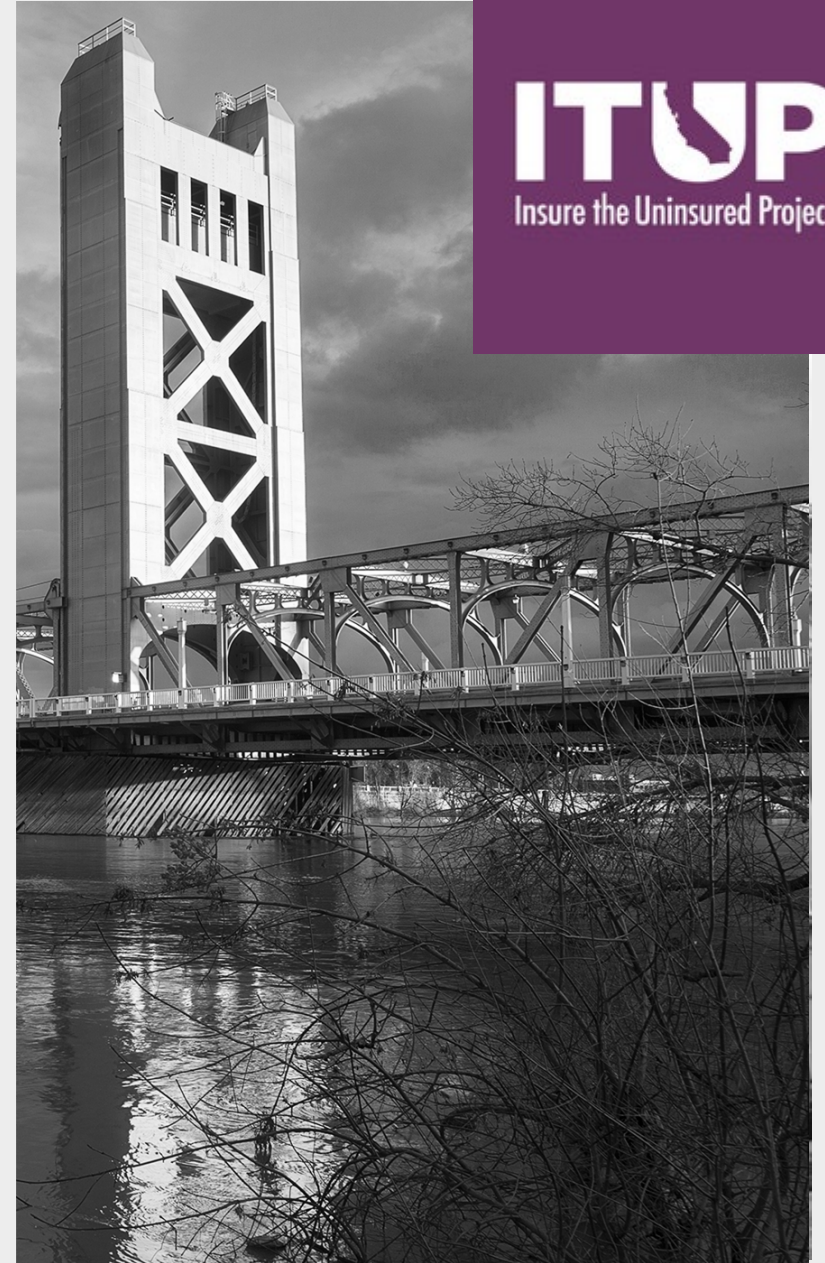


ITUP Broadband Bootcamp

Closing Equity Gaps: Broadband Bootcamp for Health Care Stakeholders

April 12, 2023



ITUP Mission & Vision



Mission

ITUP's mission is to promote innovative and workable policy solutions that expand health care access and improve the health of all Californians. ITUP implements its mission through policy-focused research and broad-based stakeholder engagement.

Vision

ITUP believes that all Californians should have a fair opportunity to live their healthiest lives.

ITUP Values



ITUP Seeks a Health Care System that is:

Universal – All Californians are eligible for comprehensive health coverage and services, including primary, specialty, behavioral, oral, and vision health services, as well as services that address the social determinants of health.

Equitable – All Californians receive health care coverage, treatment, and services that address the social determinants of health regardless of health status, age, ability, income, language, race, ethnicity, gender identity, sexual orientation, immigration status, and geographic region.

Accessible – All Californians have access to coverage options and services that are available, timely, and appropriate.

Effective – Health, health care, and related services that address the social determinants of health are person-centered, value-based, coordinated, and high-quality.

Affordable – Coverage and services are affordable for consumers at the point of purchase and care; and, at the health system level for public and private purchasers

Closing Equity Gaps: Broadband Bootcamp for Health Care Stakeholders

Wednesday, April 12th, 2023

8:45 a.m. – 4:00 p.m. PT

[Registration Link](#)

In-Person:

1414 K Street, Suite #500

Sacramento, CA 95814



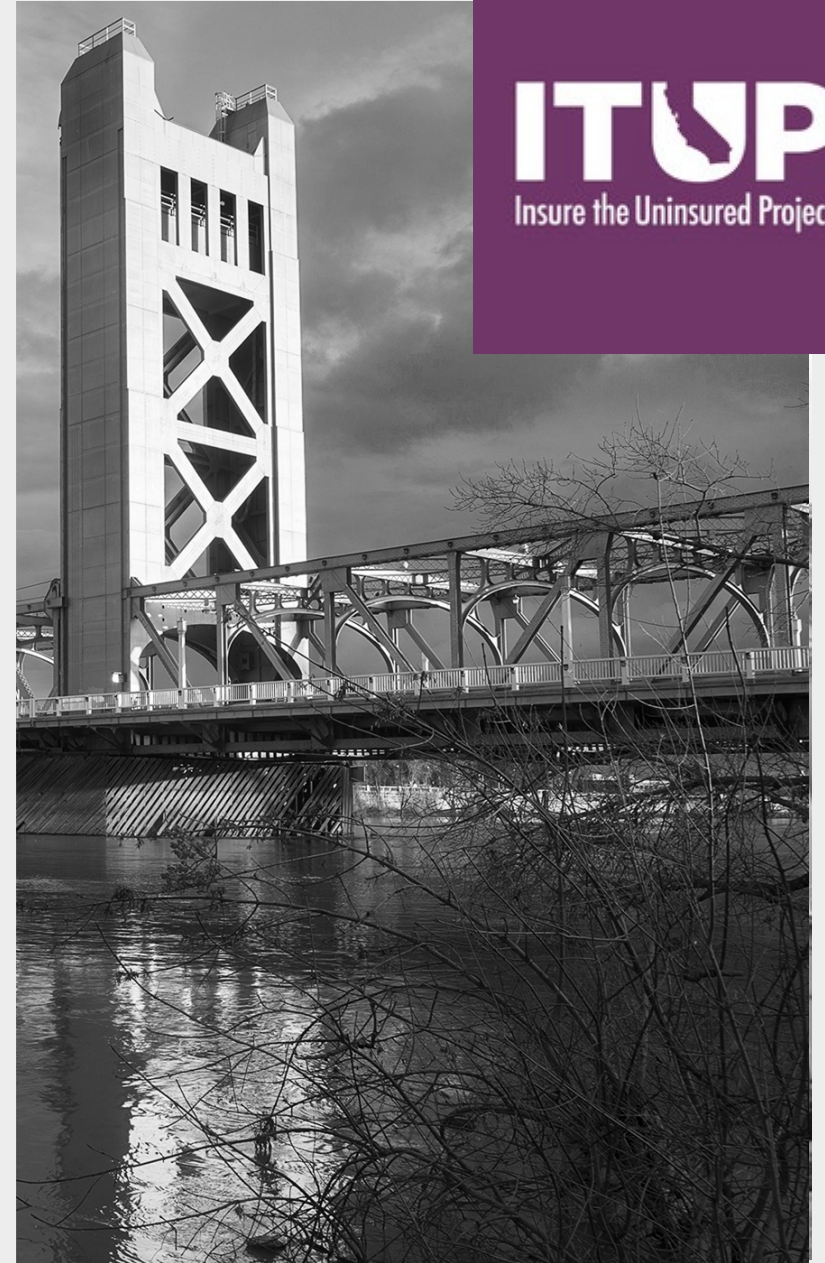
AGENDA*	
8:45 – 9:00 a.m.	Continental Breakfast
9:00 – 9:30 a.m.	Welcome and Introductions Crispin Delgado, MPP (he/him), Executive Director, Insure the Uninsured Project (ITUP) Chris Mitchell (he/him), Director, Community Broadband Networks, Institute for Local Self-Reliance
9:30 – 11:30 a.m.	Level Setting: Broadband Basics Workshop Chris Mitchell (he/him), Director, Community Broadband Networks, Institute for Local Self-Reliance
11:30 a.m. – 12:30 p.m.	Networking Lunch
12:30 – 2:00 p.m.	Workshop - Elevating Health Care Connectivity Needs for the State Digital Equity Plan Marissa Montano, PhD (she/her), Director of Policy, ITUP Anh Q. Nguyen, MP/A (she/her), Engagement and Operations Manager, Office of Broadband and Digital Literacy, California Department of Technology
2:00 – 2:15 p.m.	Break
2:15 – 3:45 p.m.	Workshop - Closing the Digital and Health Equity Gaps Sunne Wright McPeak, MPH (she/her), President and Chief Executive Officer, California Emerging Technology Fund Kimberly Harris (she/her), Strategic Partnerships and Program Development Consultant for the Community Broadband Networks Team, Institute for Local Self Reliance
3:45 – 4:00 p.m.	Takeaways and Wrap Up

Level Setting: Broadband Bootcamp Basics Workshop

Chris Mitchell

Director, Community Broadband Networks

Institute for Local Self-Reliance



Telehealth Broadband Bootcamp: Broadband 101

Christopher Mitchell

Community Broadband Networks

Institute for Local Self-Reliance

April 12, 2023

@CommunityNets

CommunityNets.org

Agenda

- Basic background resources
- Networking basics
- Fiber optic networks
- Show and Tell
- Short Break
- Fun economics!
- Wireless
- The Future!
- Q&A



Institute for Local Self-Reliance

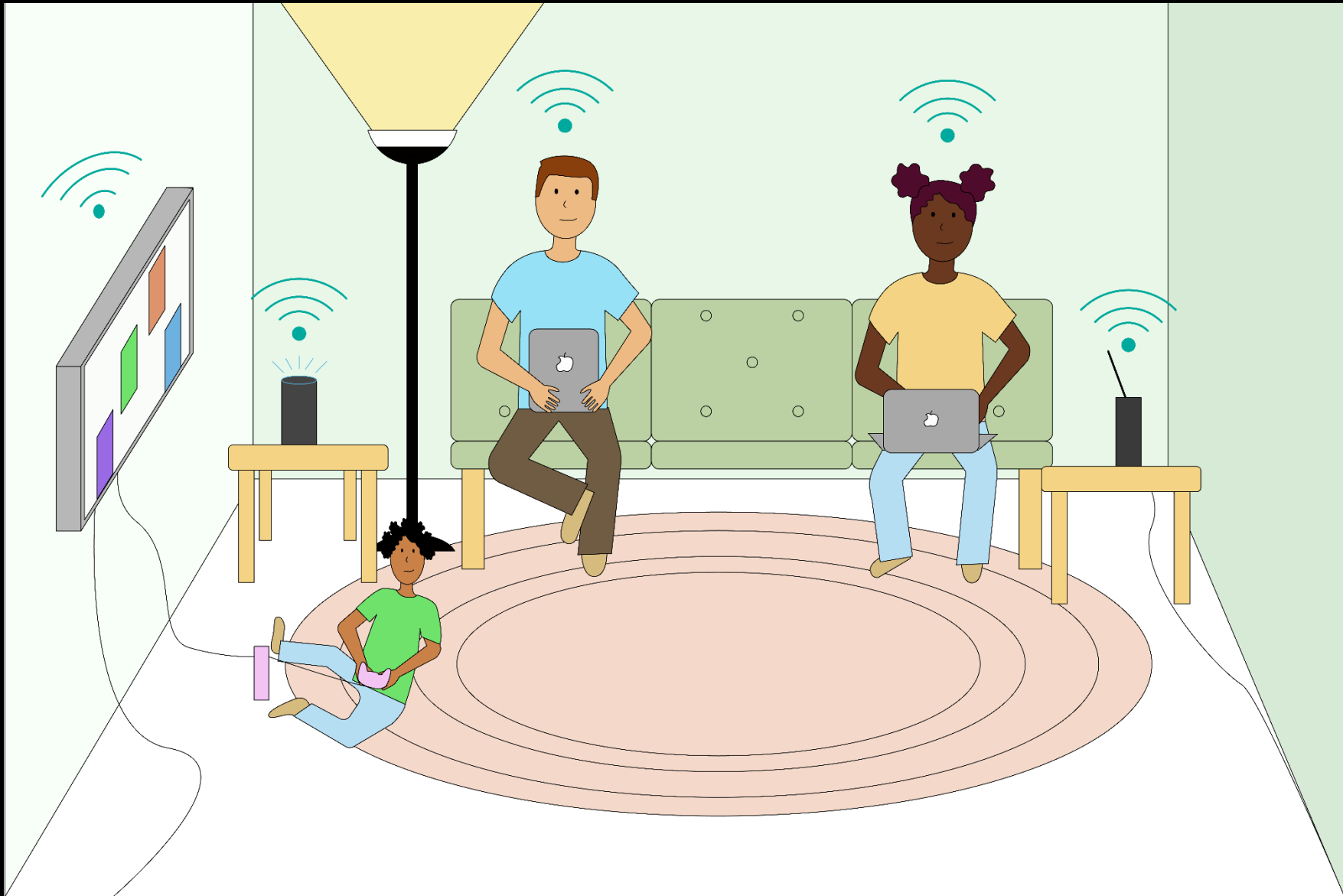
- Formed in 1974
- Focuses
 - Local Banking
 - Energy Democracy
 - Independent Business
 - Waste to Wealth & Composting
- Community Broadband Networks
 - *CommunityNets.org*





SCAN ME





Access or Availability?

WHO IS NOT CONNECTED?

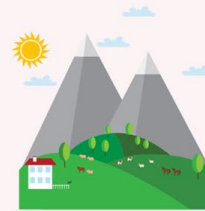
36 MILLION US HOUSEHOLDS

Do not have wireline broadband connections*

*cable, DSL or fiber



**26
MILLION**
Households in
URBAN Areas



**10
MILLION**
Households in
RURAL Areas



U.S. Census, 2019 American Community Survey 1-Year Estimates, Table B28002

Fact Sheets!



Exploring Digital Equity Fact Sheet Series

This fact sheet was created by ILSR with support from AARP



What Is Broadband?

This is one of a series of short explainers about high-speed Internet access issues. The full series is available [here](#).

BACKGROUND

The word “broadband” is an umbrella term that can be used to describe any reliable Internet connection that is always on that can support commonly used applications. In the simplest terms, broadband is high-speed Internet access.

According to a [report](#) published by Older Adults Technology Services (OATS) from AARP’s Aging Connected initiative, more than 21 million seniors in the United States lack wireline broadband access to the Internet. Online connectivity for older adults has become a necessity particularly as a result of the pandemic as more services have moved online. Online connectivity is essential for access to public health information, telehealth appointments, grocery shopping, financial security services, and staying connected to loved ones.

Many millions of children [lack home broadband Internet access](#), which is crucial for homework at almost all ages. Additional fact sheets in this series cover some of the reasons why households are not using broadband—including the lack of [availability](#), [affordability challenges](#), [access challenges](#), [lacking devices](#), and the [need to develop digital skills](#).



ILSR.org/exploring-digital-equity-fact-sheets/

Power and Poverty, not Technology



What We Do

Who We Are

Blog

Get involved

Report

Financing mechanisms for locally-owned internet infrastructure



Photo by AirJaldi

Half of humanity is connected to high-quality Internet access.

The other half will not be connected by the business models that connected the first half.



ConnectHumanity.fund/report-financing-ccps/



Nationwide Push to Address ACP Anemia

By Sean Gonsalves on Mar 15, 2023

The White House, in coordination with the Federal Communication Commission (FCC) and the U.S. Commerce Department, has kicked off a major push to get more of the estimated 52 million eligible households across the nation to take advantage of the Affordable Connectivity Program (ACP).



Our Affordable Connectivity Program Dashboard is Back and Better Than Ever



New Bill Could Make Colorado Friendly State for Municipal Broadband

By Sean Gonsalves on Mar 21, 2023

Earlier this month, a new Colorado bill was introduced that, if passed, would rid the state of a law designed to protect monopoly Internet service providers (ISPs) from competition.

LATEST PODCAST

Lessons from a Rural County - Episode 544 of the Community Broadband Bits Podcast

From grant requests that have gotten short-circuited by a local WISP



Building for

Gina Birch Loves Digital Equity at the Ashbury Center in Cleveland

By Sean Gonsalves on Mar 17, 2023

In the second episode of our new Building for Digital Equity podcast, Gina Birch talks about how she trained digital navigators at the Ashbury Senior Computer Community Center in Cleveland to help enroll eligible households into the Affordable Connectivity Program, and why working with trusted messengers and organizations is key



Lewis County Pushes Forward with Open Access Fiber Plan

Community Broadband Bits Podcast



A weekly podcast featuring interviews with people building community networks and shaping Internet policy.

From officials championing a municipal network in Mont Belvieu, Texas, to farmers building a broadband cooperative in Minnesota, to digital inclusion leaders in San Francisco, we sit down with the folks on the ground working to bring better connectivity to their communities.

MuniNetworks.org/broadbandbits



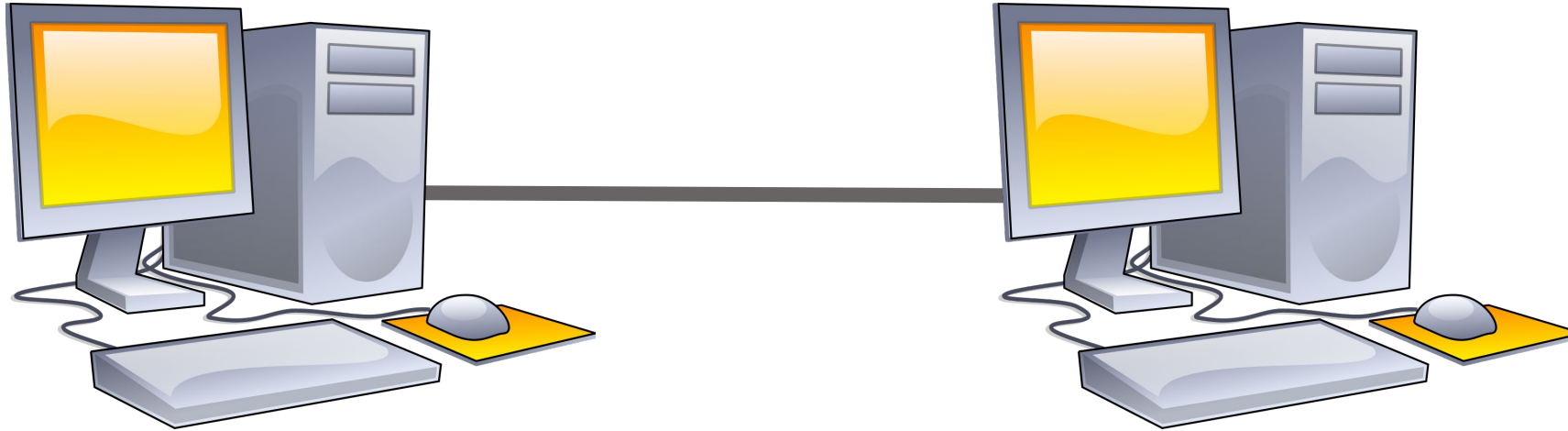
ConnectThisShow.com



**Building for
Digital Equity**

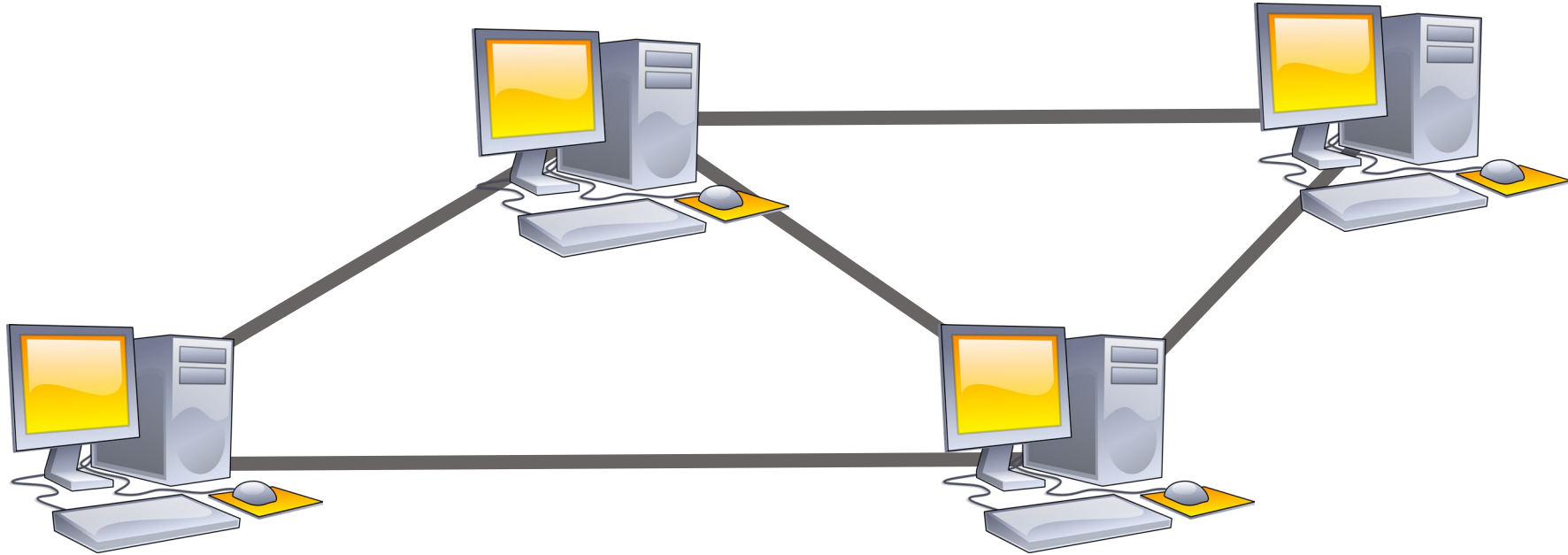
BuildingforDigitalEquity.com

What is a “network”?



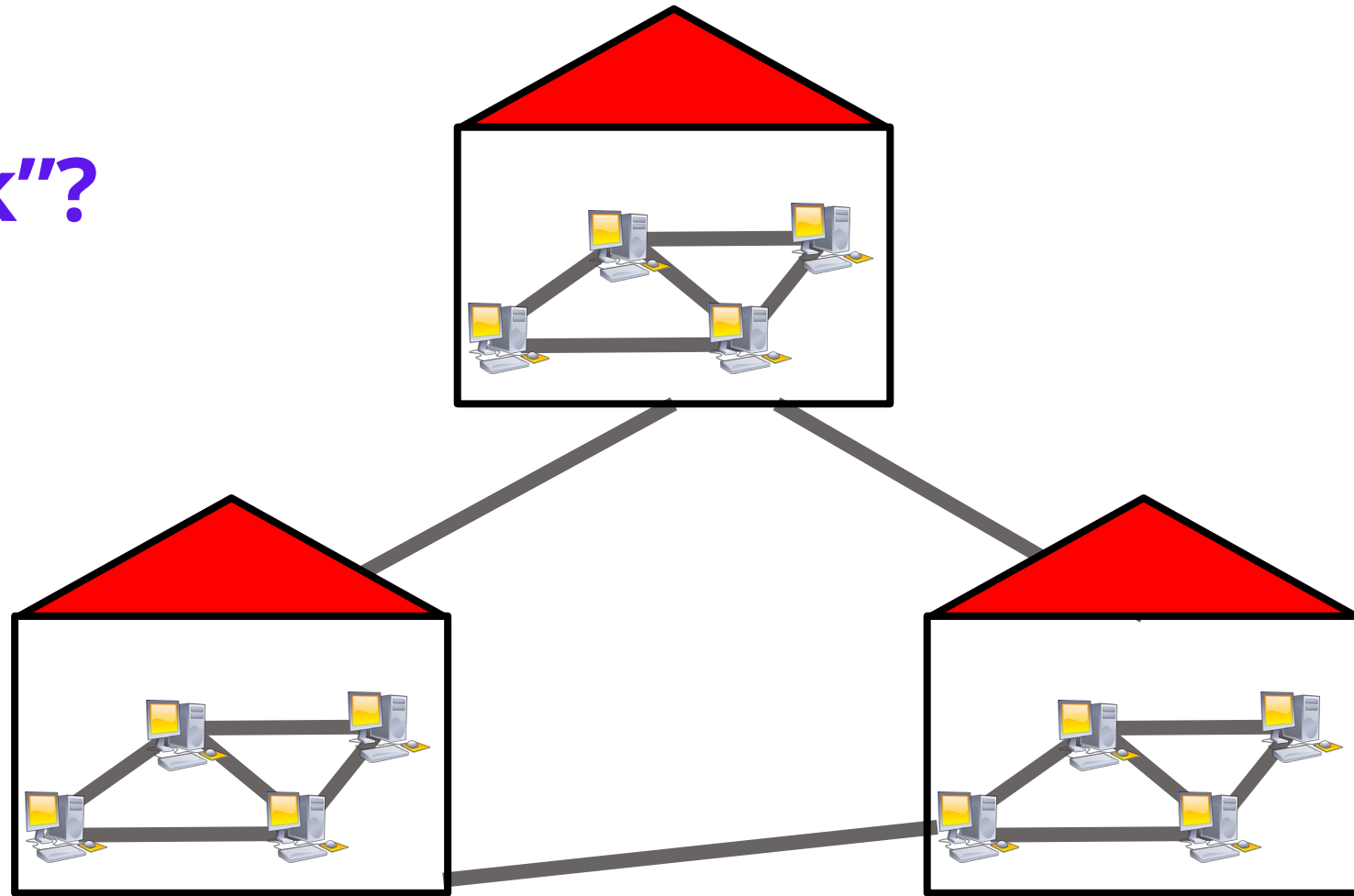
A **network** is a **connection between devices** that allows them to **communicate** and send information to each other.

What is a “network”?



A network can be very big or very small.

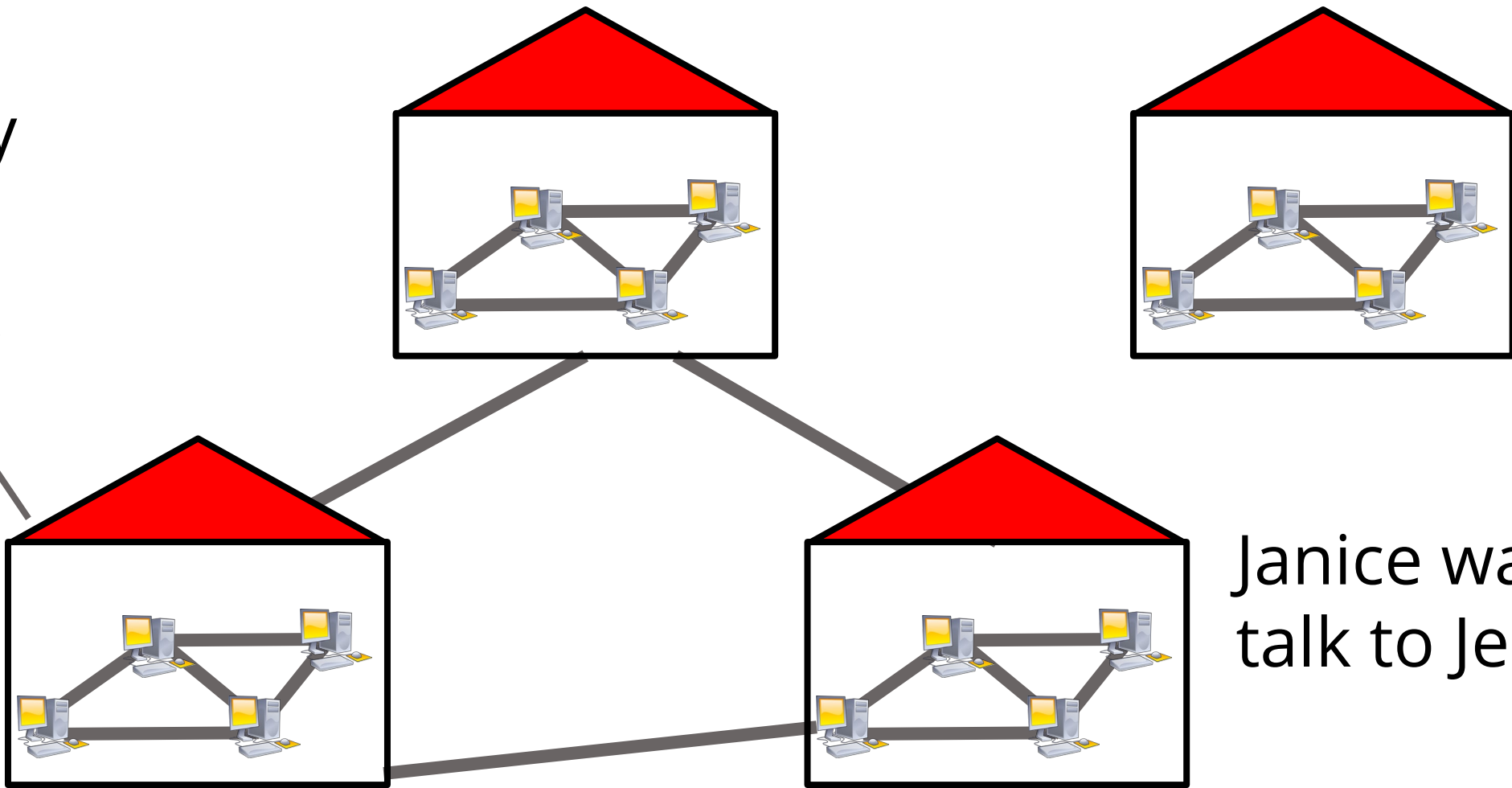
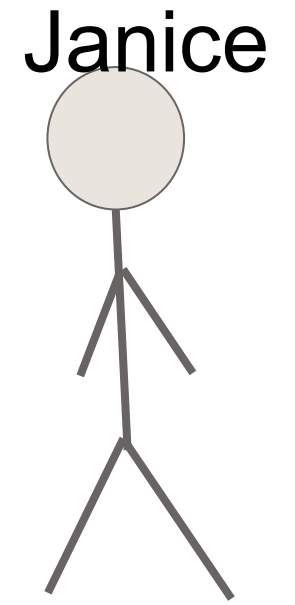
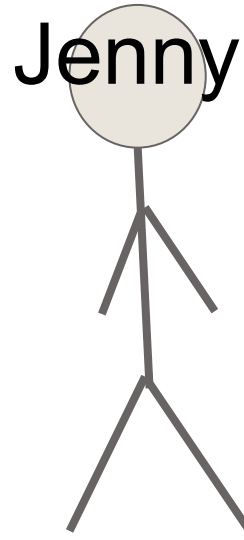
What is an “internetwork”?



Attribution: Black Brilliance Research Project, Local Connectivity Lab, UW ICTD Lab (2022)
Adult Digital Stewards Course Materials, Seattle Community Network - <https://creativecommons.org/licenses/by-sa/4.0/>



What is an "internetwork"?

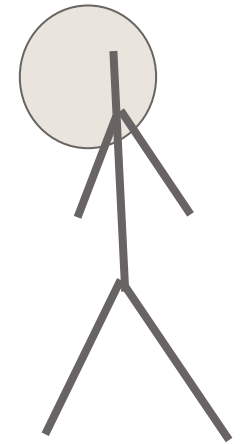


Janice wants to talk to Jenny...

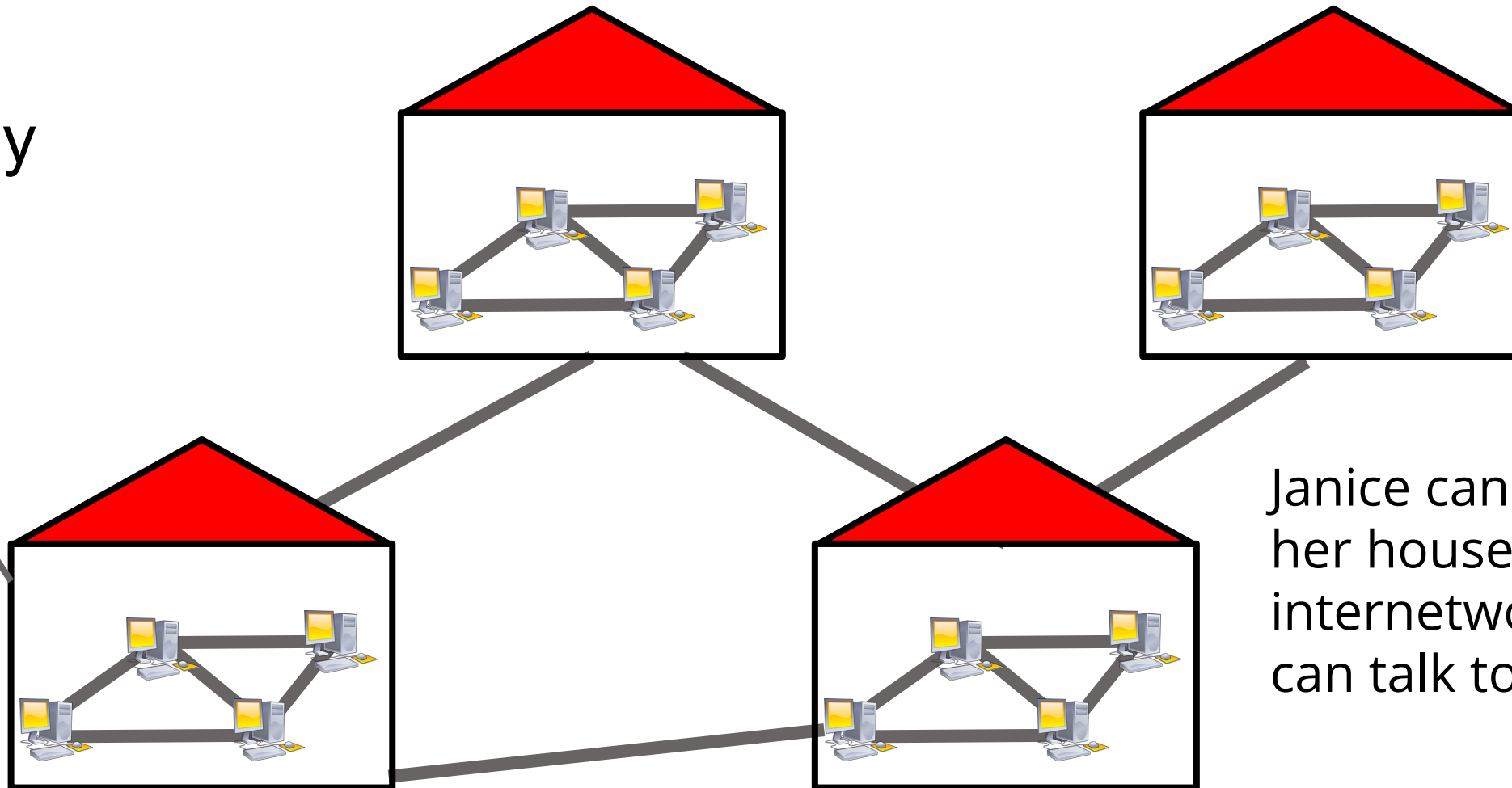
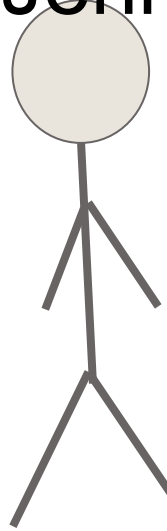


What is an "internetwork"?

Janice



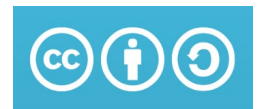
Jenny



Janice can just connect her house to the internetwork so she can talk to Jenny!

Attribution: Black Brilliance Research Project, Local Connectivity Lab, UW ICTD Lab (2022)

Adult Digital Stewards Course Materials, Seattle Community Network - <https://creativecommons.org/licenses/by-sa/4.0/>



Bits

- **The base unit of information (data)**
- A bit represents a choice between 2 states or categories

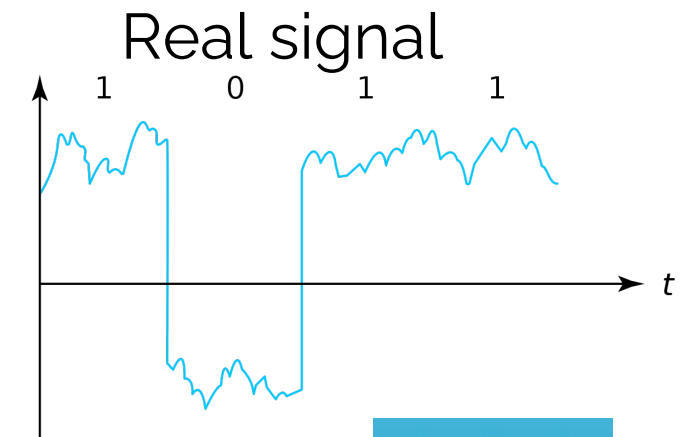
1 and 0

light and dark

Yes and No

- **Using an electrical signal (on and off)**

Ideal signal

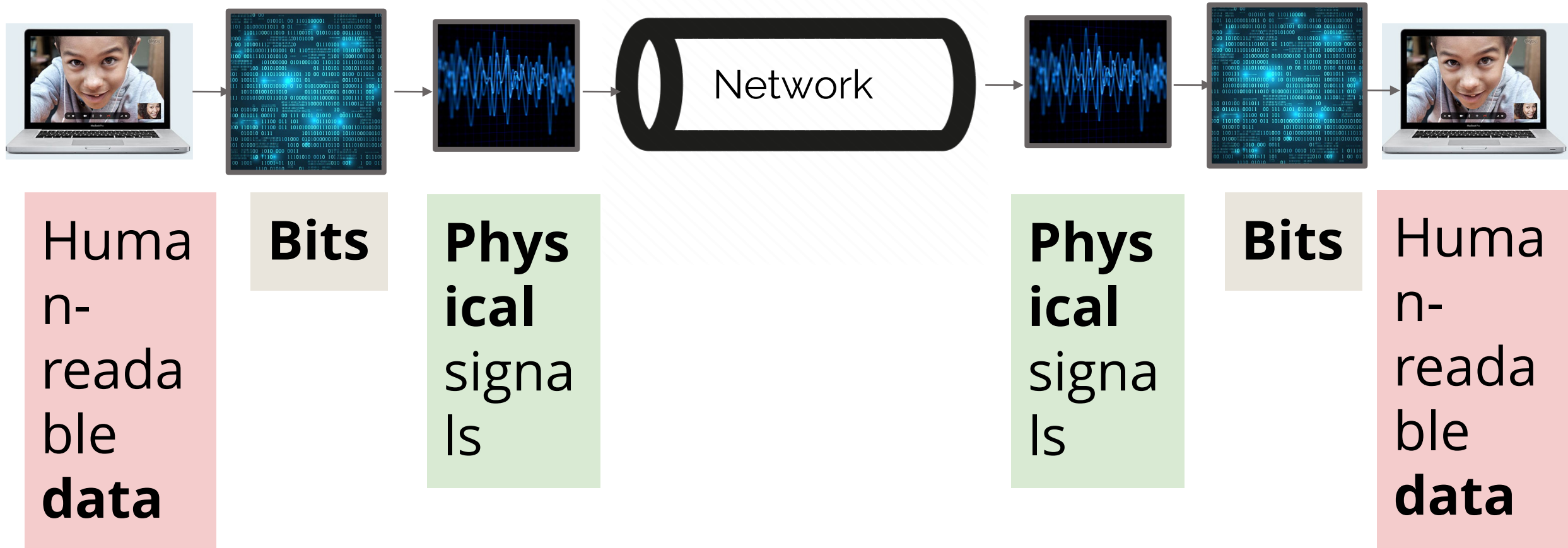


Attribution: Black Brilliance Research Project, Local Connectivity Lab, UW ICTD Lab (2022)

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Bits: How computers send data



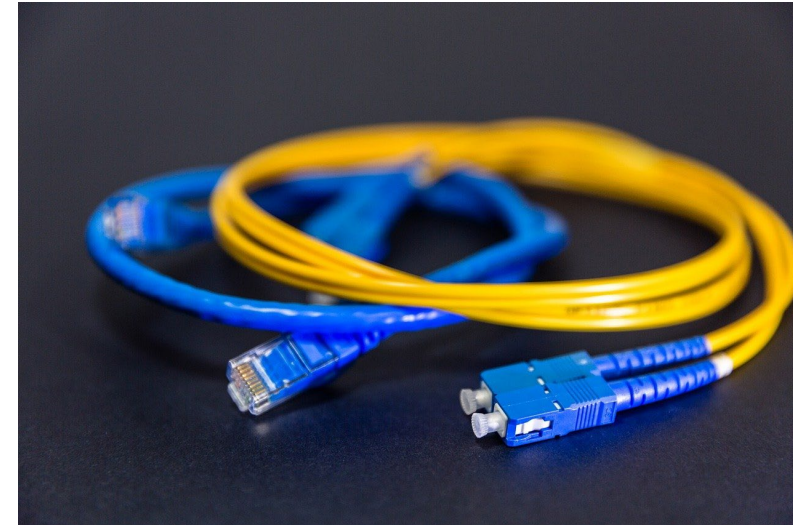
Attribution: Black Brilliance Research Project, Local Connectivity Lab, UW ICTD Lab (2022)

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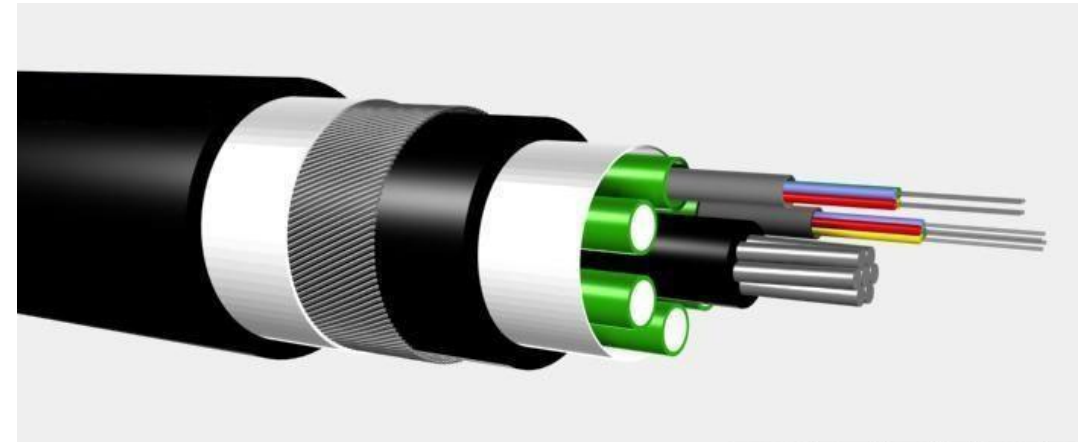
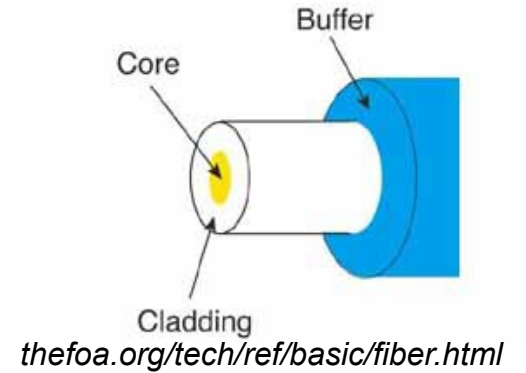
Wired Technology – Quick History

- DSL – 1-30 Mbps
 - Unreliable
 - Slow
 - Mostly Rural
- Cable – 100-1200 Mbps
 - Decent Download speeds
 - Expensive
 - Monopoly Problem
 - Urban
- Fiber optics – 100-10,000 Mbps
 - Building
 - Topology!



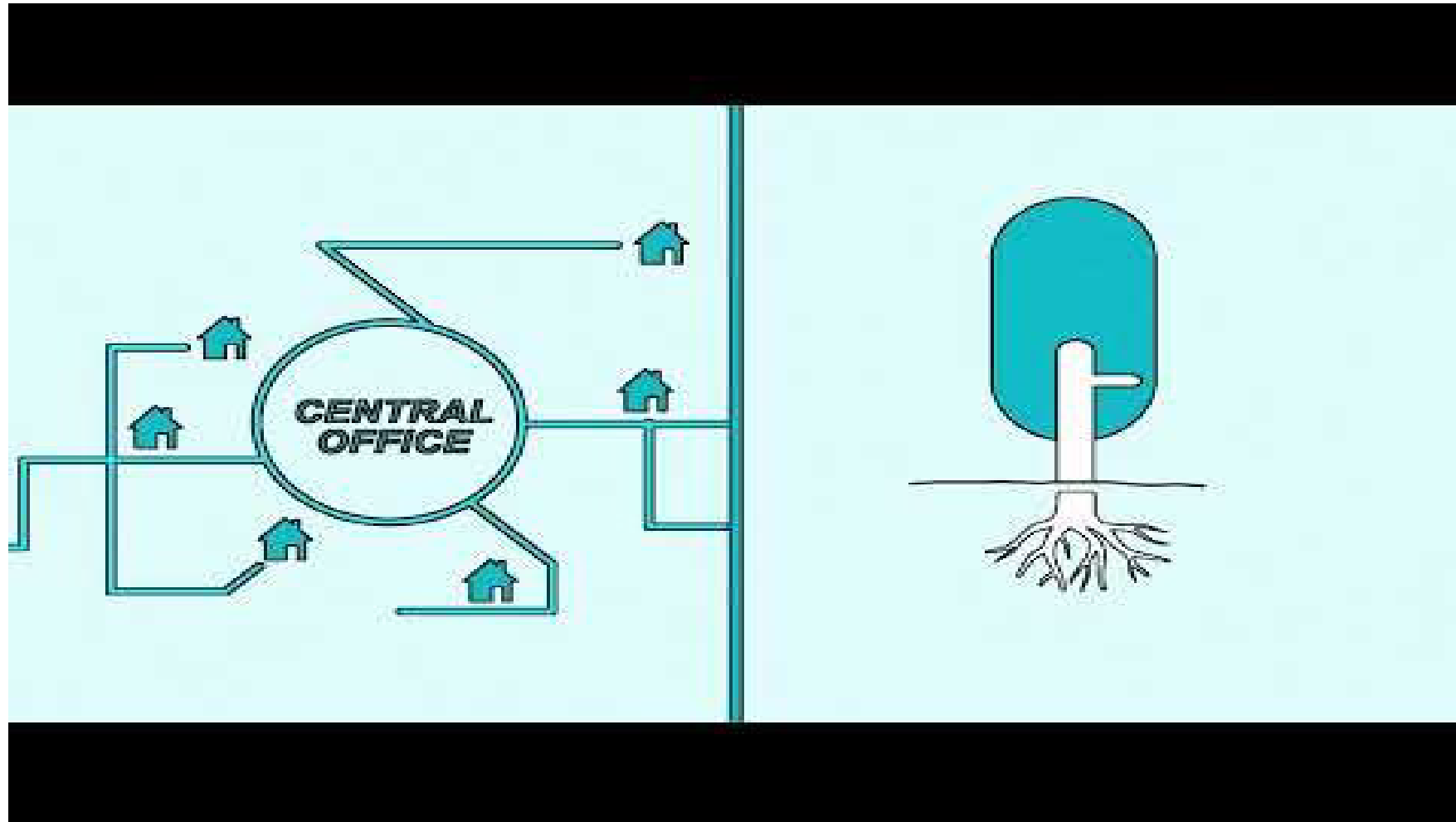
Fiber optics

- × Virtually unlimited speed, limited only by the equipment you place on the ends of the fiber
- × Can carry signals for long distances
 - + Undersea fiber cables go all the way across the oceans (1000s of miles)
 - + Will need to re-generate the signal every 60 miles or so
- × Low weight
- × Very Reliable



commons.wikimedia.org/wiki/File:Optical_fiber_cable.jpg

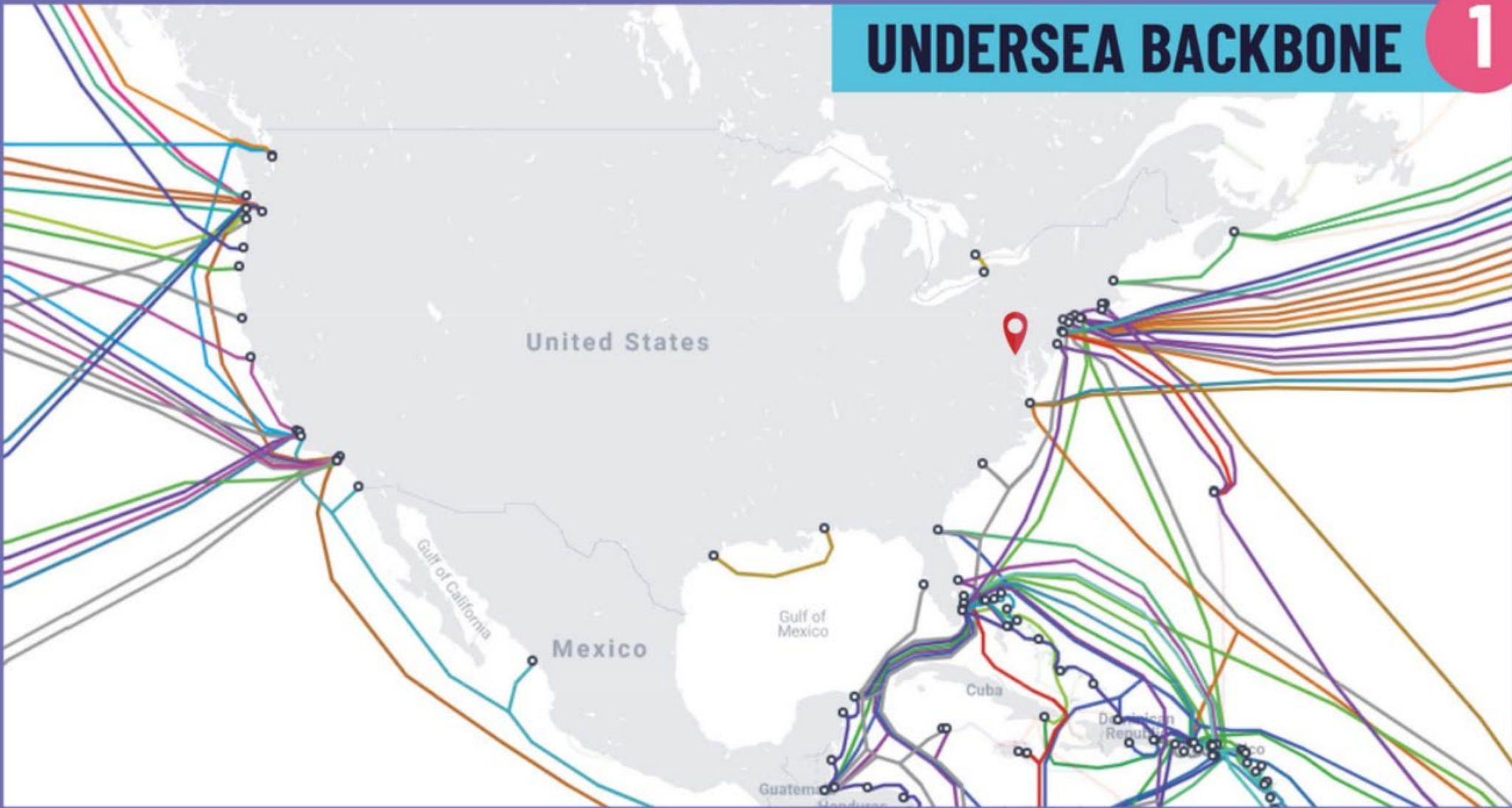
Video – Fiber Network Overview!



[YouTube.com/watch?v=qr9zjtfHR-w](https://www.youtube.com/watch?v=qr9zjtfHR-w)

UNDERSEA BACKBONE

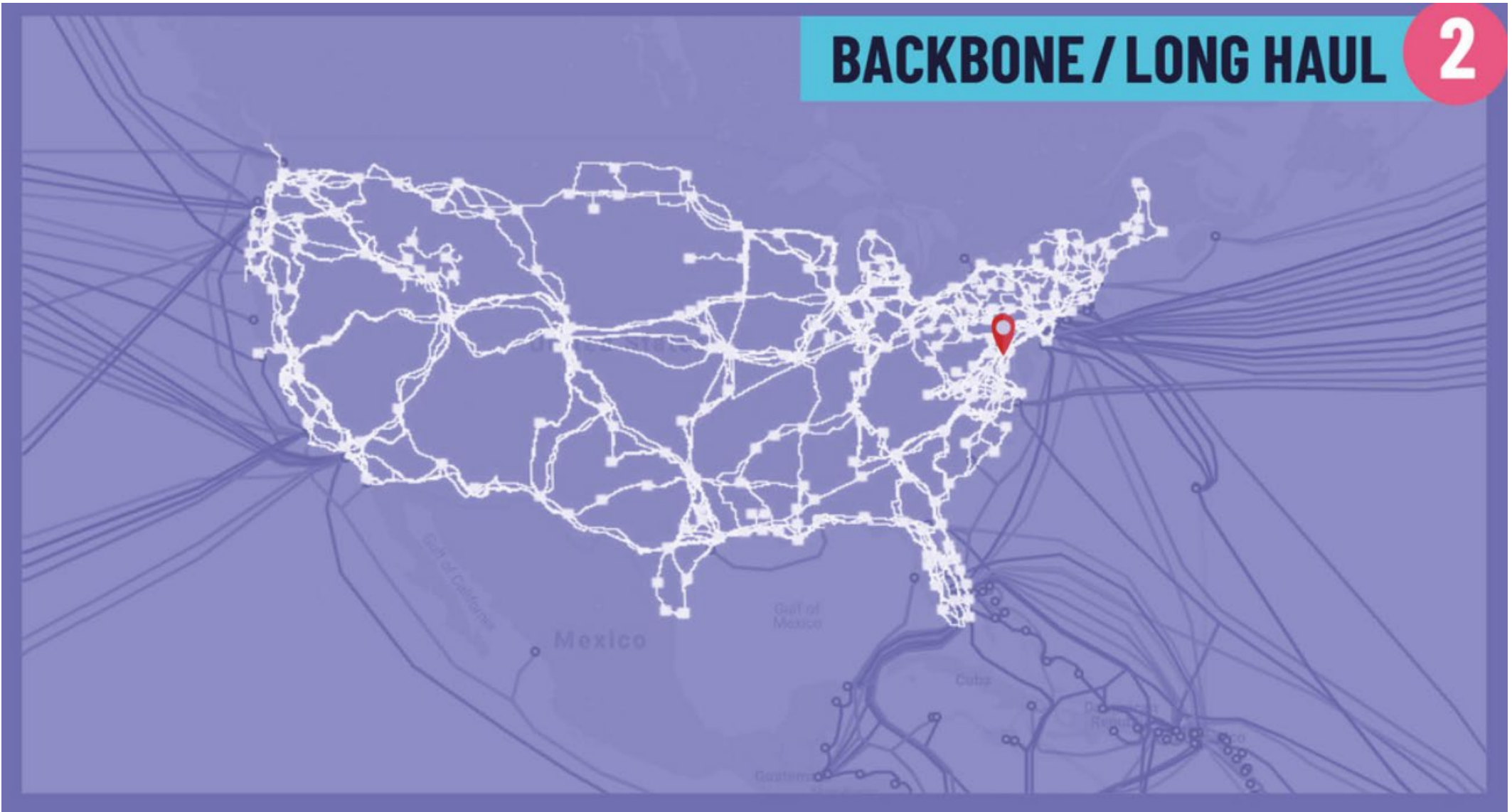
1



www.rwdfoundation.org/dell - Courtesy of Robert W. Deutsch Foundation

BACKBONE / LONG HAUL

2



www.rwdfoundation.org/dell - Courtesy of Robert W. Deutsch Foundation

BACKBONE / LONG HAUL

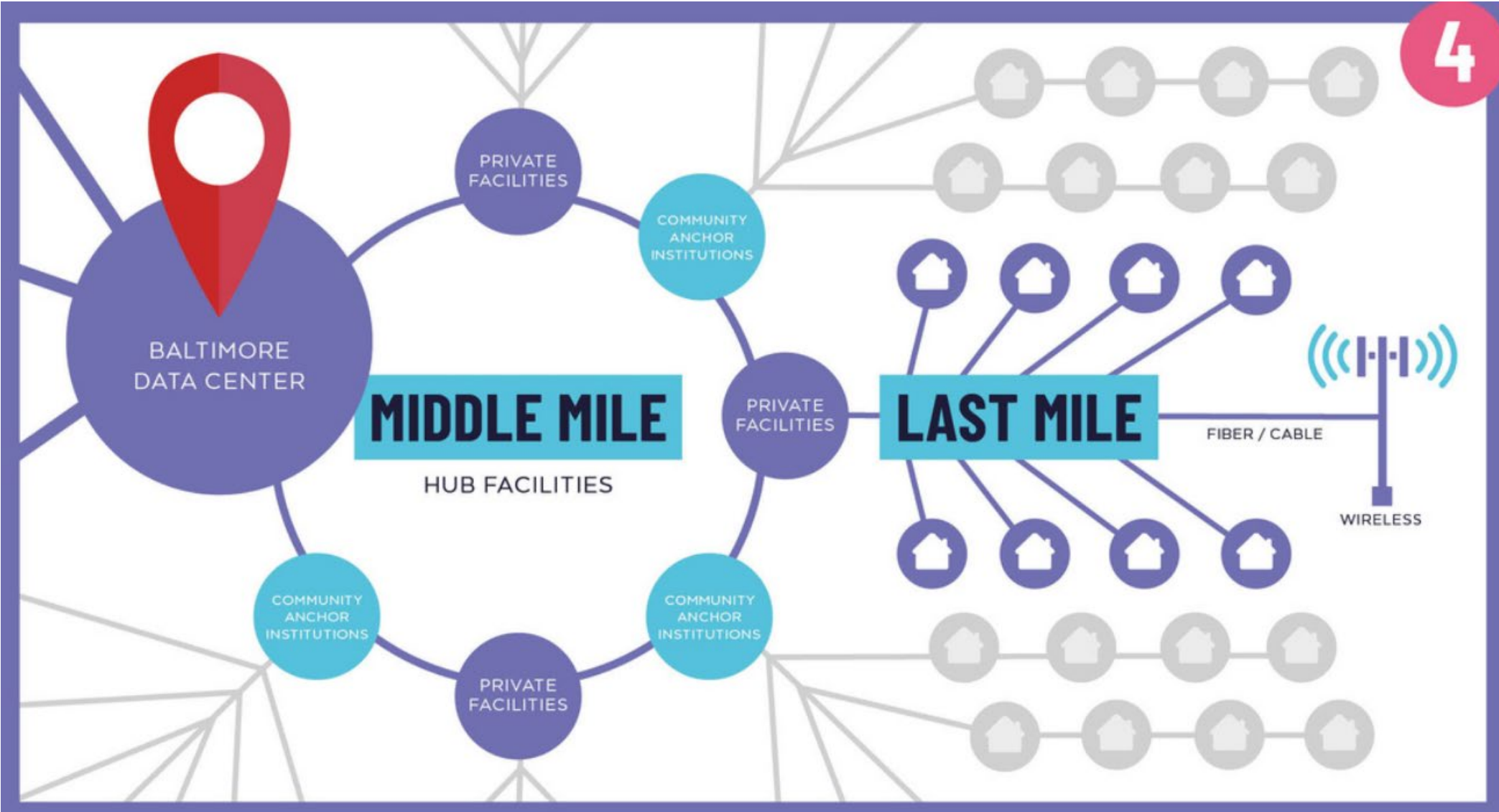
3

CHICAGO

NEW YORK

BALTIMORE

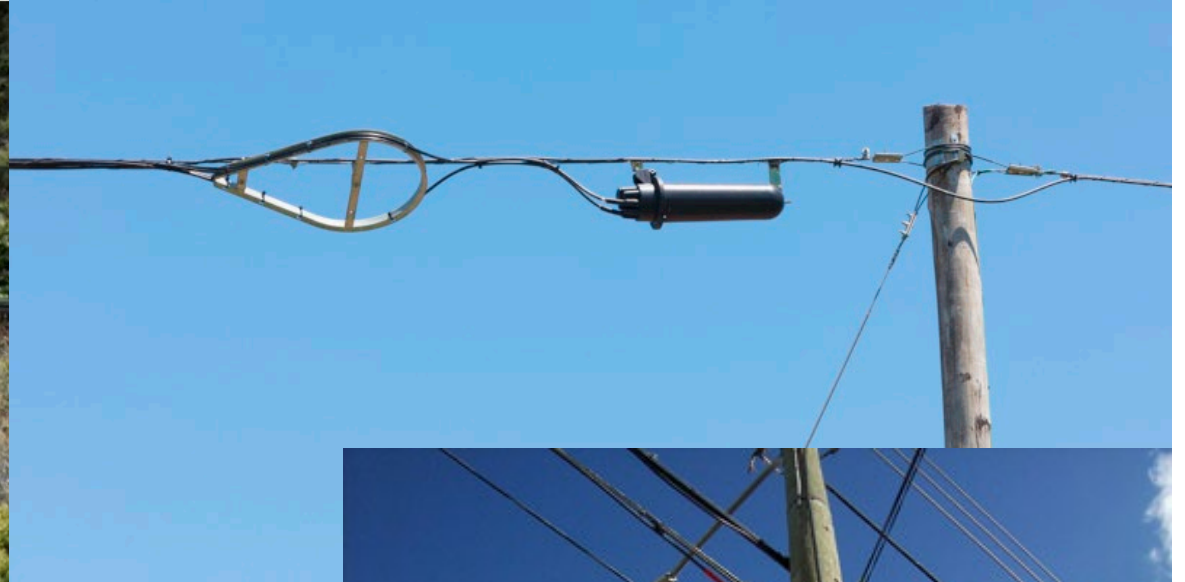
TYSONS CORNER
ASHBURN



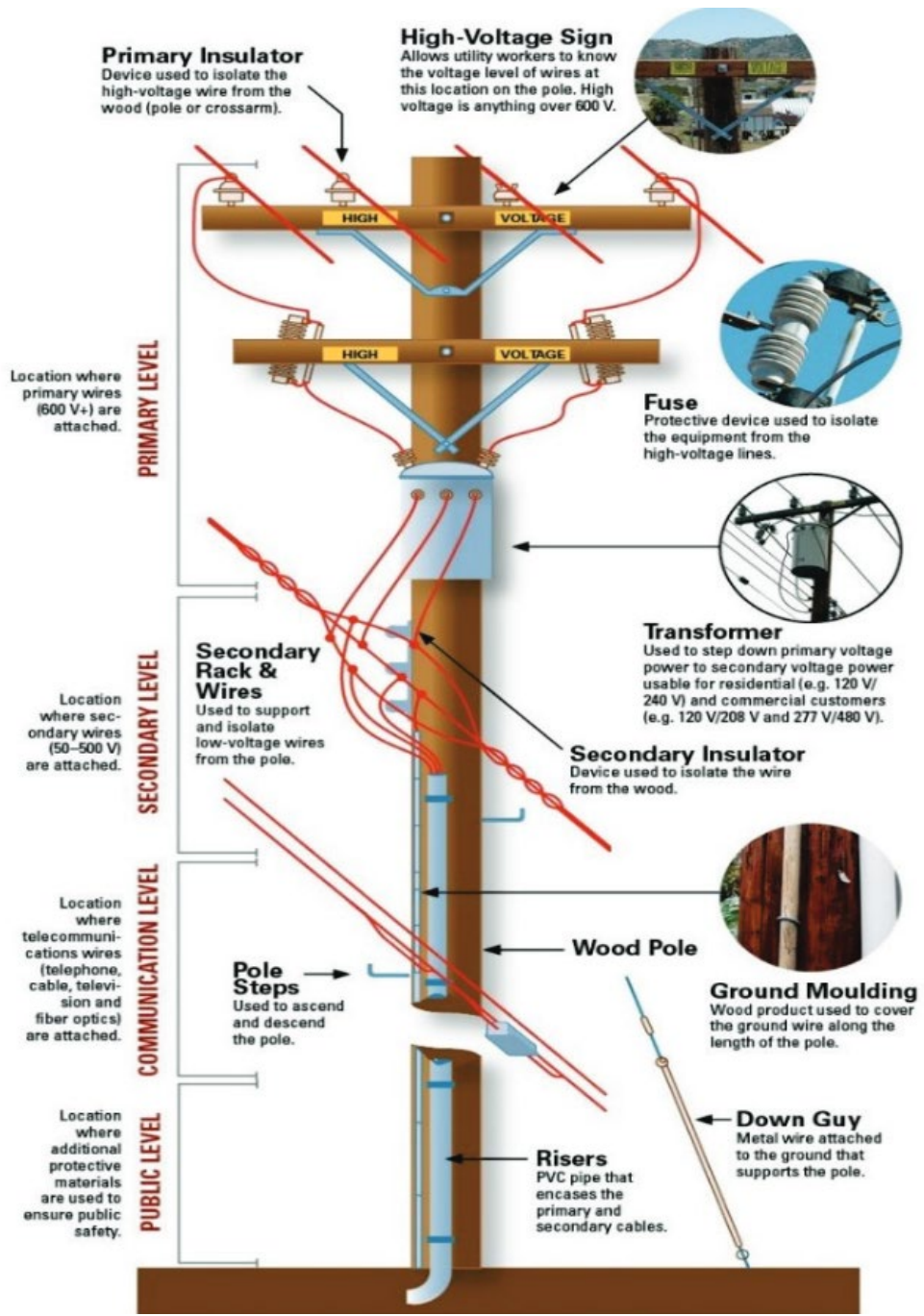
Central Office Fiber



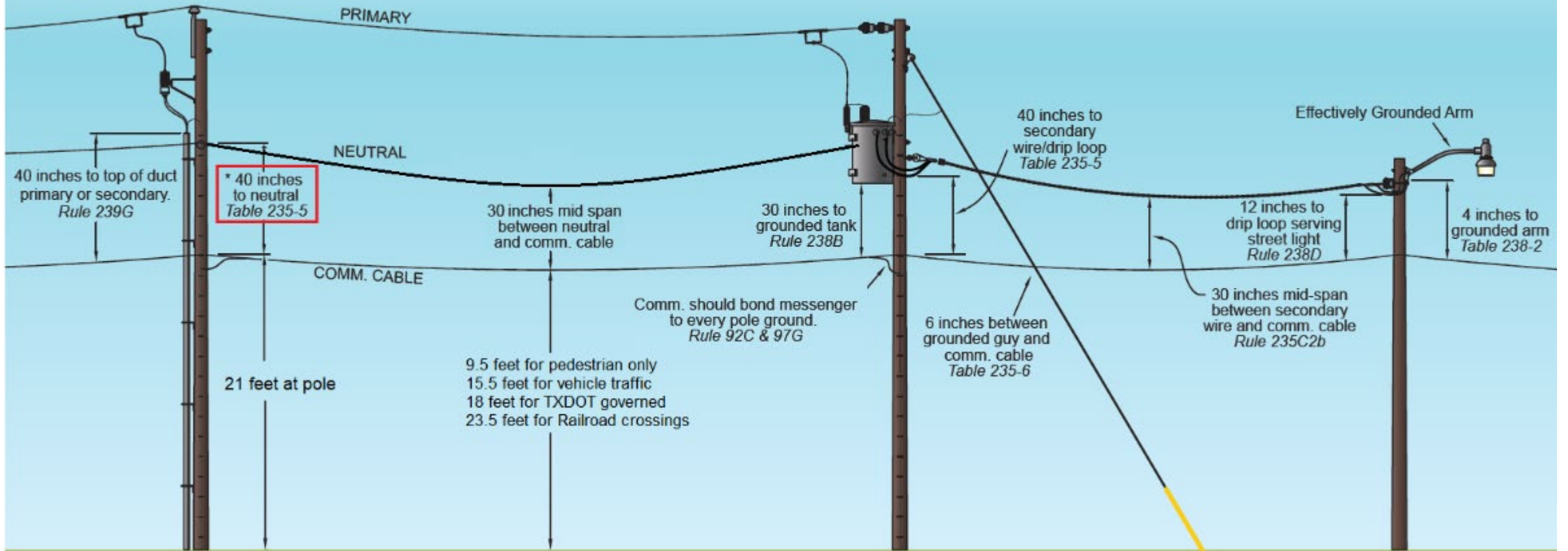
Aerial Fiber Construction



Courtesy, Dale Smith, NSRC, University of Oregon



PRIMARY | SECONDARY



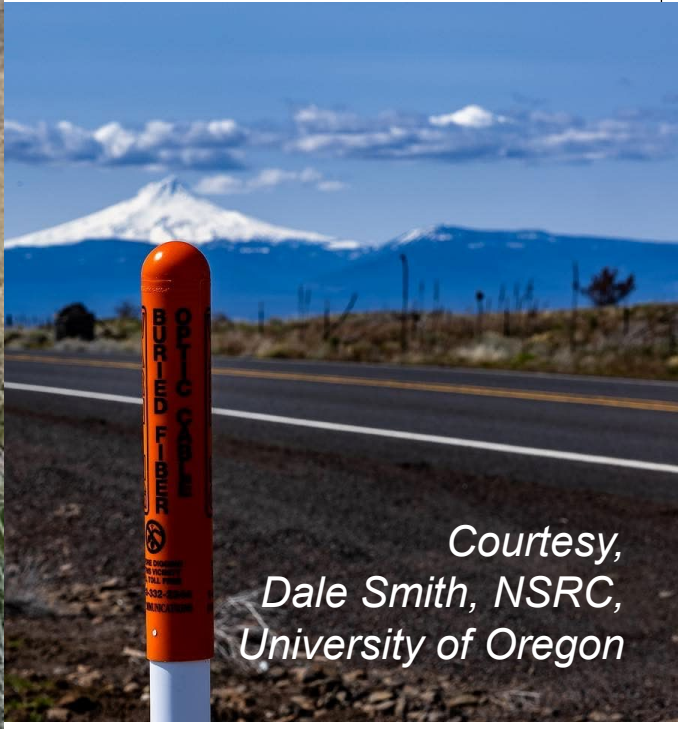
Summary of NESC Clearances to Communications Cables

Underground Fiber Construction



Courtesy,
Dale Smith, NSRC,
University of Oregon

Fiber Optic System Locates

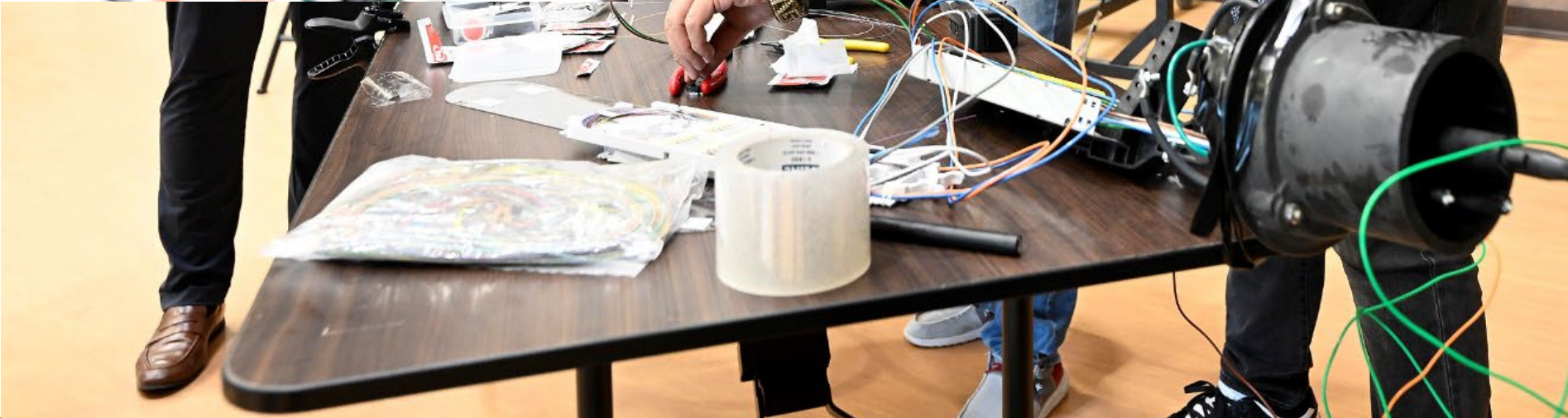


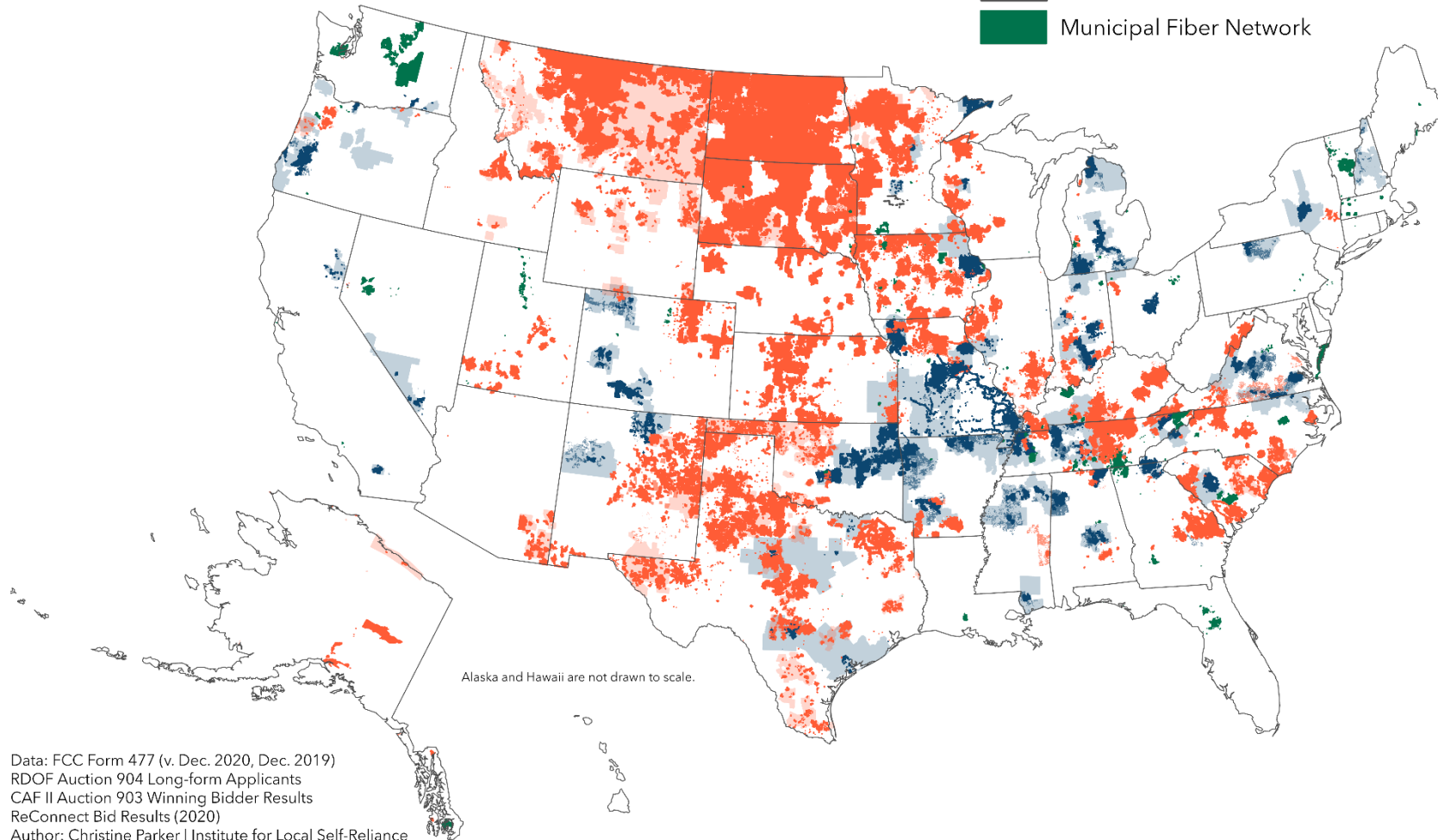
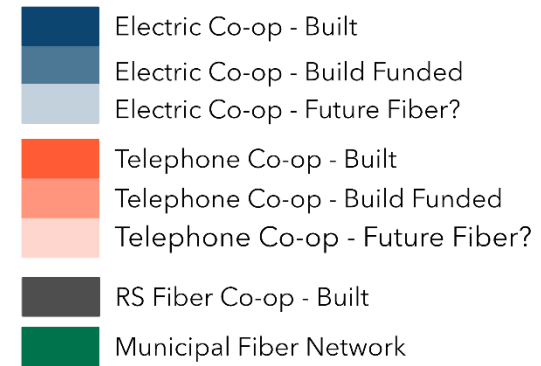
Courtesy,
Dale Smith, NSRC,
University of Oregon

Fiber Optic Systems Outages



Courtesy,
Dale Smith, NSRC,
University of Oregon





Data: FCC Form 477 (v. Dec. 2020, Dec. 2019)
 RDOF Auction 904 Long-form Applicants
 CAF II Auction 903 Winning Bidder Results
 ReConnect Bid Results (2020)
 Author: Christine Parker | Institute for Local Self-Reliance

Fiber Optics Show and Tell

- Then a quick break!

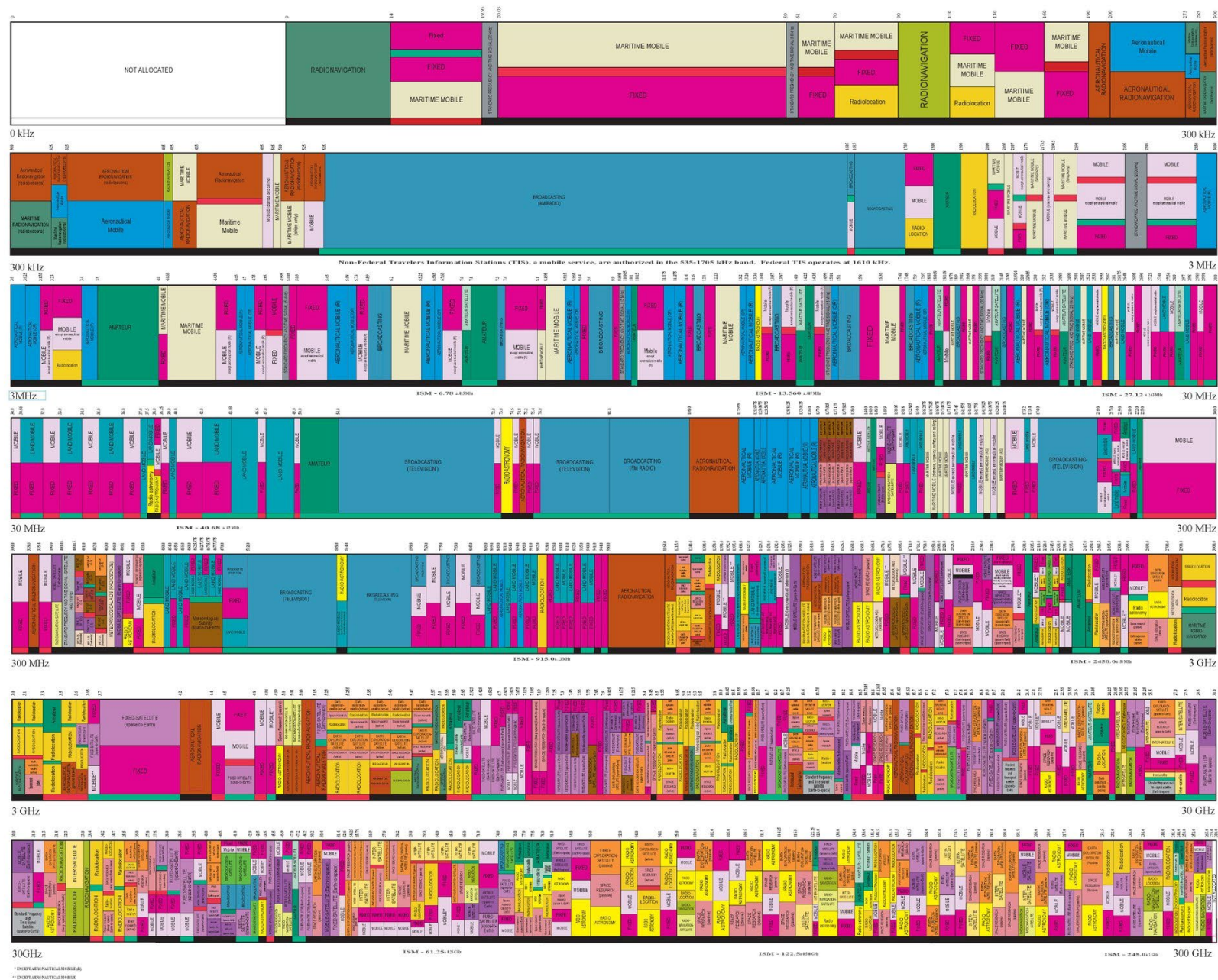
Fiber Optics Economics

- High Upfront Costs
 - Cost to build in Midwestern city, single family homes, directional boring in \$/foot
 - Conduit \$1
 - **Labor** \$9
 - Fiber \$1-\$2
 - Permitting \$2
 - Handholds, Couplers, Splicing misc, locate wire \$2.5
 - **Total:** \$17 (roughly at scale, this is super efficient and not California)
- Low Operating Costs
- Additional Cost to Connect a Home:
 - \$1000 - urban single family
 - \$500 – apartment / condo
 - \$3,000 - \$5,000 for many rural

Health Care and Broadband

- Is a \$2500 one-time cost, with \$300-\$500 per year in operating expenses, “expensive” in health care?
- Analysis: 10 rural, Black, high-poverty counties in Georgia, Alabama, Mississippi
 - 235k population
 - About \$3 billion in annual healthcare spending
 - 20% households no insurance, less than \$25k/year income
 - Effective telehealth saves \$43 million each year, half from regaining lost productivity, rest from emergency visits, readmissions, admissions
 - Estimated cost to connect 63k households, \$80 million one time costs; \$2-3 million digital equity investment per year, assumes Affordable Connectivity Plan continues
- Many other benefits that are extremely difficult to quantify – ex: Chattanooga removed racial gap in parental involvement in schools

UNITED STATES FREQUENCY ALLOCATIONS THE RADIO SPECTRUM



PLEASE NOTE: FREQUENCIES ALLOCATED TO THE SERVICE OF THE SPECTRUM USER ARE SUBJECT TO THE LIMITATIONS OF THE NATIONAL BUREAU OF STANDARDS.

Wireless Technology

- (Still mostly wired)
- Mobile
 - 4G LTE and 5G
- Fixed
- Wi-Fi
- Satellite
 - Geostationary
 - Low Earth Orbit
- High Operating Expense,
Rapid Replacement
Schedule



© Justin Smith / Wikimedia Commons, CC-BY-SA-3.0

Fixed Wireless Technology

netBlazr
Powered by GIGSTREAM

[Residential](#)

[Business](#)

[Properties](#)

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Fixed Wireless Technology



Symmetrical service (the same bandwidth for uploads and downloads)

	1 Year Term	2 Year Term	3 Year Term
2 Mbps	\$122	\$102	\$85
3 Mbps	\$180	\$150	\$125

Asymmetrical service (higher download speed/lower upload speed)

	1 Year Term	2 Year Term	3 Year Term
2/1 Mbps	\$85	\$70	\$59
3/1 Mbps	\$122	\$102	\$85

Broadband



Type	Residential
Technology	Any Technology
Speed	25/3 Mbps or greater
Data As Of	Jun 30, 2022 (Last Updated: 11/17/22)

Residential | Business

Availability Challenge

Provider	Technology	Down (Mbps)	Up (Mbps)	Chall.
▶ Nextera Holdings, LLC	Unlicensed Fixed Wireless	1000	1000	
▶ Nextera Holdings, LLC	Unlicensed Fixed Wireless	1000	1000	

Fixed Wireless Technology

open
broadband

Open Broadband @OpenBBNet · Nov 18

We have @TaranaWireless G1 in production in NC and in testing in SC. We often get asked if the claims are 'real'. Here is one of the middle results in our SC tests, and similar to our installs in Western NC. openbb.net
[@BroadbandIO](#) [@jstritzinger](#)



open
broadband

Open Broadband @OpenBBNet · Nov 7

Fall is a great time to deploy fixed-wireless #broadband in Alexander County NC! Better Internet for Your Community, from a 4.8/5 Star Google Rated ISP: openbb.net
[@alexandercounty](#) [@WISPAnews](#) [@Tville_Times](#)



🗨️ 🔄 ❤️ 1 📶

The Future: Business as Usual Course

- Over next 5-7 years, rapid improvement in rural Internet access
- Little change in low-income adoption, particularly in rural areas
- Cities, better cable modem service, more fiber in many parts of some neighborhoods
- More competition, then less in moderate-affluent areas due to consolidation
- Little market competition disciplining pricing - \$100/month/hh
- Affordable Connectivity Program – high cost to renew funding... [ACPDashboard.com](https://www.acpdashboard.com)



Discover how communities are investing in their own internet infrastructure to promote economic prosperity and improve quality of life.



Mason PUD 3 Responds to Muni Fiber Demand with Fiberhoods

Broadband Bits Podcast 274

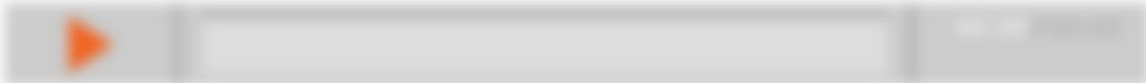


Subscribe via email for a weekly digest.

Wed, October 25, 2017 | Posted by Christopher

Share this [Facebook](#) [Twitter](#) [LinkedIn](#)

Community Broadband Bits Episode 274 - Justin Helgeson and Jeff Ryan of Mason PUD 3



Mason County Public Utility District 3 covers a large area with a lot of people that have poor internet access. If that's what you're looking for...

christopher@ilsr.org

CommunityNets.org

ILSR.org

[@communitynets](https://twitter.com/communitynets)

Networking Lunch

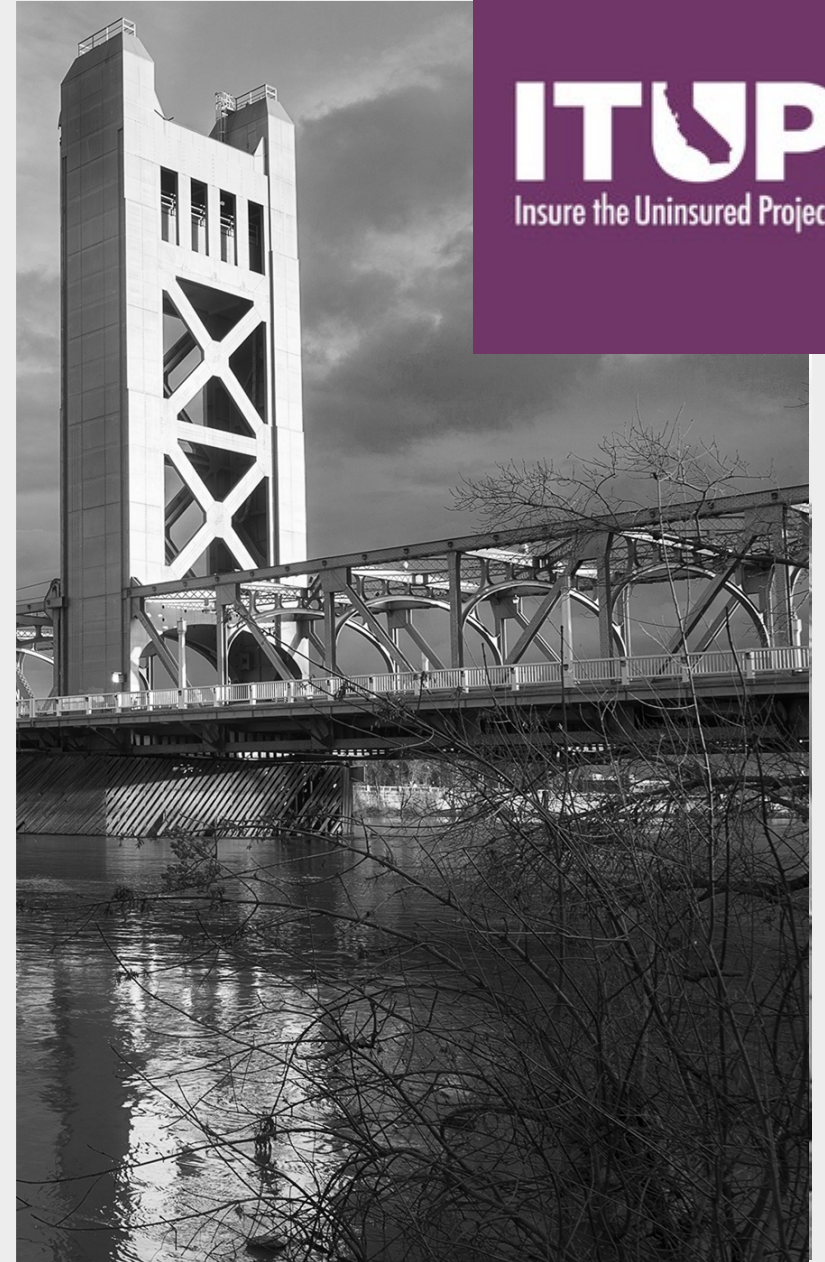


Elevating Health Care Connectivity Needs for the State Digital Equity Plan

Marissa Montano, PhD

Director of Policy

Insure the Uninsured Project (ITUP)



ITUP
Insure the Uninsured Project

The Opportunity: Broadband Investments and the Future of Health



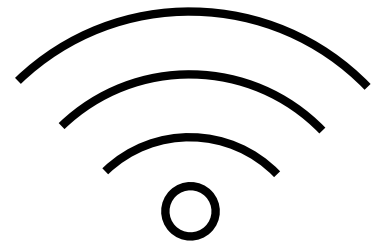
- Federal Broadband \$45 Billion Dollars in the Infrastructure, Investment and Jobs Act of 2021 (IIJA)
- \$6.5 Billion Investment in California
- Telehealth Flexibilities are Permanent



State-Level Broadband Engagement



- [California Public Utilities Commission \(CPUC\)](#)
- [California Department of Technology \(CDT\)](#)
- [State Digital Equity Plan \(SDEP\)](#)
 - Outcome Area Workgroups (OAWGs)
 - *Health OAWG*
 - *Digital Literacy & Inclusion OAWG*



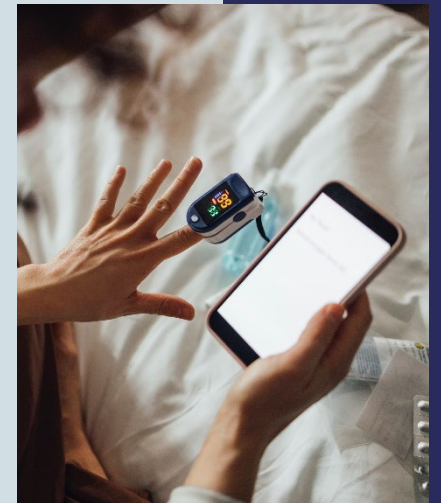
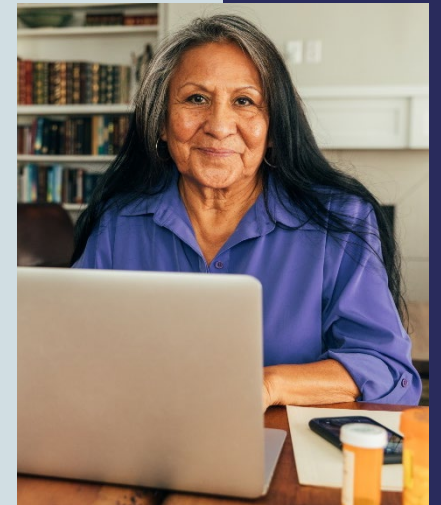
April 12, 2023

Broadband For All, Digital Equity & BEAD Planning Overview

Anh Q. Nguyen,
Engagement and Operations Manager
Office of Broadband and Digital Literacy
California Department of Technology



**BROADBAND
FOR ALL**





Access



Affordability



Adoption



**Digital Literacy
& Inclusion**

Broadband Council (2010)



Executive Order N-73-20 (2020)



Broadband Action Plan (2020)



Senate Bill 156 (2021)



Middle Mile Broadband Initiative

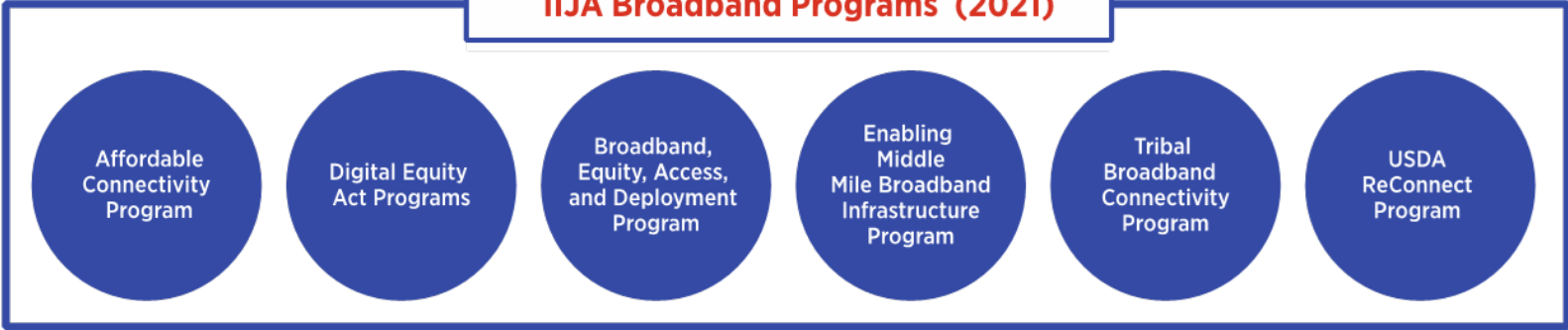
Last Mile Programs



Assembly Bill 2750 (2022)



IJJA Broadband Programs (2021)



Infrastructure Investment and Jobs Act (IIJA)

The IIJA invests roughly \$65 billion to support broadband deployment and adoption and promote digital equity in states.

**Broadband Equity, Access,
and Deployment (BEAD)**

\$42.45B

**Digital Equity Planning,
Capacity, and Competitive
Grants**

\$2.75B

BACKGROUND

SDEP AND BEAD Plan Coordination

- CDT administering entity for Digital Equity Planning program
- CPUC administering entity for Broadband Equity, Access and Deployment program
- Planning processes will be coordinated
- Extensive statewide and local engagement and input
- When completed, both plans will be integrated and unlock hundreds of millions of additional dollars to achieve Broadband for All





Covered Populations

The Digital Equity Act prioritizes investments for eight “Covered Populations”

1

Individuals living in covered households

with an income at or below 150% Federal Poverty Level

2

Aging individuals (60+)

3

Incarcerated individuals

other than individuals who are incarcerated in a Federal correctional facility

4

Veterans

5

Individuals with disabilities

6

Individuals with language barriers

including individuals who Are English learners; and have low levels of literacy

7

Members of a racial or ethnic minority group

8

Individuals who primarily reside in a rural area

9

Women

10

LGBTQI+

Specifically called out in the BEAD notice of funding opportunity



SDEP PLANNING APPROACH **PLANNING COMPONENTS**

The planning process will consist of five components:

- Statewide Planning Group (SPG)
- Outcome Area Working Groups (OAWGs)
- California Digital Equity Survey(s)
- Broadband for All, Digital Equity & BEAD Regional Planning Workshops
- Statewide Public Engagement

Six Outcome Area Working Groups

1

Education

2

Health

3

Digital Literacy and
Inclusion

4

Essential Services,
Accessibility and
Civic Engagement

5

Workforce and
Economic
Development

6

Tribal Collaboration

OAWG STAFF

Scott Adams, Cole Przybyla, Laura Sasaki, Anh Nguyen
Contractors + Graduate Student Assistants

Takeaways/Findings

- Telehealth is a powerful tool, but only if individuals have **access to the technology, devices, trainings, and skills to use it effectively.**
- Every population has **unique needs and challenges**, hence it's important to include the **community's voices** in the process of co-designing potential solutions.
- Rural Communities have been left behind when it comes to digital infrastructure, resulting in **slower economic growth and fewer investment opportunities.**
- Digital equity initiatives can improve health outcomes by partnering with healthcare providers and training digital navigators.



**WE NEED YOUR
HELP**

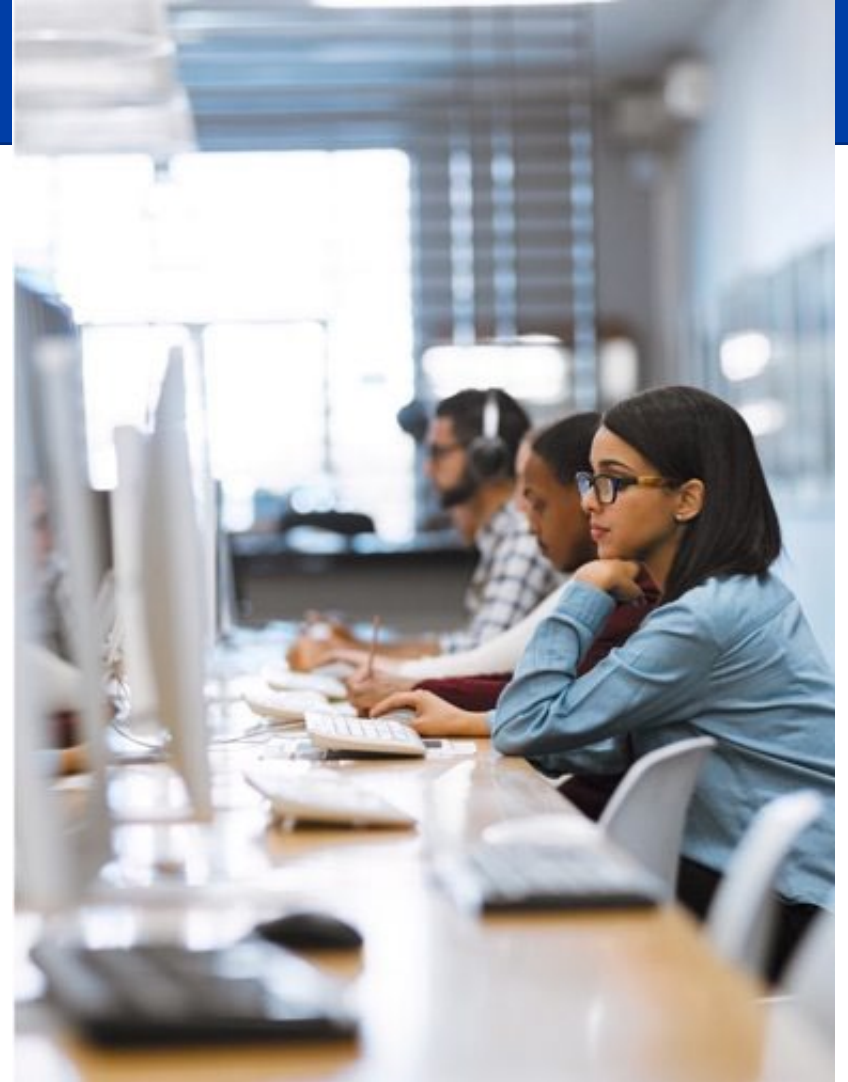
How to Take Action

Digital Equity Ecosystem Mapping (DEEM) Tool

THE DEEM TOOL IS LIVE!

The Digital Equity Ecosystem Mapping tool tracks **Digital Equity** programs, plans, services, and resources throughout California. The mapping tool will help identify:

- What programs are being offered, where they're being offered and to whom, and what is missing in each region.
- Barriers to achieving digital equity in every California county.



Make your voice heard!

Millions of Californians do not have access to the internet. Our state wants to work with organizations across California to create a plan to give all Californians the access they need to succeed in the digital age.

Help our state identify and fund programs to close the digital divide for good. Put your organization on the map now.

Visit [Bit.ly/DEEMSurvey](https://bit.ly/DEEMSurvey) or scan the QR code using your mobile device.



Broadband for All



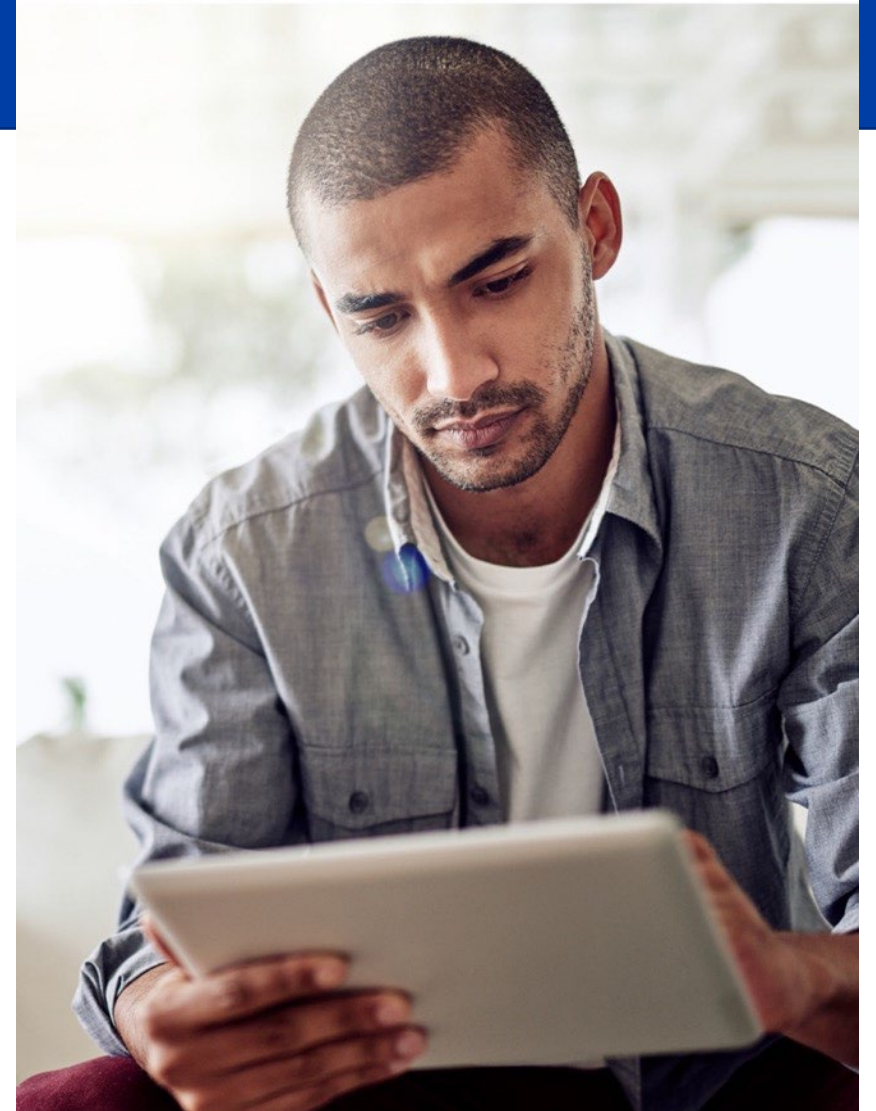
How to Take Action

Digital Equity Public Survey

CDT will distribute a statewide **Digital Equity Public Survey in multiple languages** to residents of California to identify barriers to digital equity, especially for Covered Populations.

The survey is intended to capture information about internet access, internet affordability, and internet adoption for residents in California households.

Timeline: Launch Q2 2023





Broadband for All, Digital Equity and BEAD Regional Planning Workshops

- Friday, April 14, Merced
- Saturday, April 15, Fresno
- Friday, April 21, San Diego
- Thursday, April 27, Chico
- Friday, April 28, Santa Rosa
- Wednesday, May 3, Eureka
- Friday, May 5, San Jose
- Thursday, May 11, Sacramento
- Friday, May 12, Grass Valley
- Tuesday, May 16, Inland Empire
- Friday, May 19, Los Angeles
- Saturday, May 20, Long Beach
- Wednesday, May 24, Santa Ana
- Tuesday, May 30, Tuolumne
- Thursday, June 1, Santa Maria
- Friday, June 2nd, Seaside
- *To Be Announced: Oakland*

Scan the QR code using your mobile device or visit us at bit.ly/CADigitalEquityPlanEvents



Broadband for All



Contact Us

Digital Equity Planning General: digitalequity@state.ca.gov

**California Department of Technology
Office of Broadband and Digital Literacy**

**Anh Q. Nguyen
Engagement and Operations Manager
anh.q.nguyen@state.ca.gov**



**BROADBAND
FOR ALL**

Thank You

Q&A



**BROADBAND
FOR ALL**

Workshop: Breakout Session #1

- 1. What are the digital barriers to health you've encountered in your work and/or what digital barriers to health have the communities you served faced in accessing health care?*
- 2. How do digital barriers to health contribute to, or worsen, health disparities for California communities?*
- 3. What solutions for digital barriers to health care access have you/could you use in your work to make access to health care more accessible for the communities you work with or for?*

1. Write out 2-3 barriers on the provided post it notes.
2. Then, as a group, create categories/groupings of the barriers you wrote down.
3. Place the groups post its under the categories you delineated.

Workshop: Breakout Session #2



- 1. What supports or polices are needed to operationalize the solutions identified for breaking down digital barriers to health care?*
- 2. In what ways can the state digital equity plan help support you in breaking down the digital divide to advance health equity in your work?*

15 Minute Break

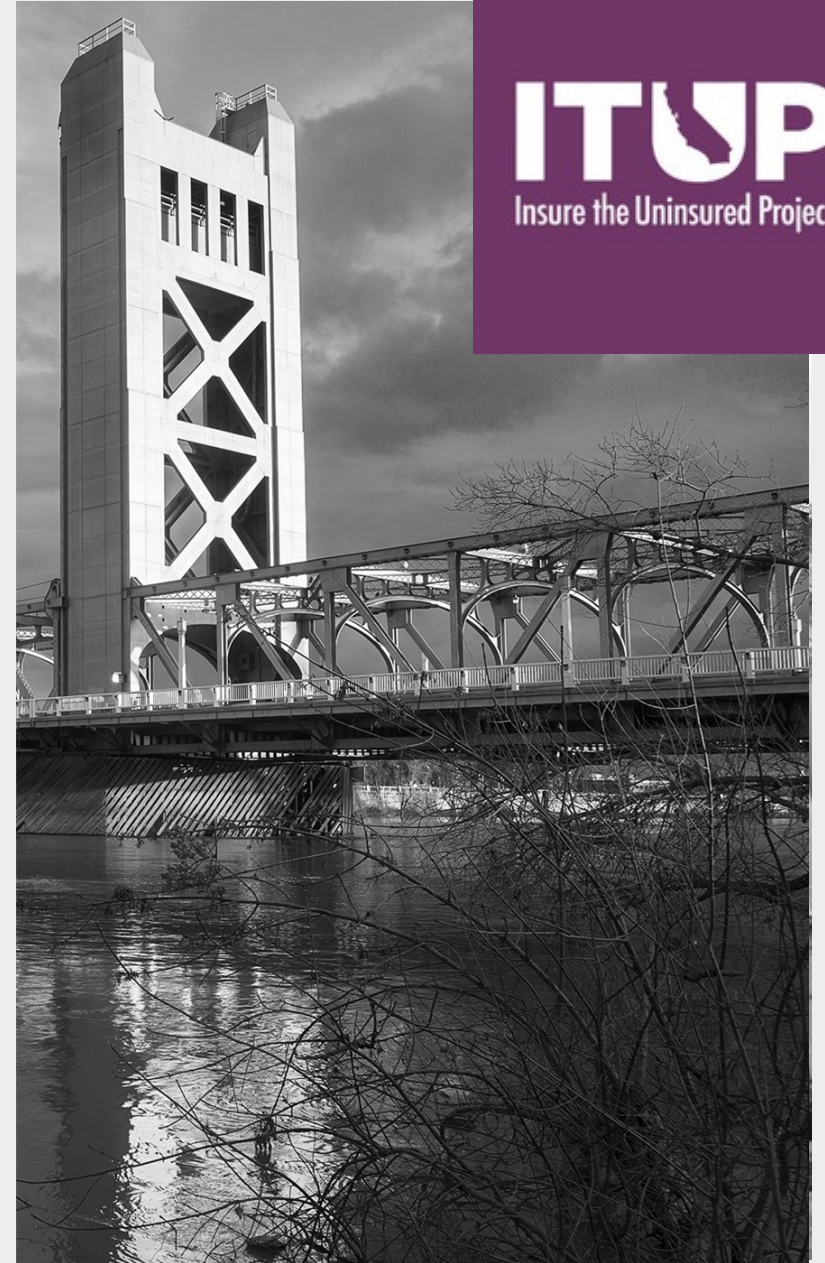


Closing the Digital Divide and Health Equity Gaps

Sunne Wright McPeak, MPH

President and Chief Executive Officer

California Emerging Technology Fund (CETF)



Thank You!



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