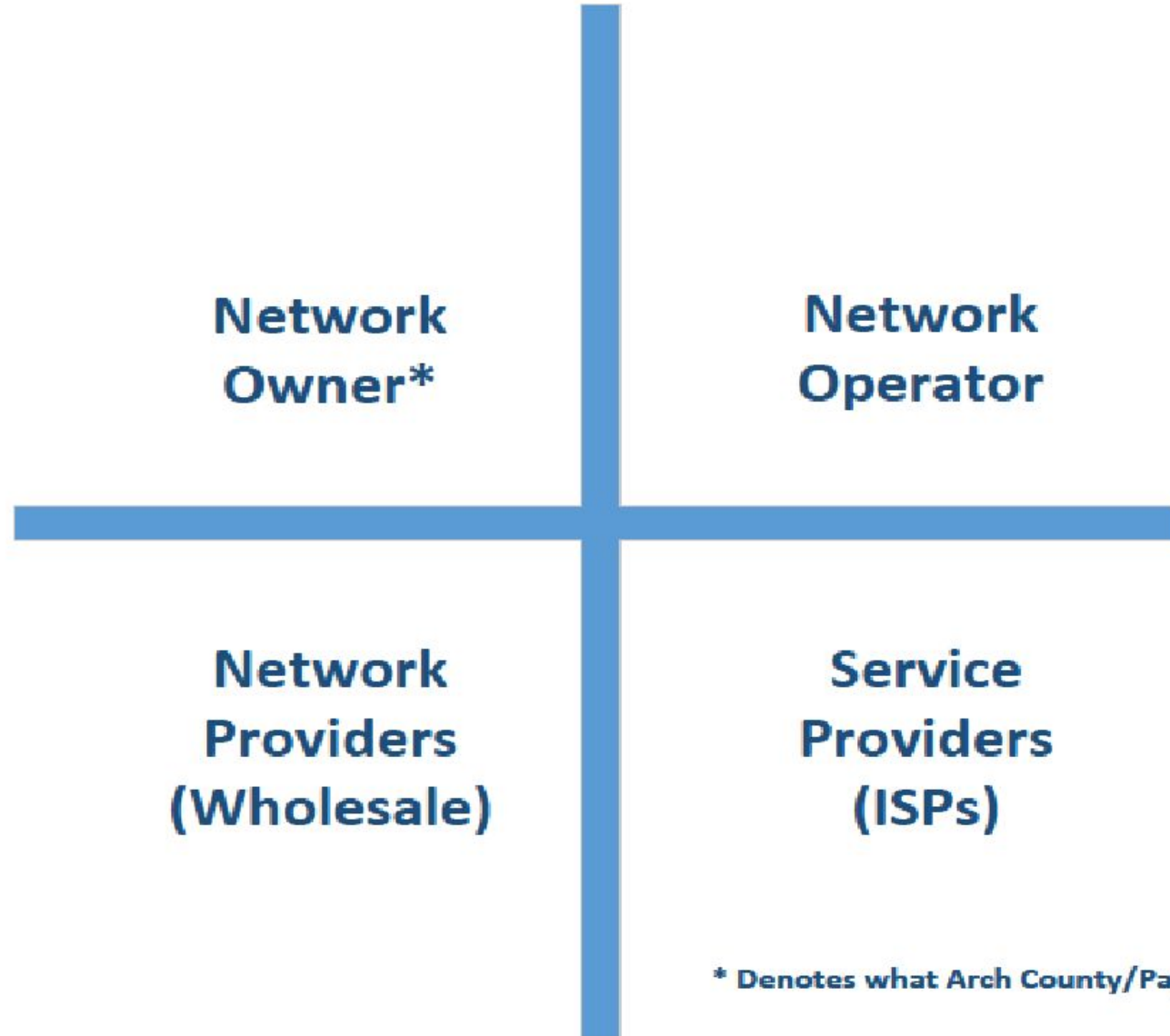
- SCAN Only
- Joint Build (USA/Scan)

Non-County/Town Owned Fiber

- PAWS Fiber
- LPEA Fiber
- ECHO Connectivity Fiber
- Prospective Fiber Links
- USA only Fiber



The 4 Necessary Components of a Municipal Network



* Denotes what Arch County/Pagosa want to be

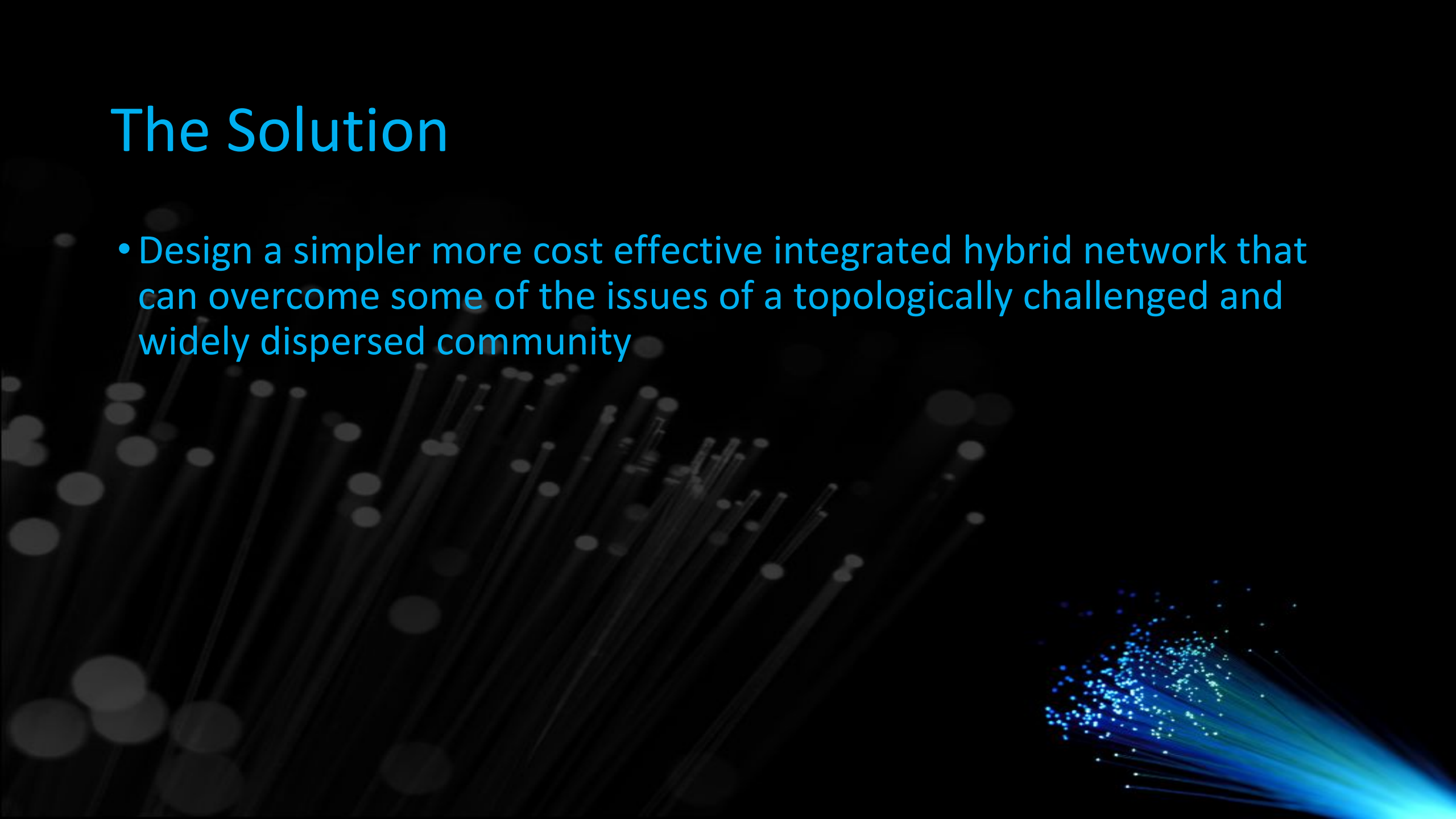
The Challenge

- 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




State Broadband Fund (DORA Administered)

- Covers only unserved areas (< 25Mbps/3Mbps)
- Funds last-mile development, requires individual customer addresses
- Rejuvenated through 2018 Legislation (SB-02, HB-1099)
- Submitted by ISP, must be backed by local government entities
- High likelihood of award if required steps are followed

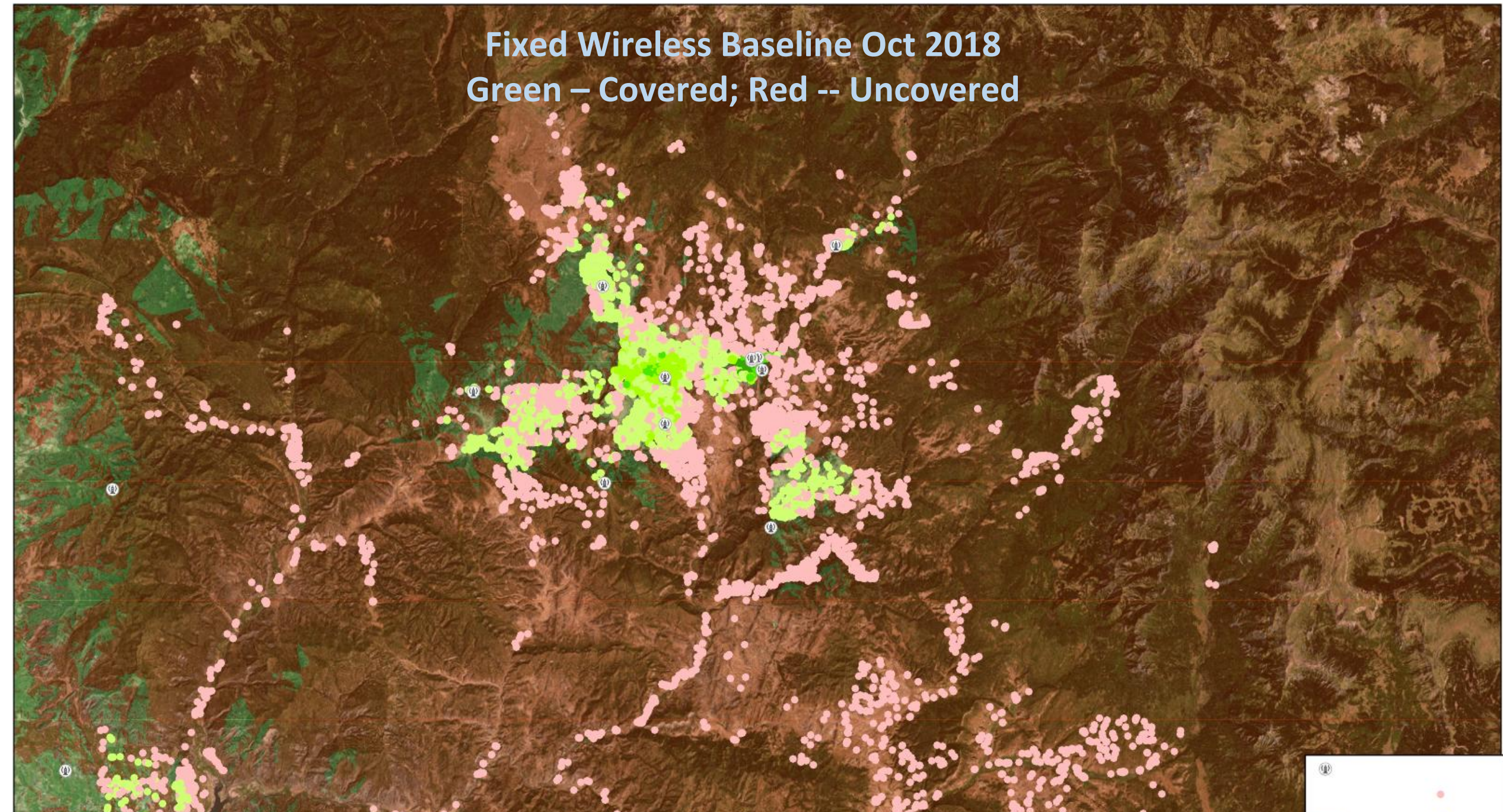
<https://www.colorado.gov/pacific/dora-broadband-fund/who-qualifies>

- <https://www.colorado.gov/pacific/dora-broadband-fund/grant-criteria>

Using “ViewShed” to determine coverage

- Add on to County GIS Product (ESRI ArcGIS)
 - Worked with Sam Montoia to create a baseline
 - Met with Fixed Wireless vendor to discuss best prospective projects
 - Developed new coverage data in Viewshed off these tower placements
- 

Fixed Wireless Baseline Oct 2018
Green – Covered; Red -- Uncovered

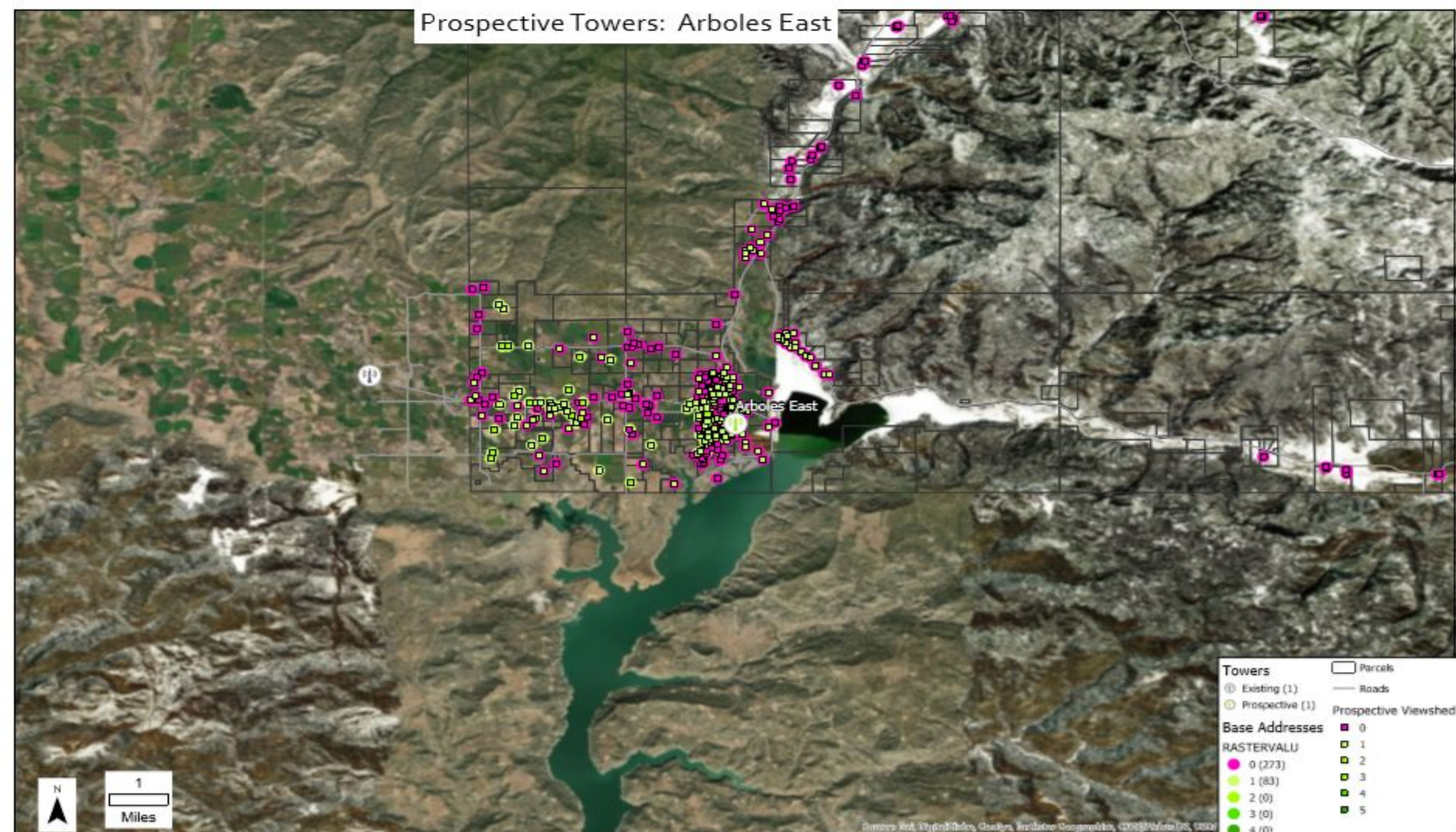


Design Impact

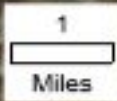
- Baseline represents 5,989 resident/business locations served
- New design represents 7,053 resident/business locations served
- 1,064 **NEW** resident/business locations served
- At 2.5 residents/location=2,660 potential new broadband users
- 18% increase in coverage



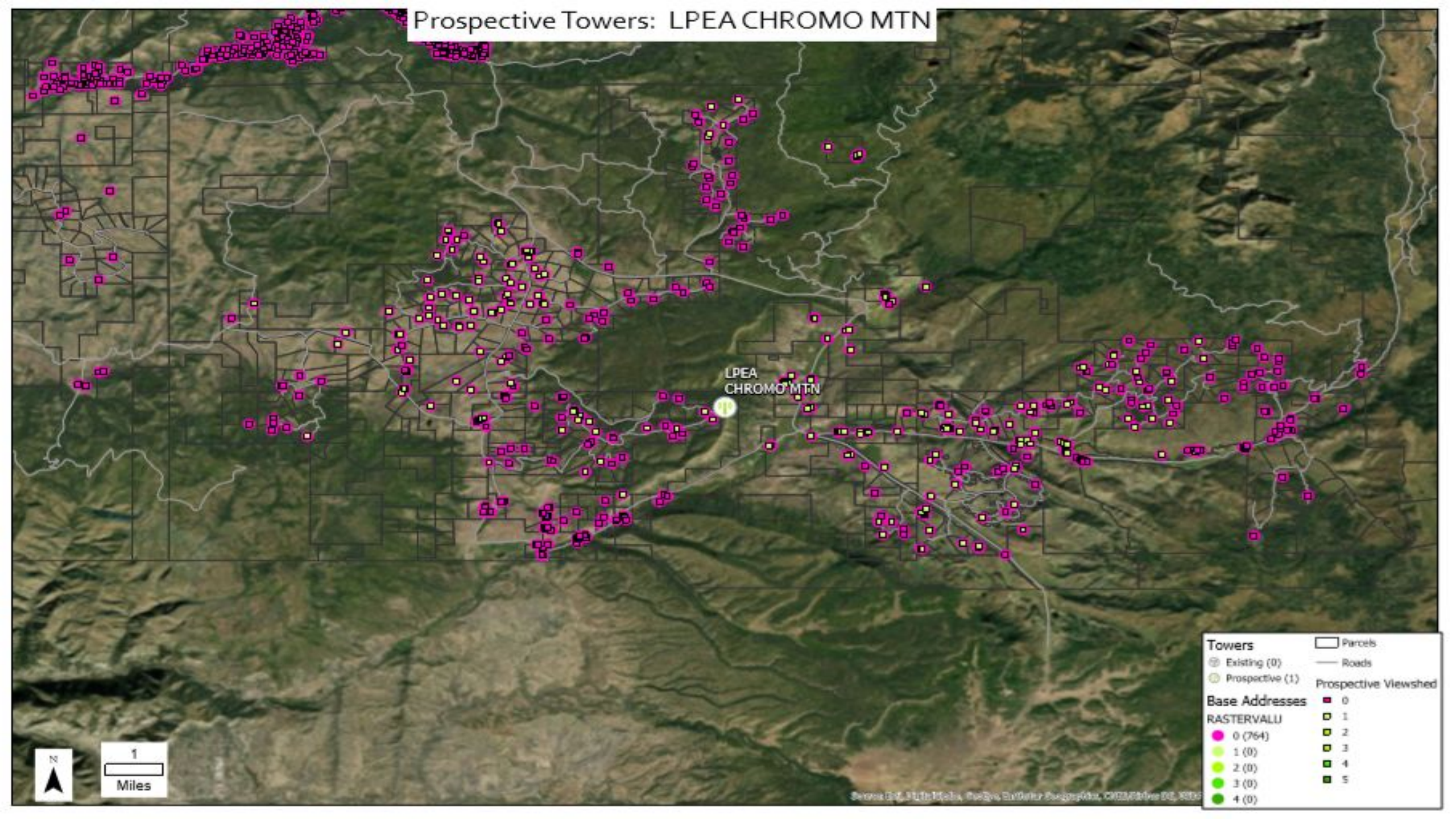
Prospective Towers: Arboles East



Towers	Parcels
Existing (1)	Roads
Prospective (1)	Prospective Viewshed
Base Addresses	0
RASTERVALU	1
0 (273)	2
1 (83)	3
2 (0)	4
3 (0)	5
4 (0)	



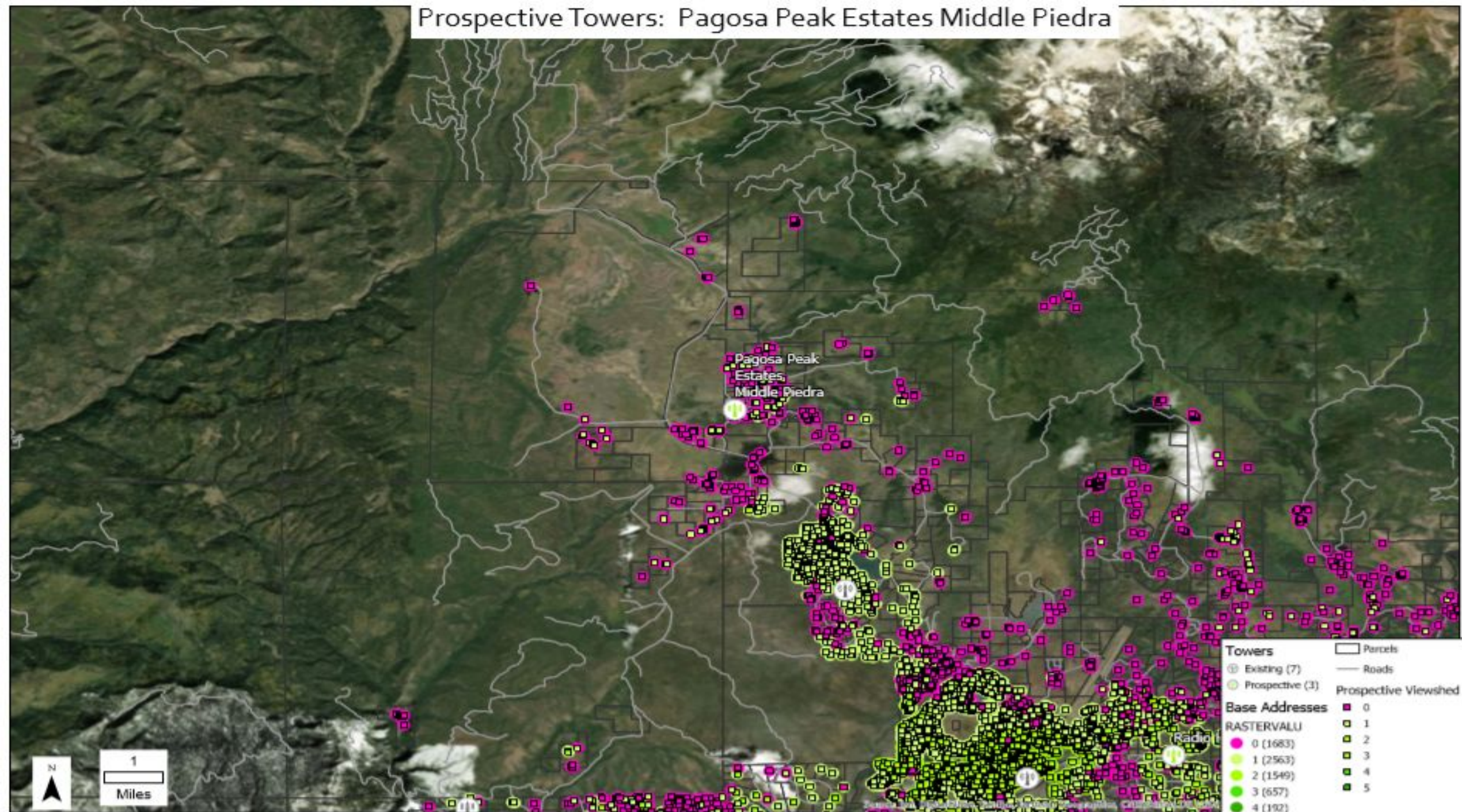
Prospective Towers: LPEA CHROMO MTN



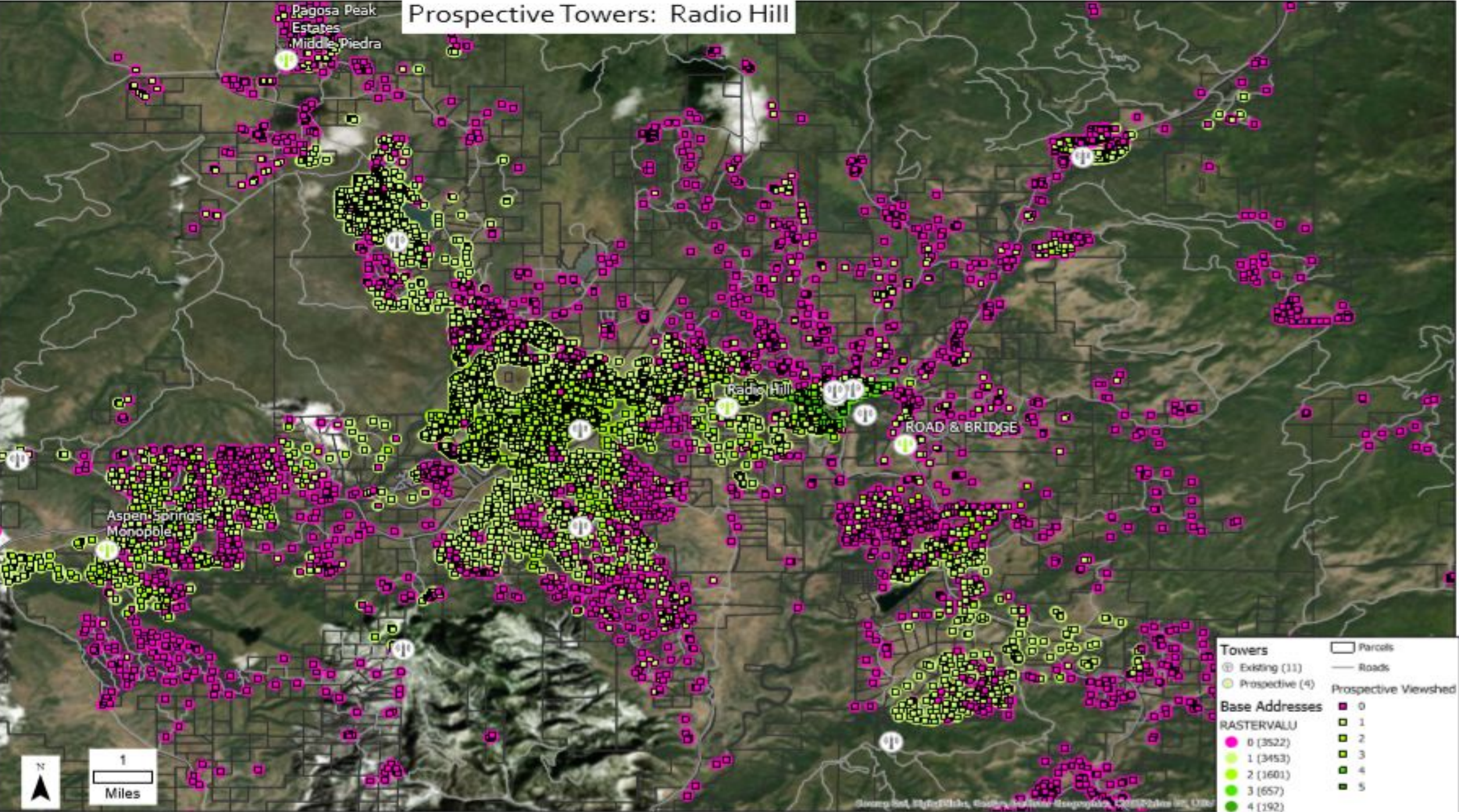
Towers	▭ Parcels
⊙ Existing (0)	— Roads
⊙ Prospective (1)	
Base Addresses	▭ Prospective Viewshed
RASTERVALU	▭ 0
● 0 (764)	▭ 1
● 1 (0)	▭ 2
● 2 (0)	▭ 3
● 3 (0)	▭ 4
● 4 (0)	▭ 5

N
1
Miles

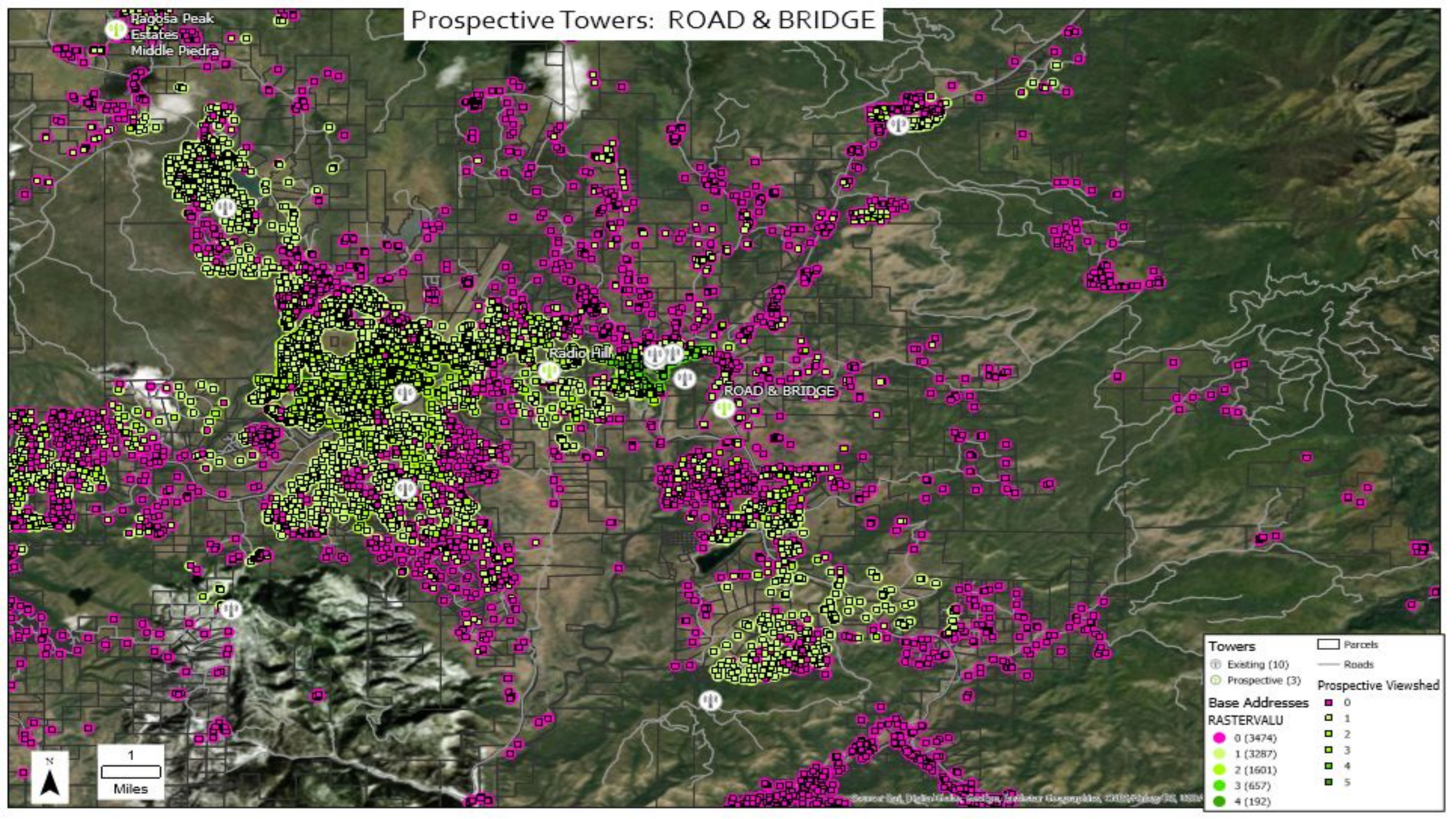
Prospective Towers: Pagosa Peak Estates Middle Piedra



Prospective Towers: Radio Hill

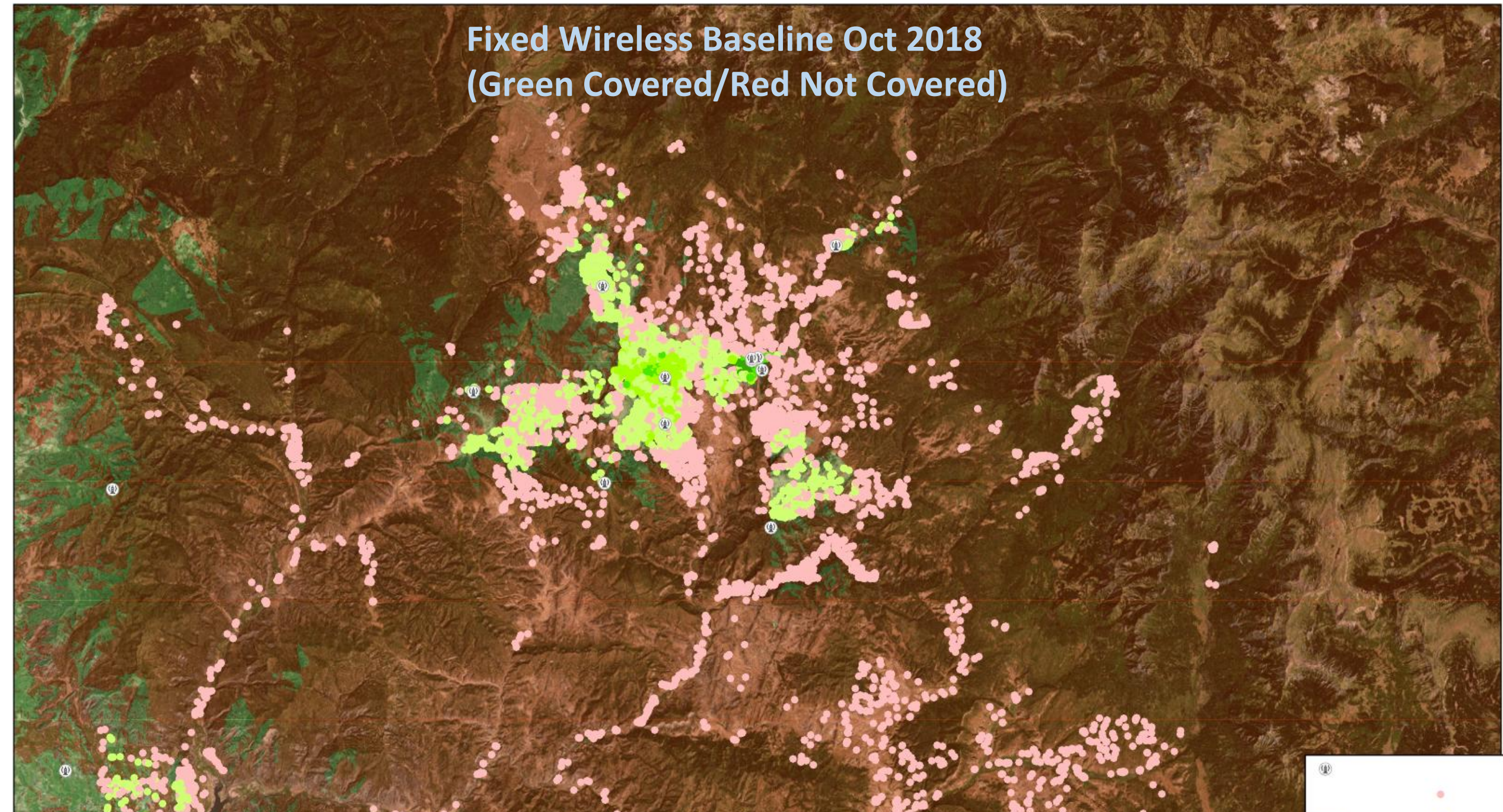


Prospective Towers: ROAD & BRIDGE

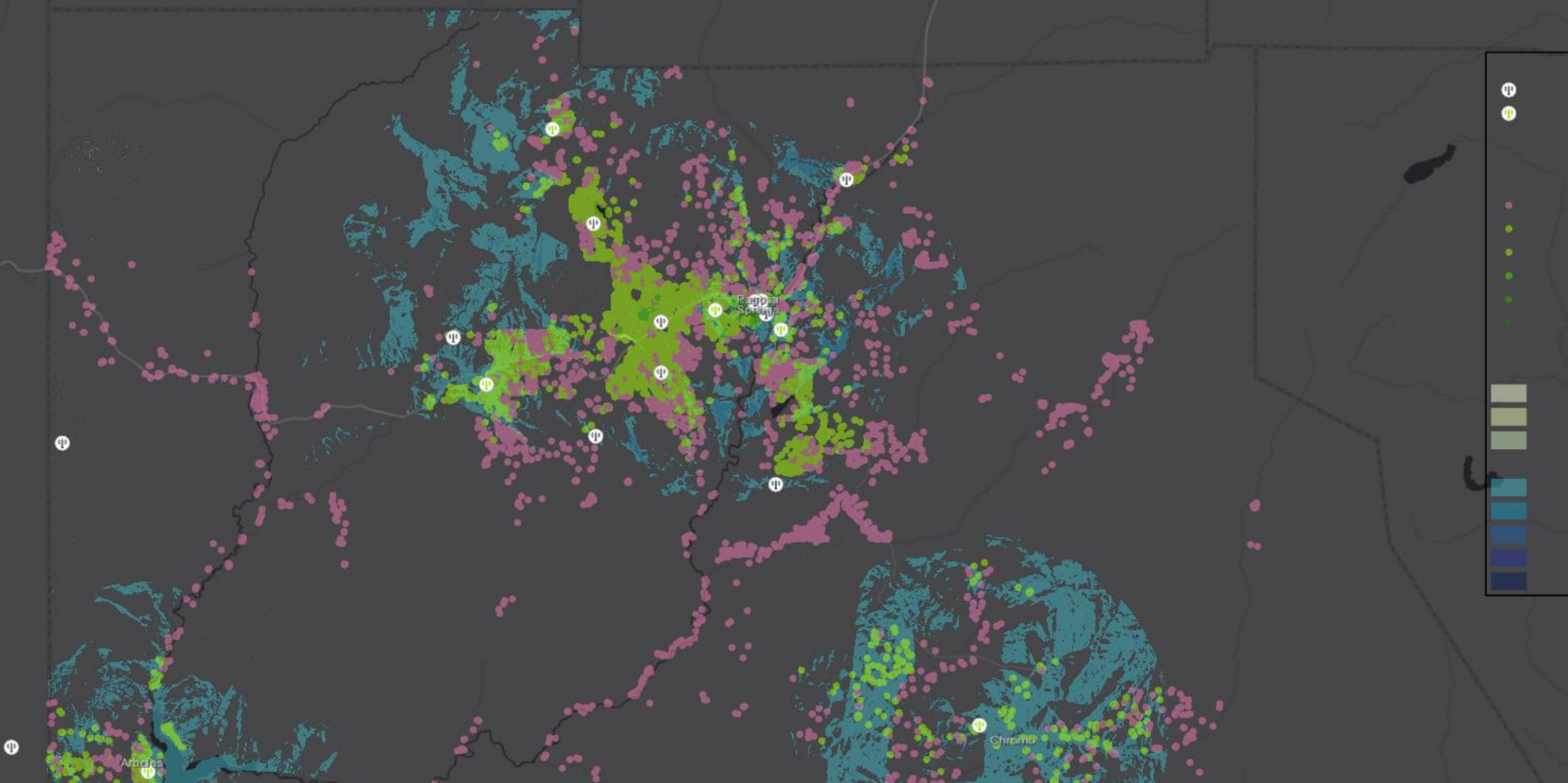


Source: Set, DigitalGlobe, GeoEye, Earthstar Geographics, CNR/SIP/IRIG, USDA

Fixed Wireless Baseline Oct 2018
(Green Covered/Red Not Covered)



New Project Viewshed Additions and Covered Addresses



Fall 2018 Notables

<u>Project</u>	<u>Estimated Cost</u>	<u>Other Share</u>	<u>City/County</u>
Joint_Fiber Build	\$1500	USA - \$750	\$750
Mapping (complete)			
Nxt Gen MM Wave Fixed Wireless Town Hall <i>(200Mbps capable – fiber fed)</i>	Skywerx		\$0
Nxt Gen MM Wave Fixed Wireless School	Skywerx		\$0
Finalize Joint Build Contract Ammendments with USA Communications (imminent)			\$5000
Full Baseline of Fixed Wireless Coverage for entire County			Part of July-Sept Project

2019 Pagosa Springs Broadband Infrastructure Projections

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>T/C Share 25%</u>	<u>30%</u>
Jacks Pasture Tower 70 '/HOA	\$35,000 Skywerx	DORA 75%/\$26,250	\$8,750	\$10,500
Arboles 60' POD	\$45,000 Skywerx	DORA 75%/\$33,750	\$11,250	\$13,500
Chromo LaPlata Tower	\$25,000 Skywerx	DORA 75%/\$18,750	\$6,250	\$7,500
Radio Tower Hill 45' POD Solar	\$60,000 Skywerx	DORA 75%/\$45,000	\$15,000	\$18,000
8 Mile Mesa Upgrade	\$20,000 Skywerx	DORA 75%/\$15,000	\$5,000	\$6,000
Road/Bridge 60' Tower	\$20,000 Skywerx	DORA 75%\$15,000	\$5,000	\$6,000

2019 Pagosa Springs Broadband Infrastructure Projections (cont).

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>T/C Share 25%</u>	<u>30%</u>
Carrier Neutral Building Space	\$25,000	No	\$25,000	\$25,000
Broadband Manager	\$75,000	No	\$75,000	\$75,000
Grant Writer	\$2,500	No	\$2,500	\$2,500
Option 1 Infrastructure Hardgoods		\$46,250	\$36,000	
Option 2 Cloman Blvd. (Phase 1)		possible	\$46,250	
TOTALS	\$307,500	\$153,750	\$200,000	\$200,000

2020 Archuleta County Broadband Projects (prospective)

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
Phase 2 Cloman Fiber (USA Communications)	\$35,046	DORA/DOLA?	\$8,762 - \$17,523
Fiber Mapping Tool	\$10,000	NO	\$10,000
Broadband Services Mgr	\$75,000	NO	\$75,000
SCAN Fiber Overlay 144 Ct	\$77,728	DOLA/DORA?	\$19,432 - \$38,864
SCAN Fiber /JB Rectify	\$10,000	NO	\$10,000
Performance Testing Devs	\$2,000	NO	\$2,000
TOTALS	\$211,775	\$55,387 - \$84,581	\$127,194 - \$153,387

2021 Archuleta County Broadband Projects (prospective)

<u>Project</u>	<u>Estimated Cost</u>	<u>Grant Eligible</u>	<u>City/County Share</u>
La Plata 72 East End Connect (FastTrack Comm)	\$15,840		DOLA? \$15,840
Broadband Services Manager	\$75,000		NO \$75,000
La Plata Substation to Hospital Interconnect (FastTrack)	\$66,000		DOLA? \$66,000
Upper/Lower Blanco Connections (Skywerx/CenturyLink)	\$75,000		DORA \$18,750 75%/\$56,250
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



Next Steps

- Work alongside SkyWerx in meeting a January 15th grant submission date
- Retain technical help to assist SkyWerx in creating 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

