# Broadband Feasibility Report
# Cochise County, AZ

**Finley Engineering and CCG Consulting**

**November 29, 2022**

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# Purpose of the Study

The scope of this project was two-fold.

- First, the report is aimed at helping to inform elected officials and the public about the state of broadband in the County today. The goal was to specifically identify the parts of the County that still don't have good broadband. That knowledge will help the County find a solution so that everybody has access to decent broadband.
- The report has also been created to provide the facts that ISPs need to pursue state and federal broadband grants. The report provides an estimate of the cost of building the needed broadband networks and calculates the amount of grants needed to find a broadband solution.

# Study Area

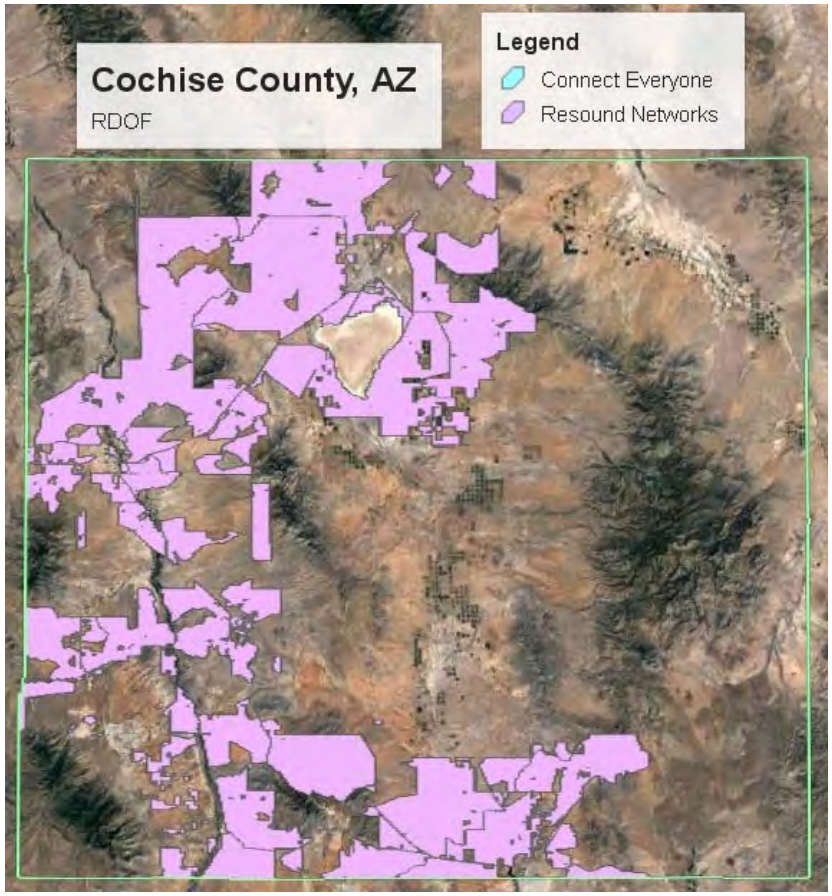
- The analysis was done for all areas in the county where customers don't have access to at least 100/20 Mbps broadband.
- We looked at two scenarios:
  - All rural locations without good broadband – 14,700 homes and businesses.
  - The rural areas other than the Tentative RDOF award to Resound networks – approximately 9,900 homes and businesses.

# Existing ISPs

- CenturyLink, Valley TeleCom, and Midvale Telephone Company are the incumbent telephone companies in the county.
- Sparklight and Cox are the incumbent cable companies, serving only in towns and cities.
- There is a fiber overbuilder in the study area, Valley Connections.
- Fixed wireless broadband is provided by Valley Connections, Transworld Network Corporation, Simply Bits, HPAZNET, CIS, Bluespan, and Dakota Pro.
- Residents also use satellite broadband and cellular broadband for home broadband.

# The RDOF Issue

- Two companies won funding from the FCC RDOF reverse auction program to bring broadband to rural areas.
- A small award went to Starry to serve 48 locations, but the company recently defaulted on the award and these area are now eligible for other grants.
- The big RDOF award was tentatively won by Resound Network to serve roughly 5,000 rural homes. It's now two years later and the FCC has still not made this award. This means these areas are in limbo and currently are not eligible for other broadband grants. The Resound Network award is controversial since the company proposes to deliver gigabit fixed wireless, a technology that doesn't seem likely to deliver that much speed.

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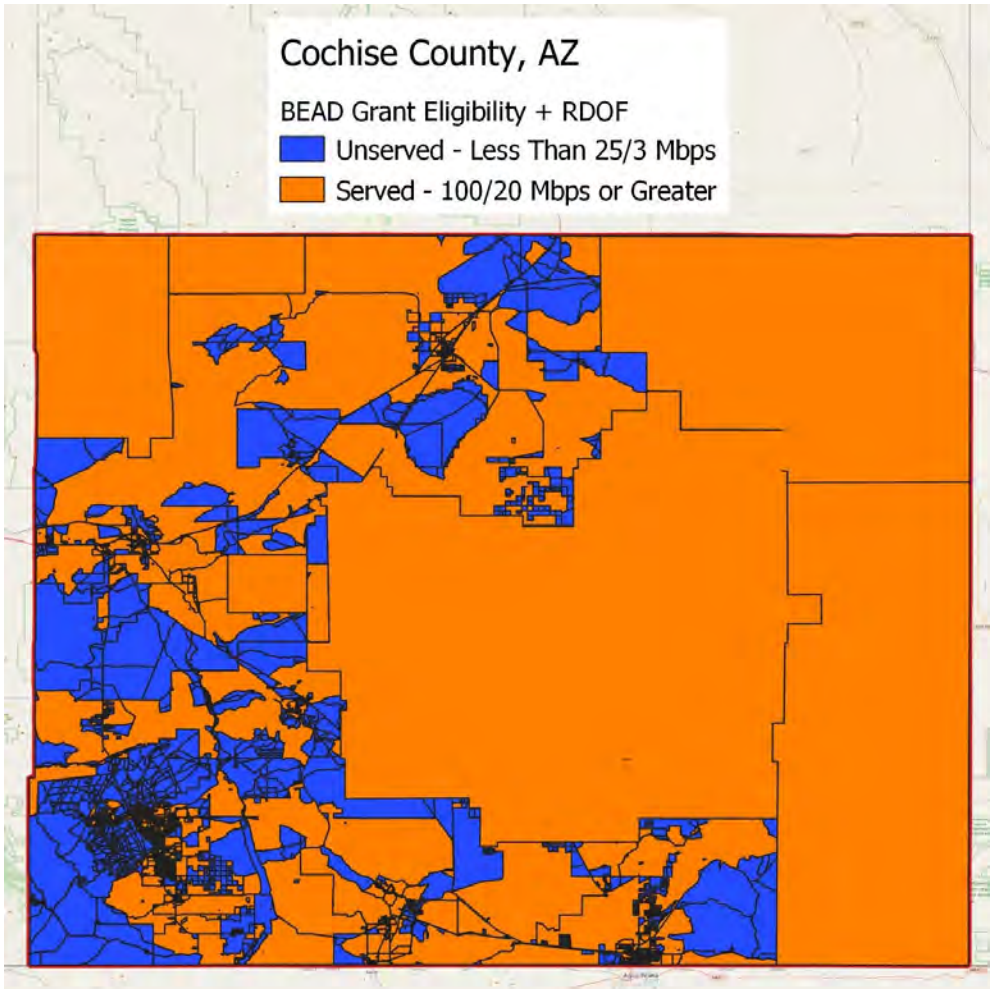


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# Market Outreach

- We reached out to the public to ask about current broadband usage:
  - Separate online surveys for residents and businesses.
  - Online Speed tests.
  - Interviews with key stakeholders.

# Online Residential Survey Results

- 7% of households say they can't get broadband. 2% of respondents only get broadband from a cell phone.
- 46% of respondents are unhappy with the value received for the price paid for broadband, 37% are unhappy with the reliability of the broadband connection, 35% of respondents are unhappy with download speeds, and 27% are unhappy with ISP customer service.
- The average price for broadband is $80 per month, this is higher than what we see in other communities. The average price for Cox Broadband in the county is over $90.
- 66% of respondents support the idea of funding a better broadband solution, with another 33% that might support but need more information. Only 1% of respondents do not support the idea.

# Speed Tests

We got access to over 60,000 speed tests.

| Provider | Number of Tests | Download (Mbps) | Upload (Mbps) | Latency (ms) |
|---|---|---|---|---|
| Telephone DSL | 3,635 | 16 | 3 | 44 |
| Fiber | 1,090 | 243 | 124 | 8 |
| Cable Companies | 26,779 | 174 | 12 | 19 |
| Fixed Wireless | 10,415 | 26 | 8 | 45 |
| Low Orbit Satellite | 3,425 | 95 | 11 | 58 |
| High Orbit Satellite | 145 | 31 | 3 | 683 |
| Cellular | 14,740 | 82 | 15 | 53 |
| Total | 60,229 | 113 | 14 | 37 |

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# Network Design: Key Considerations

Design Considerations

- Largest Investment
- Longest Estimated Life
- Look Forward – Not What is
  - Uses
    - Work From Home
    - Content Creation
  - Definition of Broadband
    - 2019 – 10/1
    - 2020 – 25/3
    - 2021 – NTIA & USDA 100/20

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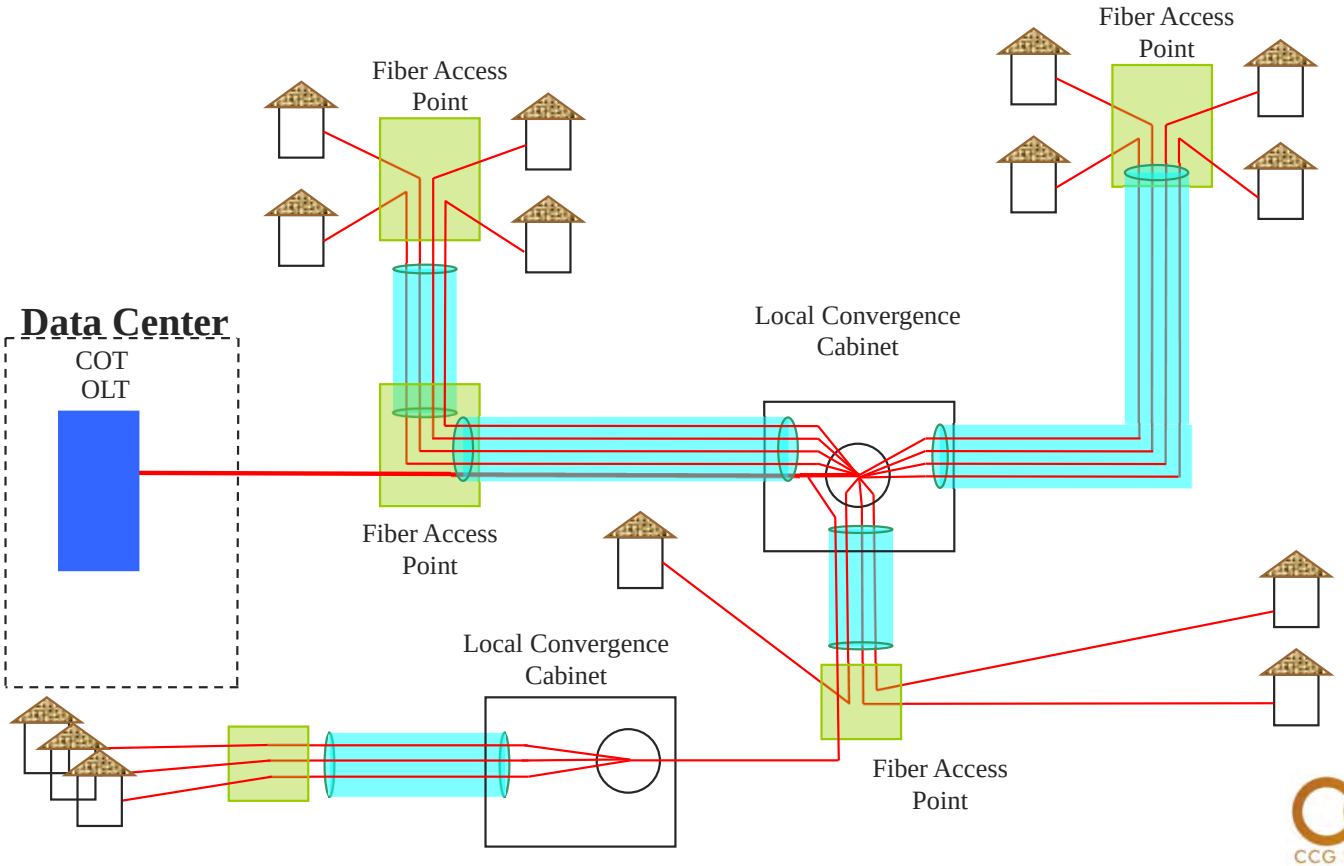
# Technology

- The RFP asked us to consider what technologies might be used to close the broadband gaps. Finley Engineering considered both wireless and fiber technologies.
  - We could not find a wireless solution that made sense due the housing density, trees, and topology.
  - We considered several fiber technologies and determined that passive optical network fiber technology is the best fit for the County.
- Network designed with XGS-PON technology capable of delivering 10-gigabit broadband.
- Required fiber: 1,127 whole study area and 617 miles in non-RDOF areas.

# Network Design: Key Considerations

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# Network Design: Key Considerations

Key Design Points

- Where: Fiber Network follows existing utilities for aerial / buried construction.
- Active vs Passive: Cost Model used an ODN capable of supporting both
  - Where is the research and development dollars going
- Capacity: 10Gbps today across the entire network, the upper limits are a limitation of electronics, not the ODN
- One Data Center: Redundant interconnect routes to one or more ISPs
- Extra fiber provided for future growth / expansion.

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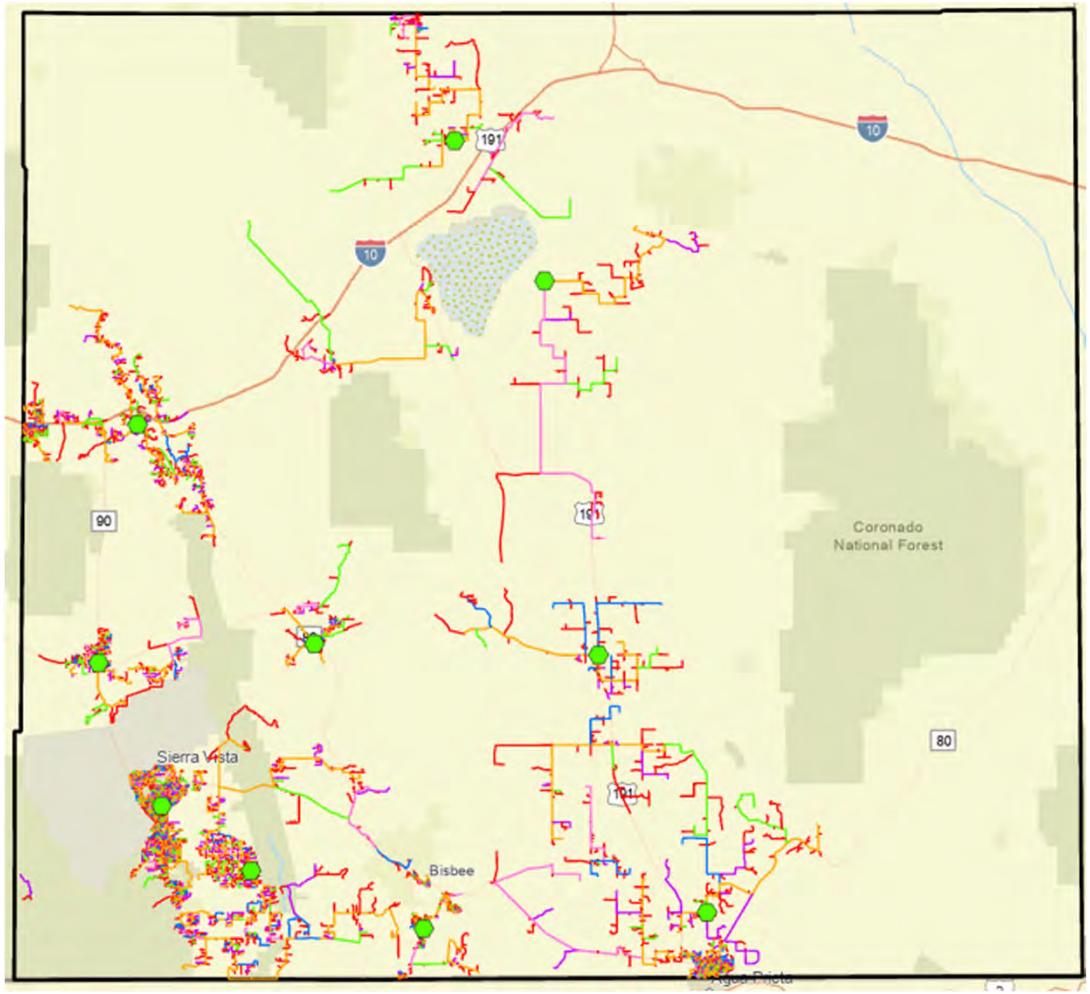
# Network Design: Methodology

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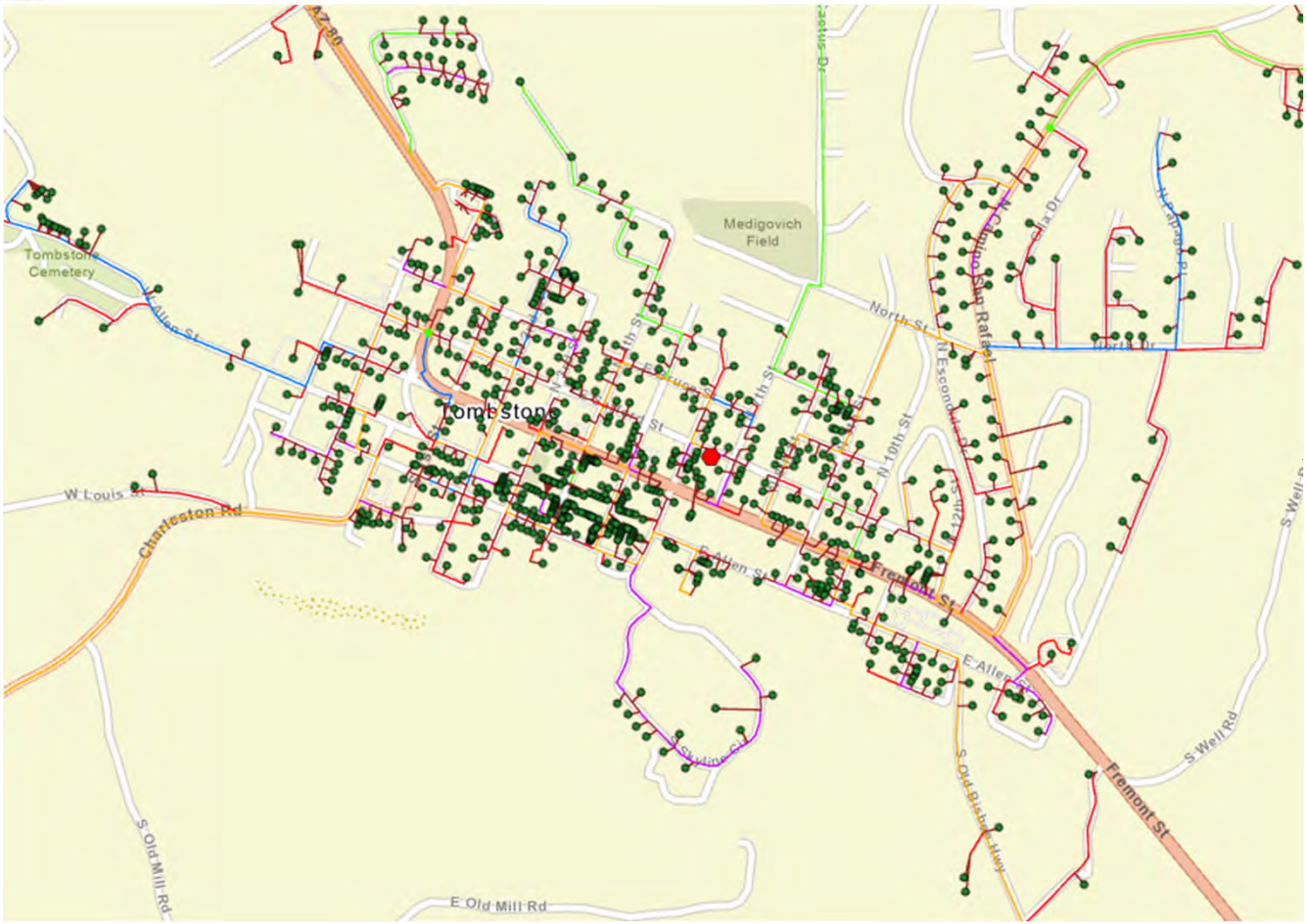


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# Cost of a New Fiber Network

| | Total Rural Area | Without RDOF |
|---|---|---|
| Fiber | $ 76,012,550 | $ 49,527,439 |
| Drops | $ 6,563,038 | $ 4,447,570 |
| Electronics | $ 7,554,393 | $ 5,874,731 |
| Huts | $ 2,075,000 | $ 1,660,000 |
| Operational Assets | $ 341,354 | $ 326,956 |
| Total | $ 92,546,335 | $ 61,836,696 |
| Passings | 14,724 | 9,915 |
| Cost per Passing | $6,285 | $6,237 |

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# Financial Analysis – Total Rural Area

Substantial Grants Needed

| Penetration | Assets | Breakeven Grant | % of Assets |
|---|---|---|---|
| 50% | $ 90.7 M | $45.7 M | 40% |
| 55% | $91.6 M | $39.7 M | 43% |
| 60% | $92.5 M | $34.1 M | 37% |
| 65% | $93.5 M | $28.2 M | 30% |
| 70% | $94.4 M | $21.8 M | 23% |

The upcoming BEAD grants can provide up to 75% grants.

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# Other Key Financial Variables

Financial performance is sensitive to other key variables:

- Interest rates
- Loan Terms
- Prices
- Cost of the Network

# Grant Funding

- Congress passed infrastructure bill with over $42.5 billion for broadband funding – will mostly be aimed at rural areas, but state will have a say in who gets funding. The State's share will be at least $600 million.
- With some minor limitations, the County can use ARPA funding as matching funds for broadband projects.
- The State of Arizona will have several rounds of state broadband grants.
- There is also funding available for digital literacy and getting computers into homes.

# Strategic Questions

- What to do about RDOF areas? What if FCC doesn't decide this soon? If the FCC awards this to wireless provider, will you consider them as a partner?
- Is the County Willing to Help Fund a Solution? If so, how much and in what manner?
- What is the County's Best Role in Finding a Solution? As a partner in grants or a supporter? Digital equity grants on top of infrastructure?

# Next Steps

- Reach out to ISPs. We recommend talking to potential ISPs as an early step. Informal discussions, RFI, or RFP?
- Community Outreach. How to involve the public in the process.
- Review Local Fiber Policies. Are there any barriers for ISPs that want to build a fiber solution?
- Challenge the FCC Maps? There is an current open window to challenge the FCC broadband map fabric.

# Contacts

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