

# Broadband Assessment Mason County, West Virginia

## Final Project Report

June 3, 2020



*This presentation is incomplete without the  
accompanying management discussion*

# Agenda

- Review of Progress to Date
- Capital Cost Estimates
- Community Rankings
- Network Options
- Feedback
- Recommendations
- Next Steps
- Project Milestone Update

# Progress to Date

- Conducted research & modeled the addressable market
- Interviewed key stakeholders
- Identified unserved and underserved areas
- Mapped communities in need
- Presented our initial findings to the to the Mason County Commission and PDC
- Mapped proposed network routes
- Calculated CAPEX projections for areas in need
  - Backbone costs (aerial and buried)
  - Last mile costs
  - Cost per household and per community
- Prioritized the communities based upon ranking criteria

# Demographics

Area	Population Estimate (2019)	Land Area in Sq. Miles (2010)	Estimated Number of Households	Persons per Household	Population Density (People per Sq. Mi.)	Broadband HH Unserved or Underserved (%)	Median HH Income	Poverty Rate
<b>Mason County</b>	26,516	431	10,849	2.4	62	34%	\$40,347	17%
<b>West Virginia</b>	1,792,147	24,038	734,676	2.4	75	22%	\$44,921	18%
<b>United States</b>	328,239,523	3,531,905	119,730,128	2.7	93	19%	\$60,548	12%

# Addressable Market

<b>Total Addressable Market for Retail Telecom Services for Mason County, West Virginia</b>				
<b>Telecom Service</b>	<b>Annual Revenue at Year 1</b>	<b>Annual Revenue at Year 5</b>	<b>Annual Revenue at Year 10</b>	<b>Cumulative 10 Year Revenue</b>
<b>Voice</b>	\$2,809,364	\$2,498,714	\$2,067,134	\$24,104,301
<b>Video</b>	\$7,552,758	\$6,571,281	\$5,558,034	\$64,231,558
<b>Data</b>	\$7,951,091	\$9,367,782	\$10,195,509	\$93,465,482
<b>Wireless</b>	\$9,015,519	\$11,866,398	\$15,265,567	\$123,704,309
<b>Total</b>	<b>\$27,328,731</b>	<b>\$30,304,175</b>	<b>\$33,086,244</b>	<b>\$305,505,651</b>

# Service Providers

Provider	Technology	Willingness to Partner	Comment
<b>Agile Networks</b>	Wireless	Yes	Ohio-based company providing data transport and broadband internet services. Recently acquired by InSite Wireless Group. Work primarily with public safety and carriers but are also serving residential in some regions of Ohio. Has an existing presence in Mason Co. Interested in partnering if County assets can be made available and a sustainable financial model can be achieved.
<b>Altice (Suddenlink)</b>	Cable	Yes	Operations in New Haven, Mason, Henderson, Point Pleasant, and Hartford. Headend in Point Pleasant. Approx. 1,400 Internet customers, or 13% of households. ~200k subscribers in WV.
<b>Frontier</b>	DSL	Unlikely	Recently filed for bankruptcy. Aged network with serious reliability issues.
<b>HughesNet</b>	Wireless	Unknown	Reliability and affordability issues.
<b>JB-Nets</b>	Wireless	Unknown	Point to point wireless Internet with operations in Ohio.
<b>Segra</b>	Fiber	Yes	Formerly LUMOS. Ethernet, transport provider. Has fiber to the hospital in Point Pleasant but network is at capacity - would have to upgrade to increase capacity. Goal is to be number one provider in WV.

# Key Findings from Stakeholder Interviews

© All Rights Reserved 2020

- Mason County is well positioned to support a growing economy
  - Access to rivers and rail
  - Productive labor force
  - Affordable taxes and cost of living
  - Proximity to several major cities in the region
- Major challenges to this success:
  - Broadband availability & affordability
  - Infrastructure/Site Readiness
  - Mindset
- Mason County demographics are typical of most West Virginia counties, making it difficult to make a business case for broadband outside of Point Pleasant
  - Lower than average median household incomes
  - Low density, rural areas with topography challenges (mud and floods)
  - Population decline

# Key Findings from Stakeholder Interviews (continued)

© All Rights Reserved 2020

- **Broadband**
  - Availability, affordability and reliability are all major issues
  - There is very little fiber available in the county -- dark fiber to libraries & sheriff's office, but no one can afford to light it
  - More populated areas along the Ohio river have more options than rural areas
  - Bottom line -- if you don't have Suddenlink, you don't have broadband
- **Cellular**
  - No county-owned fiber to cell phone towers
  - Cell service is "nonexistent" in the less populated areas, especially near valleys, creeks, and school systems
  - Service along major corridors is inadequate -- multiple dead zones
  - Even downtown Point Pleasant lacks adequate cell phone service



# Current State vs. Future State

Goal	Current State	Future State
<b>Economic Development</b>	Lack of broadband & cellular service is a hindrance to growth and causes operational inefficiencies	Broadband serves as a key driver and catalyst for economic growth
<b>Education</b>	Digital divide	Every student has access to online learning and engagement from home
<b>Emergency Services</b>	No fiber to towers	Fiber to all towers, real time communications
<b>Residential Services</b>	Inadequate broadband accessibility, affordability, and reliability in most of the county	Work from home, telemedicine, distance learning options

# Other Considerations

- The Coronavirus pandemic has amplified awareness of the need for broadband, especially in rural areas for telemedicine, distance learning, and working from home
- Two important middle mile initiatives could serve as catalysts for improving connectivity in Mason County:
  1. Facebook Middle Mile Project
    - 275-mile network
    - Charleston to Ashburn - under construction, est. 2021
    - West of Charleston - permitting underway
  2. ThunderCloud
    - 60-mile fiber network being promoted in Charleston, WV
    - Partnership between Marshall University, Alpha Technologies, other nonprofits
    - Would address Region 2 (plus Putnam and Kanawha County), 200k households and 10k businesses

# Unserviced Communities

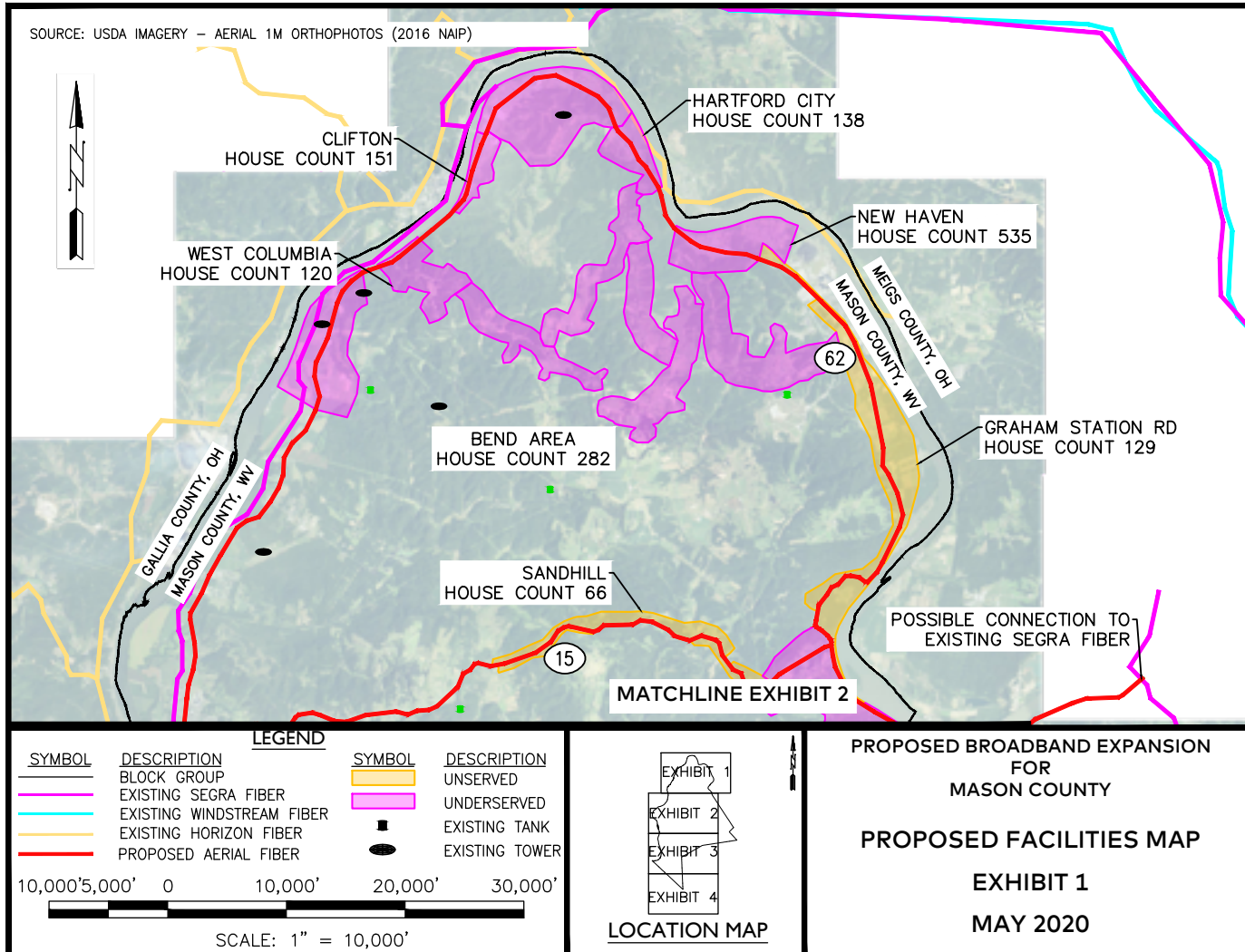
Community	Route Length (miles)	Estimated Number of HH/Potential Connections	AREA (SQ. MI.)	Density: Housing Units per Square Mile
Ambrosia	9	190	3	61
Apple Grove	5	179	4	47
Arbuckle / Grimms Landing	5	140	2	74
Ashton / Glenwood	6	234	3	94
Barton Chapel	4	42	1	38
Clendenin	10	88	3	28
Crab Creek	9	89	3	34
Flatrock	20	149	1	186
Hannan / Ashton-Upland	11	234	3	75
Jerry's Run	9	364	4	91
Leon	8	198	2	104
Letart / Chestnut Ridge Rd Area	7	217	3	68
Letart / Graham Station Rd Area	8	129	3	48
Oshel Rd	4	68	1	97
Roosevelt Elementary School	3	101	1	202
Sandhill Rd	5	66	1	55
Southside	12	136	11	12
<b>Total</b>	<b>134</b>	<b>2,624</b>	<b>48</b>	<b>55</b>

# Underserved Communities

Community	Route Length (miles)	Estimated Number of HH/ Potential Connections	AREA (SQ. MI.)	Density: Housing Units per Square Mile
Bend Area (Interior)	16	282	6	46
Clifton	3	151	0	378
Gallipolis Ferry	6	374	3	107
Hartford City	4	138	1	230
New Haven	8	535	1	439
West Columbia	2	120	1	160
<b>Total</b>	<b>40</b>	<b>1,600</b>	<b>13</b>	<b>127</b>

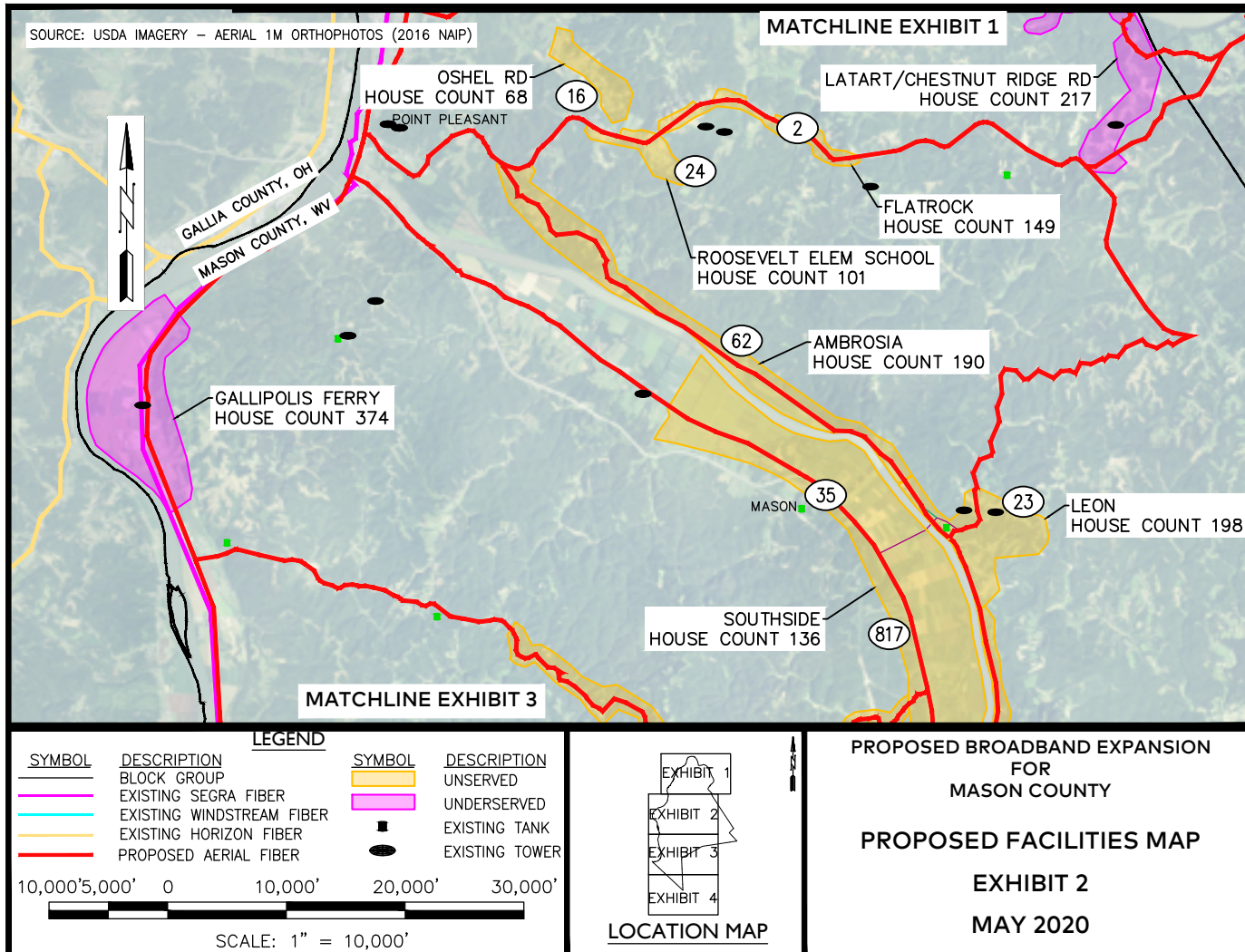


# Proposed Network Plan – Detail (1 of 4)





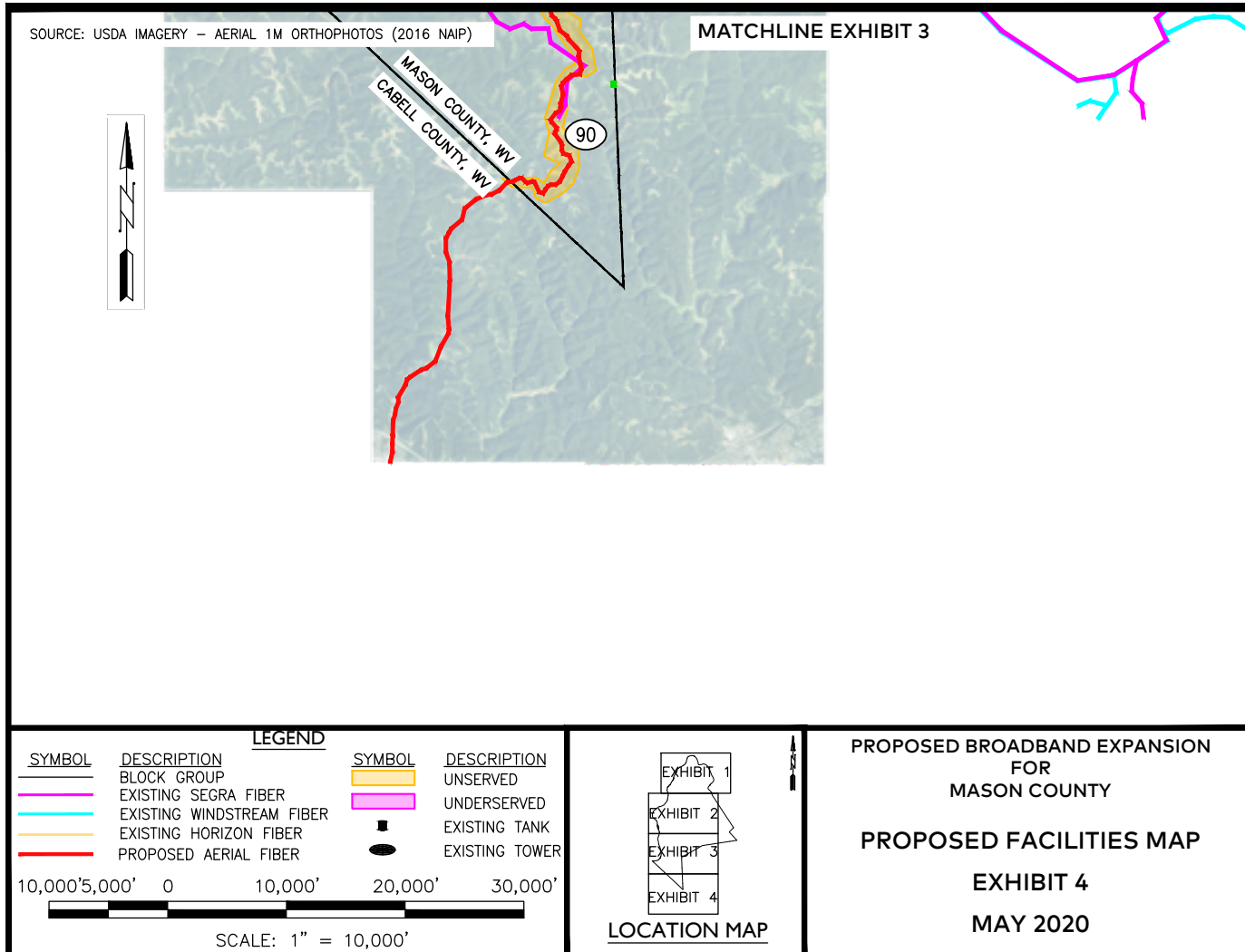
# Proposed Network Plan – Detail (2 of 4)







# Proposed Network Plan – Detail (4 of 4)



# Capex by Fiber Route

Backbone Fiber Route	Start/Finish	Backbone Fiber Length (miles)	CAPEX - 80/20 Buried/Aerial <sup>2</sup>
A	FB Fiber (Hunington) to Apple Grove	23	\$2,900,000
B	FB Fiber (Milton) to Apple Grove	26	\$3,200,000
C	Apple Grove to Point Pleasant	16	\$2,000,000
D	Point Pleasant to Millwood (Segra)	20	\$2,500,000
E	Point Pleasant to Letart/Route D	18	\$2,300,000
F	Point Pleasant to Hartford/Letart	26	\$3,100,000
G	Point Pleasant to Route B Loop (Southside)	22	\$3,000,000
H	Southside to Gallipolis Ferry	15	\$1,900,000
I	Route D to Leon/Route G	12	\$1,500,000
J	Leon to Point Pleasant (Ambrosia)	9	\$1,300,000
K	Leon to Grimms Landing/County Line	7	\$1,000,000
L	Grimms Landing to Route G Loop (Segra)	9	\$1,200,000
<b>Total</b>		<b>203</b>	<b>\$25,900,000</b>

# Capex by Community

Community	Last Mile Fiber Length (miles)	Last Mile CAPEX - 80/20 Aerial/Buried	Est. Number of Households/Connections	Est. Cost per Connection
Ambrosia	9	\$963,230	190	\$5,070
Apple Grove	5	\$711,733	179	\$3,976
Arbuckle / Grimms Landing	5	\$699,950	140	\$5,000
Ashton / Glenwood	6	\$827,077	234	\$3,535
Barton Chapel	4	\$498,661	42	\$11,873
Bend Area	16	\$1,539,714	282	\$5,460
Clendenin	10	\$940,492	88	\$10,687
Clifton	3	\$546,317	151	\$3,618
Crab Creek	9	\$880,234	89	\$9,890
Flatrock	20	\$532,754	149	\$3,576
Gallipolis Ferry	6	\$1,047,943	374	\$2,802
Hannan / Ashton-Upland	11	\$1,138,079	234	\$4,864
Hartford City	4	\$612,032	138	\$4,435
Jerry's Run	9	\$1,232,374	364	\$3,386
Leon	8	\$908,134	198	\$4,587
Letart / Chestnut Ridge Rd. Area	7	\$882,166	217	\$4,065
Letart / Graham Station Rd	8	\$840,079	129	\$6,512
New Haven	8	\$1,382,831	535	\$2,585
Oshel Rd	4	\$507,893	68	\$7,469
Roosevelt Elem School	3	\$547,027	101	\$5,416
Sandhill Rd	5	\$594,667	66	\$9,010
Southside	12	\$1,099,437	136	\$8,084
West Columbia	2	\$537,074	120	\$4,476
	<b>174</b>	<b>\$19,469,899</b>	<b>4,224</b>	<b>\$7,247</b>

# Ranking Methodology

Criteria	Weighting
Unserved or Underserved Community	40 Points: Unserved, 20 points Underserved
CAPEX per Household (incorporates number of potential connections)	20 Points: Lowest cost-per-household
HUD/CDBG Eligible	15 Points: Greatest LMI %
% of Households with School-Age Children	15 Points: Greatest % of School-Age Children
Proximity to Apple Grove Site	10 Points: Closest to Site (mi)
<b>Total Possible Points</b>	<b>100</b>

# Community Rankings

Ranking	Community	Total Score	Served by Route
1	Ashton / Glenwood	88	A
2	Hannan / Ashton-Upland	86	B
3	Apple Grove	82	A,B
4	Leon	81	I,J,K
5	Jerry's Run	81	B
6	Flatrock	73	D
7	Letart / Chestnut Ridge Rd Area	72	E,F
8	Ambrosia	70	J
9	Roosevelt Elementary School	70	D
10	Oshel Rd	67	D,E
11	Barton Chapel	66	B
12	Arbuckle / Grimms Landing	66	K,L
13	Clendenin	66	B,C
14	Letart / Graham Station Rd Area	65	F
15	Crab Creek	64	H
16	Southside	63	G
17	Sandhill Rd	61	E
18	Gallipolis Ferry	59	C
19	West Columbia	55	F
20	Hartford City	54	F
21	New Haven	53	F
22	Clifton	51	F
23	Bend Area (Interior)	49	F

# Recommendations

- Think big -- but start small -- with Fiber Routes A & B
  - To ensure Apple Grove project has adequate infrastructure
  - To access Segra's network for connectivity
  - To connect with Facebook's network for further redundancy and diversification
  - To create network connections to unserved and underserved communities
- Develop a framework of broadband attraction by leveraging existing assets and future projects -- consider RFP process
  - To attract further investment from existing providers
  - To create opportunities for additional service providers
  - To develop a more competitive environment
- Seek funding and explore partnership opportunities with ongoing broadband initiatives and service providers

# Next Steps

- Gather feedback from the Mason County Commission and the PDC on this presentation
- Draft the final report
- Continue working with service providers to identify best-possible partners
- Support Region 2 as it seeks funding
  - CDBG
  - USDA
  - ARC
  - EDA
  - FCC

# Project Milestone Update

