



Housekeeping Items

Reminders

- Cameras on! Introduce yourself in the chat!
- Be prepared to participate, ask questions and contribute during the discussion portion
- We will record all presentations and make available following the call today
- The participant discussions will not be recorded and "off-the-record"
- Respecting the space to openly discuss

Every county has unique needs, and each county should make the decision that is best for their community!



My County. My NACo.

All county elected officials and staff are members and can:

ACCESS – A seat at the table

ENGAGE – on the issues that matter

NETWORK – with folks who know what it's like to walk in your shoes

SAVE – money, time and resources

SUCCEED – as a county and as an individual

To learn more about a NACo membership, visit our membership inquiry page



When we come together as counties, our collective voice is insurmountable

Gary Moore, Judge-Executive, Boone County, Kentucky

Today's Roadmap







A Foundational Review of Broadband

County Success Story!

Group Discussion



A Foundational Review of Broadband

What is broadband technology?

What processes involve the county?

What is the funding horizon for broadband?

Where does the provider come in to play?



A Foundational Review of Broadband

Alex Kelley, Head of Broadband Consulting, Center on Rural Innovation (CORI)



Broadband is just data (1s and 0s) transmitted over distance

- Wirelessly using electromagnetic waves
- Over copper wires using electromagnetic pulses
- Over glass strands using lasers



Key Features of Data Transmission

Data Transmission Measured in Megabits per second (Mbps)

Speed in which small pieces of data (image and video) come from the web to your device

Download Speed

Speed of getting information from the web to your device

Upload Speed

Speed at which you can send information from your device to the web

Latency

• The delay in time (lag) it takes data to transfer data from one part of the network to another (e.g. the web to your device)

Jitter

Variation in time and time delay while transmitting data



Common Technologies





Common Broadband Technologies

DSL

- Oldest technology;
 slowest option
- Utilizes phone lines for data transmission
- Speeds decrease with distance from central offices (networking equipment)

Wireless

- LTE (currently 4G & 5G),
 Satellite (traditional &
 LEO), Fixed Wireless
- Speeds can slow during bandwidth congestion
- Geography can inhibit transmissions
- Data caps and speed throttling are common

Cable

- Speeds can slow during high congestion
- Upload speeds are significantly slower than download speeds
- Companies can be reluctant to upgrade to new technologies
- Not always available

Fiber

- Fastest speeds
- Symmetrical upload & download speeds
- Future-proof technology is able to scale to faster speeds
- Long-term
 maintenance costs are
 lower (made of glass)



New / Emerging Technologies

Low Earth Orbit (LEO) e.g., Starlink

- Closer to earth than traditional satellites, but still has higher latency and affected by trees and topography
- Speeds in practice <100Mbps download and <20Mbps upload
- Satellites need to be replaced as often as every 5 years
 - RISK: if not profitable, companies may shutter services

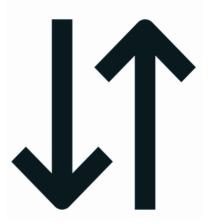
5 G

- Industry has created confusion around this term
- Can reach gigabit speeds in perfect conditions
- Requires small cell nodes 500-800 feet apart
 - Deters rural deployment for the near future
- Higher frequencies are more impacted by walls and barriers





Why are the vast majority of communities choosing fiber?



Symmetrical upload & download speeds - that are faster and faster as demand increases



Future-proof technology that does not need to be replaced as
often as other infrastructure



Biggest impact on economic development and quality of life

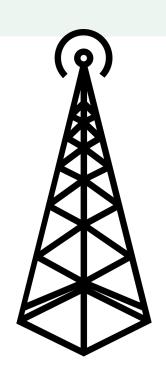
There has a been a paradigm shift due to the resources available for capital expenditures - communities are aiming for fiber now with 1-time money.

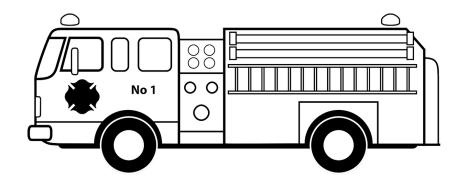


Fiber is prerequisite for other connectivity

Fiber networks allow for expansion of:







Cellular LTE service

Fixed Wireless (including 5G)

Public safety networks, transportation applications, etc.

Free, philanthropically supported access to expertise

- 1. Resource Library a searchable database of vetted broadband program resources including plug and play contracts, case studies, how-to guides, and more.
- 2. Community Conversations an online community forum where members can ask questions, share their experiences, and have access to educational materials and other relevant content.
- 3. **Help Desk** a virtual interface featuring FAQs and the option to book an appointment to speak with broadband experts about the issues in your backyard!

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County Processes in Broadband



Pole Attachments

Counties are often primary stewards of public utility poles



Environmental & Historical Reviews

Counties oversee permitting processes for environmental and historical reviews within our jurisdictions



Rights of Way (ROW)

Counties often manage the rights-of-way for public property held in trust for the community



County Solutions in Broadband



Dig once policies

This applies to all construction policies – particularly valuable to leverage for broadband deployment



Asset mapping

Counties can leverage internal resourcing to map county assets in advance of infrastructure projects



One-Touch-Make-Ready (OTMR)

This policy allows for pole owners to conduct all make-ready tasks at the same time in advance of a deployment project



Can my county get involved directly in broadband?

- County-owned broadband, sometimes referred to as municipal or community broadband, is wholly permissible in 33 states
- Common restrictions in other states may include:
 - Required referendums to provide broadband services directly
 - Profitability timelines for build-out projects
 - Lack of private providers in an area
- Counties can equally serve as diligent partners in broadband expansion and deployment opportunities

A Foundational Review of Broadband

What is broadband technology?

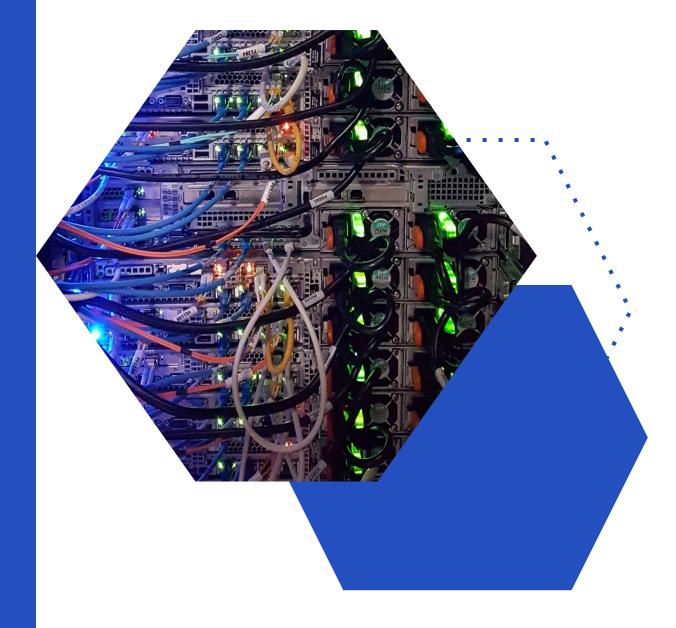
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Broadband Funding Landscape





Majority of Broadband Funding today

	Broadband Equity Access and Deployment (BEAD)	County ARPA Funding	Capital Projects Funds		
Elig ib le Projects	To be determined by states, but overall preference for FTTH	Flexible uses, including broadband	State by state determination - but FTTH and usually wireless are permissible		
Eligible Entities	Municipal Entities cannot be excluded	Flexible applications	Determined by state policy - eligible to municipal entities if state allows		
Eligible Service Areas	TBD based on the updated FCC maps and NTIA challenge process	Lack of affordable, reliable or accessible high-speed internet services (100/20)	Eligibility set by states - often 25/3		
Application Info	Applications will open end of 2023 at the earliest	Counties have until 2024 to obligate funds and 2026 to expend funds related to broadband deployment	State by state basis		

Other Federal Funding for Broadband

USDA

Reconnect program: Grants, Loans, and 50/50

Eligible areas lack 100/20Mbps

Most recent round closed yesterday - will open again next year TBD

EDA

Recipient must be municipal entity

Eligibility not related to existing service

Must prove job creation

HUD

Counties may use CDBG program for broadband funding

Must meet one of these needs:

Benefit to low- and moderate-income persons, Elimination of slums/blight, and Urgent need

ARC, DRA, Northern Borders

Variety of programs relevant to particular geographies

Typically use rules similar to EDA and typically have specific broadband-focused programs



Other Funding Sources

General Obligation (GO) Bond

GO bonds are backed by the full faith and credit of the issuer (typically ultimately taxpayers)

- Private partner can often guarantee payment of bonds
- Bonds are not issued directly but are sold through an underwriter

Revenue Bond

Revenue bonds are backed by revenue of a service.

- Revenue bonds used to expand network, once network reaches certain size and reliability
- This is a great source of follow-on funding for municipal networks

Friendly Private Debt

Any number of private entities can provide capital, in the form of a loan or grant.

- High Networth individuals
- Impact investors
- Banks
- CDFIs
- Entities w/ endowments

Open Market Private Debt

Business plan and partnership agreement must show clear signs of sophistication and success to raise this capital.

- Often unsecured
- Typically 9%+ interest
- Fundraiser takes 3-4% commission



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NACo Broadband Bootcamp November 3, 2022

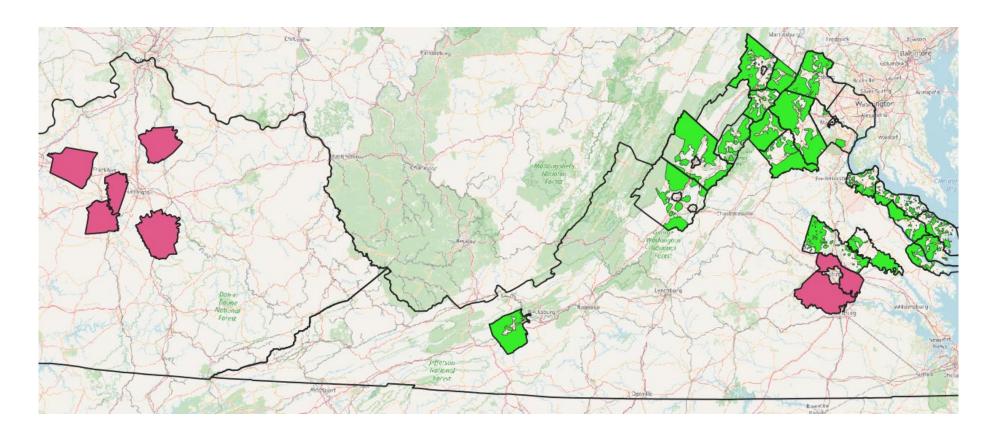
About All Points Broadband (APB)

- A rural broadband company operating in VA, KY, WV, and MD, and the largest rural-facing ISP in the mid-Atlantic
- Four-time honoree to the *Inc. 5000* list of America's fastest growing, privately-held companies
- APB's lead equity sponsor is Searchlight Capital Partners, the #4 builder of fiber-to-the-home (FTTH) broadband networks in the United States
- In the past 18 months, All Points has received more than \$300 million in federal and state grants



All Points Broadband's Partnerships

- APB is the universal broadband deployment partner for 27 counties in VA and KY
- Building ~4,500 miles of fiber and connecting over 100,000 unserved locations by 2026



All Points' Deployment Principles

- Build it once, build it right, include all unserved/underserved locations
- All Points' designs extend FTTH access to all unserved/underserved locations within a locality
 - Field verification to determine actual unserved/underserved locations
 - No cherry picking terminals placed so that a drop is available for all locations
- All Points partners with electric utilities on the network to reduce costs, increase reliability, and decrease deployment timeline
 - All Points has active partnerships with 5 electric utilities
- All Points' XGS-PON, all-fiber networks designed to meet broadband consumption demands over the next generation

Identifying Served Areas – Correctly

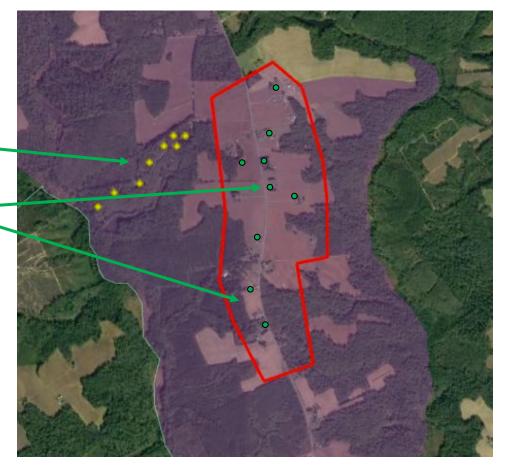
- Current broadband maps are inaccurate new federal map coming in 2023 "claims" to have accurate, location-based service map
- ISPs are best equipped to determine actual unserved/underserved locations

Purple area is considered "served"

But these locations do not

These locations have access to service

 APB's approach: Send trained technicians into the field to visually inspect where there is and isn't wired broadband service



Role of Local Governments

- Local governments deserve to have a say in who serves their community
- Find the right dance partner
- Local leadership makes the difference
- Network design should be done by partner ISPs not consultants
- Utilize resources! NTIA, State Broadband Office, Expert Counties



Learning the Programs

- Past Rural Digital Opportunity Fund (RDOF)
 - \$9.2 billion initially awarded
 - ~\$2.7b in awarded areas have been rejected or defaulted
- Present State Programs
 - Many states have established programs funded primarily through American Rescue Plan Act (ARPA) or CARES Act
- Future Broadband Equity, Access, and Deployment Program (BEAD)
 - Federal broadband money headed for the states to achieve universal coverage



The Cherry-Picking Conundrum



	Combined		Group A		Group B	
Locations		300	150		150	
Average Cost/Location		3,500	\$	2,000	\$	5,000
Potential Annual Revenue		234,000	\$	117,000	\$	117,000
Total Cost of Deployment		1,050,000	\$	300,000	\$	750,000
Capital Investment /						
Annual Revenue*		4.49		2.56		6.41

Viable

Viable

Not Viable

* Project is viable at 4.5 years or less

Key Takeaway: A solution that only connects marginally viable unserved pockets, with no plan for the remaining unserved areas, actually perpetuates the digital divide

Cherry-Picking Example

- Specific roads and entire communities are left outside projects
- Red Locations inside project
- Green Locations outside project



Cherry-Picking Example

- Locations within projects are omitted
 - Driveway length
 - Underground utilities
 - Wrong side of the road
 - Many more reasons
- Red Locations included in project
- Green Locations excluded from project



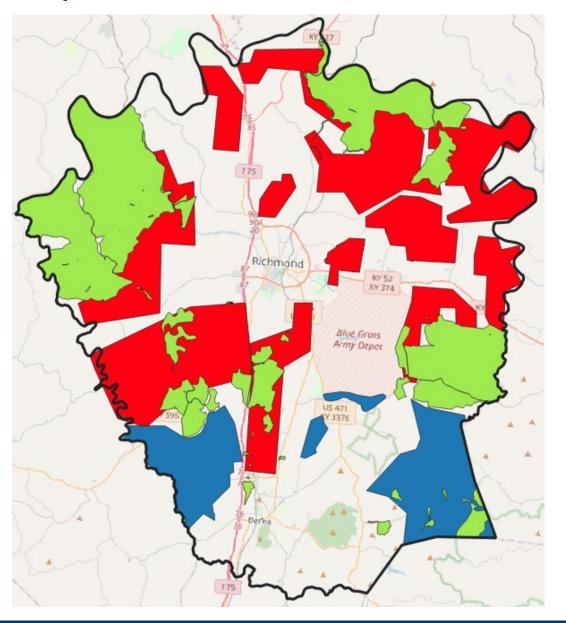
Importance of Universality

- Partial RDOF and state awards often do not achieve universal coverage unless additional awards are made
- It is critical that counties understand existing awards and not assume large grant awards solve everything
- Sooner or later, every county in the nation will need to achieve universal coverage as BEAD Program requires universal coverage:
 - 1. Complete Coverage of Unserved Locations and Underserved Locations, Followed by Prioritization of Eligible CAIs. The Eligible Entity, in awarding subgrants for the deployment of a broadband network, shall award funding in a manner that ensures the deployment of service to all unserved locations within the Eligible Entity's jurisdiction. If the Eligible Entity has sufficient funds to ensure deployment of service to all underserved locations within its jurisdiction, it must ensure such deployment as well. If the Eligible

Piecing Together the Puzzle – Example

 Madison County, Kentucky had state awards and RDOF awards that <u>did not</u> achieve universal coverage

- White Served Areas
- Green RDOF Awarded Areas
- Red State Awarded Areas
- Blue APB Project Areas



Final Thoughts

- Designate a local broadband champion(s)
- Find a broadband deployment partner(s) who is committed to universal service
- Support only universal grant applications
 - "Chipping away" hurts the overall economics of rural broadband
 - Only issue RFPs seeking universal deployments or partner
- Consultants will not build these networks work with ISPs
- Think regionally and creatively
- This is a once in a generation opportunity let's get it right



Today's Roadmap







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County Success Story!

Group Discussion





What Are The Steps

- Phase 1 | Document un-served and under-served address-points; produce coverage maps
- Phase 2 | Identify potentially available vertical assets
- Phase 3 Utilize Real Properties files and GIS
- Phase 4 | Compare maps with existing FCC maps
- Phase 5 | Assess potential technologies and ISPs
- Phase 6 | Research funding sources and applications







NORA Address Point Mapping

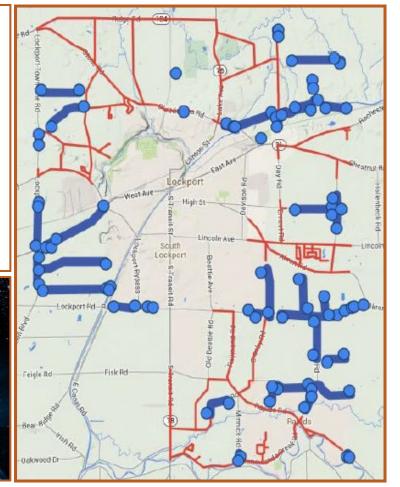
NORA's study illustrated the true and actual unserved address points in each town (Niagara, Orleans)



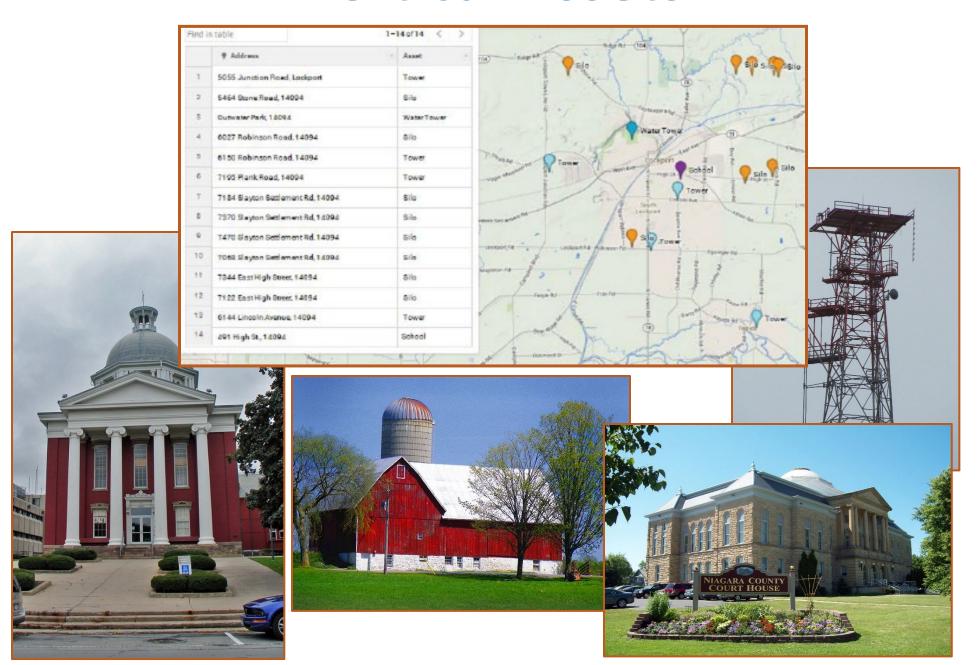
NORA sample of point-to-point verified unserved roads

(NORA survey identified un-served roads throughout both counties)

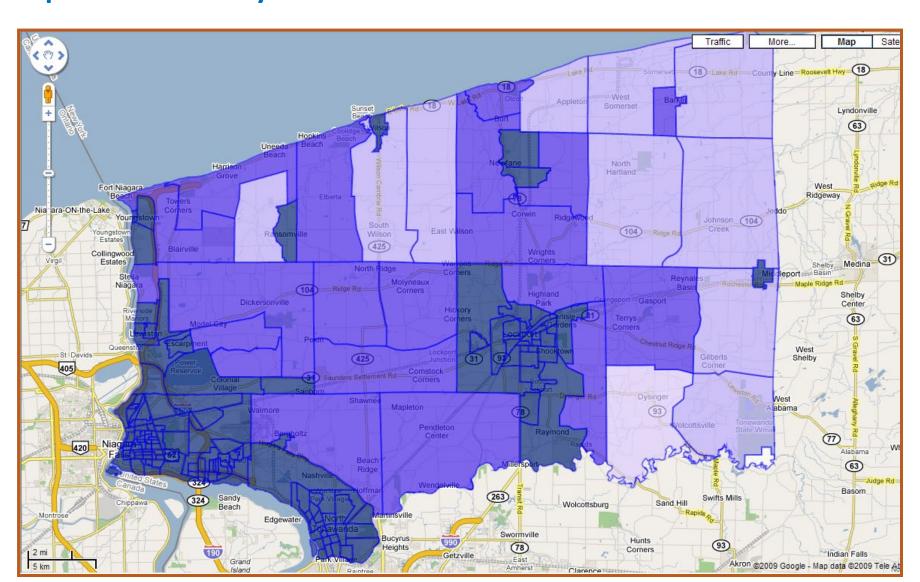
Address Segment Endpoint	Address Segment Endpoint	Count
5289 Shunpike Rd., Lockport, NY	5509 Shunpike Rd., Lockport, NY	11
5378 Leete Rd., Lockport, NY	5597 Leete Rd., Lockport, NY	23
4717 Lockport Junction Rd., Lockport, NY	4775 Lockport Junction Rd., Lockport, NY	11
5063 Lockport Junction Rd., Lockport, NY	Lockport Junction Rd., Lockport, NY	1
5316 Lockport Junction Rd., Lockport, NY	5359 Lockport Junction Rd., Lockport, NY	3
5701 Campbell Blvd., Lockport, NY	5833 Campbell Blvd., Lockport, NY	14
5312 Saunders Settlement Rd., Lockport, NY	5324 Saunders Settlement Rd., Lockport, NY	2
5337 Old Saunders Settlement Rd. , Lockport	5656 Old Saunders Settlement Rd. , Lockport, NY	18
5286 Hinman Rd., Lockport, NY	5674 Hinman Rd., Lockport, NY	35
5200 Murphy Rd., Lockport, NY	5683 Murphy Rd., Lockport, NY	45
5821 Robinson Rd., Lockport, NY	5945 Robinson Rd., Lockport, NY	11
6023 Robinson Rd Lockport NY	6049 Robinson Rd. Lockport NY	4



Vertical Assets

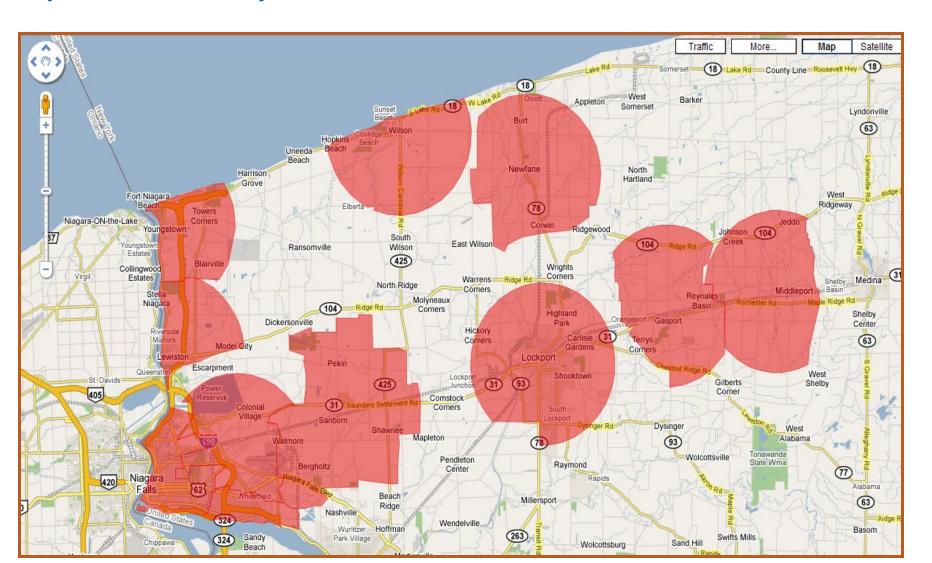


Sample Cable Coverage Map provided by ISP Vendors to NYS Broadband

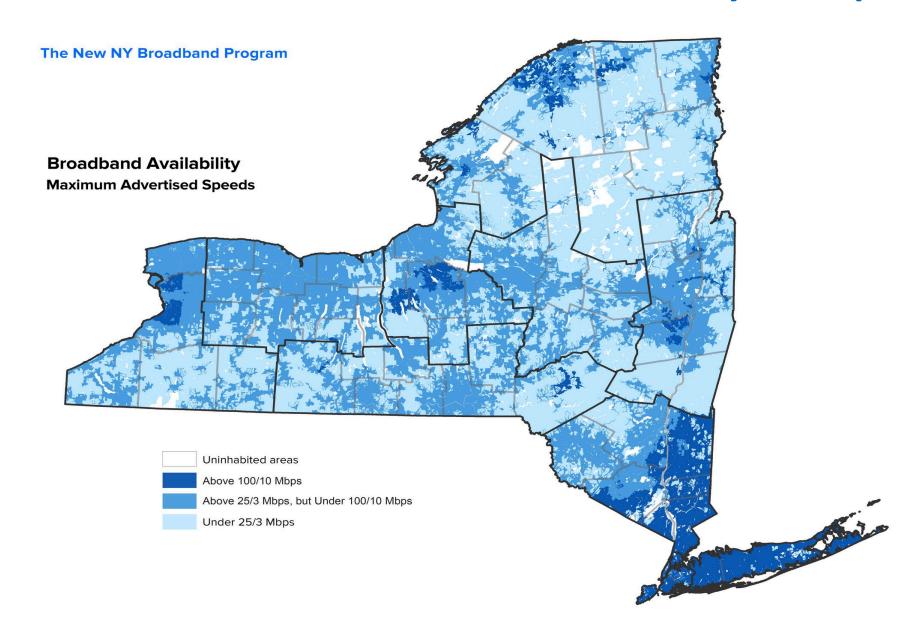


Sample DSL Coverage Map

provided by ISP Vendors to NYS Broadband



FCC Broadband Availability Map



Percent <u>Unserved</u> by County

STATEWIDE BROADBAND AVAILABILITY BY COUNTY

NORA

Road-by-Road

Report = 25%

NY State

Report = 6%

Orleans County

REDC Region	County	Population	County Square Miles	Population without Access at 6 Mbps	% Population Unserved at 6 Mbps	Population without Access at 100 Mbps	% Population Unserved at 100 Mbps
Capital	Greene	49,221	657	39,021	79%	44,621	91%
Capital	Warren	65,707	930	5,207	8%	56,407	86%
Capital	Washington	63,216	845	8,416	13%	52,616	83%
Capital	Albany	304,204	532	17,204	6%	193,204	64%
Capital	Schenectady	154,727	209	5,727	4%	83,227	54%
Capital	Columbia	63,096	647	46,696	74%	63,096	100%
Capital	Rensselaer	159,429	665	16,429	10%	159,429	100%
Capital	Saratoga	219,607	843	7,607	3%	218,767	100%
Central	Cortland	49,336	501	6,736	14%	49,336	100%
Central	Oswego	122,109	1,400	11,109	9%	122,109	100%
Central	Madison	73,442	660	7,242	10%	73,442	100%
Central	Cayuga	80,026	881	17,426	22%	44,826	56%
ntral	Onondaga	467,026	805	15,026	3%	190,026	41%
Finge s	Seneca	35,251	390	6,351	18%	35,251	100%
Finger L.	Livingston	65,393	640	6,693	10%	65,393	100%
Finger Lak	ario	107,931	662	8,431	8%	107,931	100%
Finger Lax	onroe	744,344	1,384	23,344	3%	744,344	100%
Finger Lakes	enesee	60,079	495	4,179	7%	60,079	100%
Finger Lakes	Orleans	42,883	814	2,383	6%	42,883	100%
Finger Lakes	Yates	25,348	375	8,148	32%	25,348	100%
Finger Lakes	Wyoming	42,155	596	7,155	17%	42,155	100%
Finger Lakes	Wayne	93,772	1,396	7,772	8%	93,772	100%
Long Island	Nassau	1,339,532	446	49,532	4%	49,532	4%
Long Island	Suffolk	1,493,350	2,372	53,350	4%	53,350	4%
Mid-Hudson	Sullivan	77,547	996	4,947	6%	77,547	100%
Mid-Hudson	Ulster	182,493	1,160	8,493	5%	161,393	88%





Microsoft "Live Data" The Truth!

What Technologies Are Out There?

	Fiber / Wireline	Fixed Wireless	CBRS Wireless	Satellite
Network Deployment	Complex	Simple	Simple	Complex
Broadband Speeds	Fast	Medium to Fast	Medium	Medium
Subscriber Cost	Medium	Low	Low	Medium
Network Cost	High	Low	Low	High
Network Completion	3-7 Years	1-2 Years	1-2 Years	10+ Years
Capacity of Service	High Capacity	Medium to High	Medium to High	Low to Medium
Network Durability	Decades	5-10 Years	5-10 Years	5-7 Years
Network Upgrade	Expensive	Inexpensive	Inexpensive	Expensive

What Are PROs and CONs?

	Fiber / Wireline	Fixed Wireless	CBRS Wireless	Satellite
Network Deployment	Fiber deployed underground or on telephone poles to the home of office. Broadband is then typically broadcast within home / office via WiFi routers and selected cable connections.		Customer equipment (CPE) placed on house to receive signal from a nearby tower. Broadband is then transmitted within home / office via WiFi routers. E-911 connections can occur via most cell phones	Locate small satellite dish on property and bring wire to inside location where it can be transmitted within home / office via WiFi.
Broadband Speeds	Broadband speeds can reach up to 1 gbps but are typically 100 mbps to 250 mbps symmetrical, though only businesses would need uplink speeds greater than 25 mbps.	Broadband speeds can reach up to 1 gbps but are typically 25 mbps to 1 gbps downlink and \$10 to 25 mbps uplink, though only businesses would need uplink speeds greater than 25 mbps.	Broadband speeds can reach up to 1 gbps but are typically 25 mbps to 100 mbps downlink and \$10 to 25 mbps uplink, though only businesses would need uplink speeds greater than 25 mbps.	Broadband speeds up to 100 mbps downlink under good conditions but substantially less on the uplink. Service is materially impacted by weather.
Subscriber Cost	Service Fees range from \$50 to \$150 per month. Typically bundled with TV at a cost up to \$200 per month. Can require \$1000 to \$10,000 installation fee. Cable boxes and modems can cost \$1000s.	Service fees range from \$30 to \$150 per month. Installation fee ranges from \$100 to \$300. Equipment cost about \$300 to \$500.	Service fees range from \$30 to \$90 per month. Installation fee ranges from \$100 to \$300. Equipment cost about \$250.	Service fee of \$100 per month. \$600 to \$1000 equipment fee and shipping. Installation is separate and can cost \$100 to \$200.
Network Cost	Fiber buildouts can cost between \$1,500 to \$7,500 per home.	Wireless networks costs range between \$250 to \$1,000 per home.	RTO's CBRS network cost about \$250 to cover each home in Orleans County and <\$100 for each home in Niagara County.	Satellite deployments cost billions of dollars to deploy However, on a serviceable household basis, the cost is estimated at \$5,000.
Activation Time	Fiber builds take 3-5 years to connect 400 square miles.	Wireless systems take 1-2 years to connect 400 square miles	Wireless systems take 1-2 years to connect 400 square miles	Satellite service takes days once the satellites have been launched.
Capacity of Service	Residential fiber networks are shared, so speeds slow down during evenings when usage is at its highest.	Capacity is based on the subscribers located within each sector. Capacity can be added by using more towers or adding a different wireless network.	Capacity is based on the subscribers located within each sector. Capacity can be added by using more towers or adding a second wireless network.	Capacity is limited to about 25 subscribers per town. New satellites need to be launched to increase capacity. RTO estimates >2% of Orleans County can use the service
Durability	Highly durable network that should last 20-40 years before replacing the fiber. Equipment is replaced every 5-7 years.	Depends on the wireless vendor selected. Can be durable. Equipment is replaced every 3-5 years.	RTO selected carrier-grade equipment that should last 5-7 years.	Satellites have a lifespan of 5 years. Very expensive because satellites need to be constantly launched.

What Needs To Be In The RFP

- Issue RFPs (Orleans & Niagara)
- Provide Q&A for ISPs
- Screen respondents (c.10-12)
- Perform Interviews (c. 8)
- Complete ISP Scoring
- Select ISP Provider
- Execute Contracts (OC & NC)



- The RFP is targeted to include the following general clauses:
 - While there may be municipal financial support for build-out, the solution must be self sustaining afterward; not relying on legislative / taxpayer subsidy.
 - The provider shall be financially and organizationally stable enough to successfully participate in this initiative and into the future; with a clause allowing the municipality to recoup costs should that not occur.
 - The provider shall be required to commit to a timeline to meet the 100% coverage model.
 - The provider shall charge no more for their service nor be more restrictive in delivering that service than neighboring incumbents.
 - The provider shall offer Internet speed that meets the FCC definition of broadband (though they may offer other speeds, as a subscription option).
 - The provider agrees to attain 100% coverage within consortiummunicipalities before expanding into other like-municipalities that border those involved in this initiative.

What Funding Sources Are Available

- NY Broadband Program, intended to bring high-speed Internet service to every New Yorker by 2018
 - Blocked by Charter/Spectrum re: Time Warner merger
 - Still not done and will not be 100% coverage
- USDA Broadband ReConnect Program Application
 - "Member Item" request via Senator Schumer and Assemblyman Jacobs
 - Direct application via county grant writer
- American Rescue Plan Broadband Allocation
 - Provide funding for 100% coverage across each county
 - Separate contracts with ISP
- Community Development Block Grant
 - Provide funding to low-income families
 - for end-user equipment and access

What Is The Total Goal

- Provide high-speed, reliable, and affordable Internet access to:
 - 3 cities
 - 22 towns
 - 9 villages
 - 15 school districts
 - 5 hospital
- Approximately 4,310 un-served homes and businesses
 - With an estimated 10,755 POPs
- Approximately 127,339 totals buildings











The goal of NORA:

The Niagara Orleans Regional Alliance has committed to providing reliable high-speed internet to every address point across Orleans & Niagara counties at an affordable price.







QUESTIONS?

Thank You!

- Lynne M. Johnson
- Legislature Chairman
- Orleans County Legislature
- Co-Chair, Niagara-Orlean Regional Alliance
- Office: 585-589-7053
- Cell: 585-355-5563

- David E. Godfrey
- Chairman, Admin. & Finance
- Niagara County Legislator
- Co-Chair, Niagara-Orleans Regional Alliance
- Office: 716-439-7177
- Cell: 716-870-4518

Today's Roadmap







A Foundational Review of Broadband

County Success Story!

Group Discussion



Thank you!

Coming up...

- Part Two: Why Counties Are Central in the Effort to Deploy High-Speed Internet
 - Thursday, November 10th, 3:00pm-5:00pm ET
 - Register here: https://www.naco.org/events/why-counties-are-central-effort-deploy-high-speed-internet
- Part Three: Effective County Strategies for Broadband Deployment Projects and Partnerships
 - Thursday, November 17th, 3:00pm-5:00pm ET
 - Register here: https://www.naco.org/events/effective-county-strategies-broadband-deployment-projects-and-partnerships

