Michael Sherwood	Josh Broder	Brett Lasher	Bill Baver	Bart van Aardenne
City of Las Vegas	Tilson	Cox	NTT Data	Terranet

ABOUT ME

- Recovering network engineer, former Signal Officer, now CEO at Tilson

- Tilson in Las Vegas and Nevada

  - On a mission to build America's information infrastructure

  - Nevada Professional Engineer

  - Nevada licensed telecom general contractor

  - Las Vegas location with ~50 employees today, growing to ~250 this year (of 2,000)

  - Building fiber and 5G throughout Nevada

  - Consulting for state and city governments on broadband subsidy programs

  - Develop and own multi-tenant poles as a CLEC in Nevada

- Why are we here?

  - Growth in Clark County

  - Progressive attitude about technology adoption – leadership

  - Las Vegas will be the most connected city in the world

VIRTUAL JOB FAIR

Las Vegas Entry-Level Jobs

CDL Laborers, Microtrenching CDL Laborer, Microtrenching Laborer, or OSP Laborer
Email kwharton@tilsontech.com to sign up

11am-2pm PT Friday, March 24th
11am-2pm PT Monday, March 27th

TILSON
On a Mission

OPEN JOBS LAS VEGAS

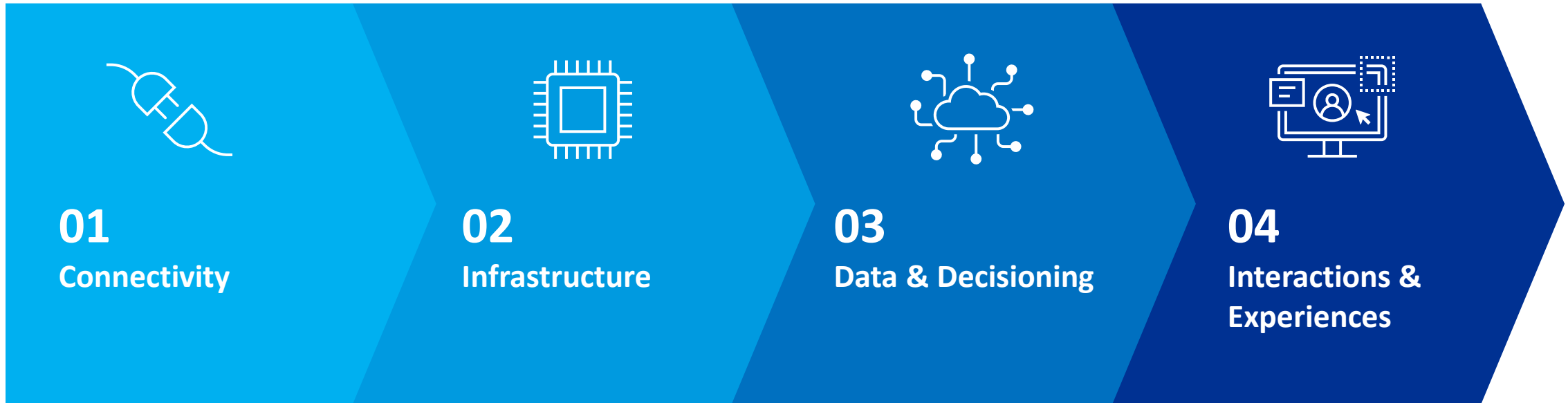Regional AVP, Las Vegas

Regional Director of Engineering

ESS Engineering Project Manager

OSP Director of Microtrenching

OSP Director of HDD

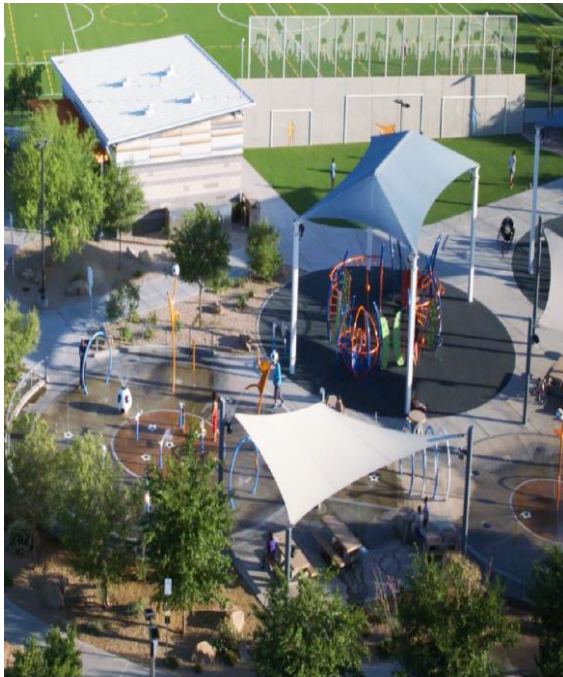+20 other positions

Cox's Connected Environments toolset will deliver the future of Smart Communities

01
Connectivity

02
Infrastructure

03
Data & Decisioning

04
Interactions & Experiences

Cox Private Networks

Current Smart Communities Projects: City of Las Vegas + Surrounding Areas

Smart Parks	Smart Downtown (Urban Areas)	Curbside Management	Smart Lighting
Baker Park : Las Vegas	Fremont St. District : Las Vegas	Fremont St. District : Las Vegas	Water St. Innovation District: Henderson, NV

Cox Private Networks

FIBER

- **Fiber makes up the backbone of all digital infrastructure. It enables wireless, data centers, and broadband service.**

- Challenges for fiber installation
  - Cost – Caliche and hard surfaces
  - Disruption
  - Access
  - Labor availability
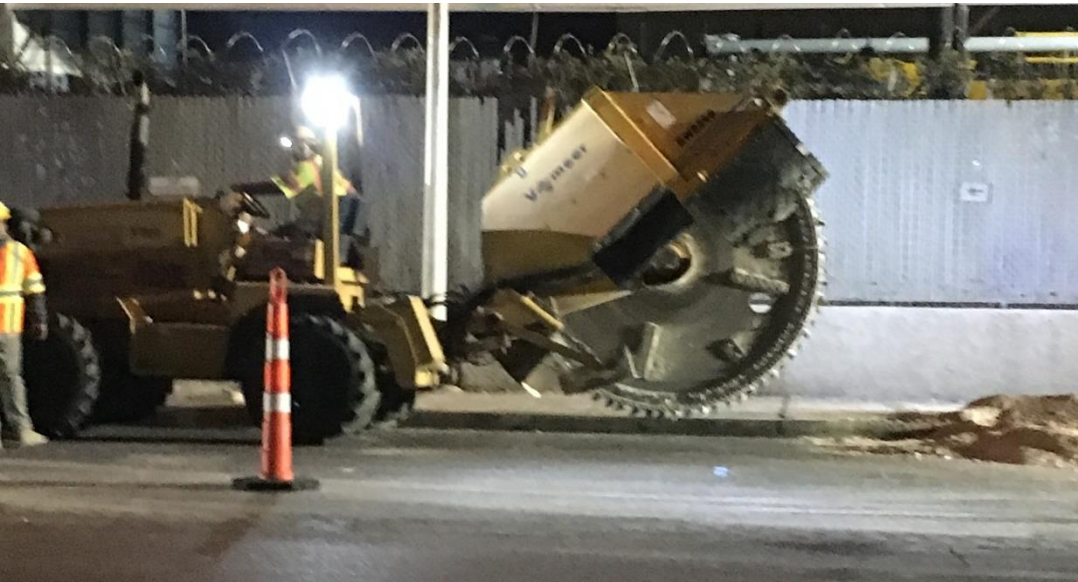
Construction Expo in Vegas last week

Fiber to the small cell pre-pandemic, so much Caliche!

DRILLING

MICROTRENCHING

IT'S THE LITTLE THINGS

COLOR TO MATCH EXISTING GRADE

EXISTING GRADE

EXISTING ASPHALT CONCRETE, PAVEMENT THICKNESS VARIES

MIN. PEA GRAVEL

12 AWG TRACER WIRE, TAPED TO UPPERMOST MICRODUCT

MIN. DEPTH

MIN. COVER

(3) MICRODUCTS

3/4" WIDTH
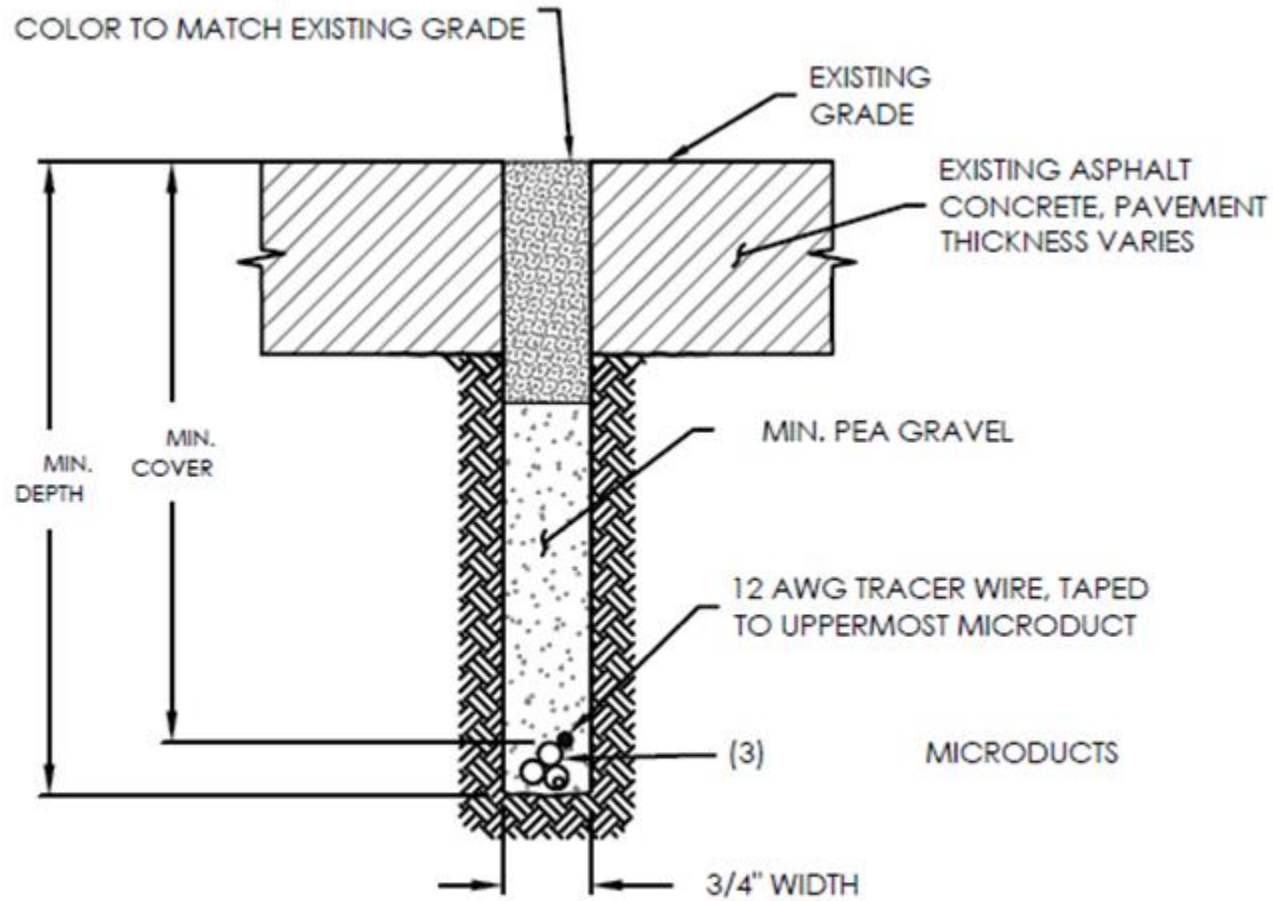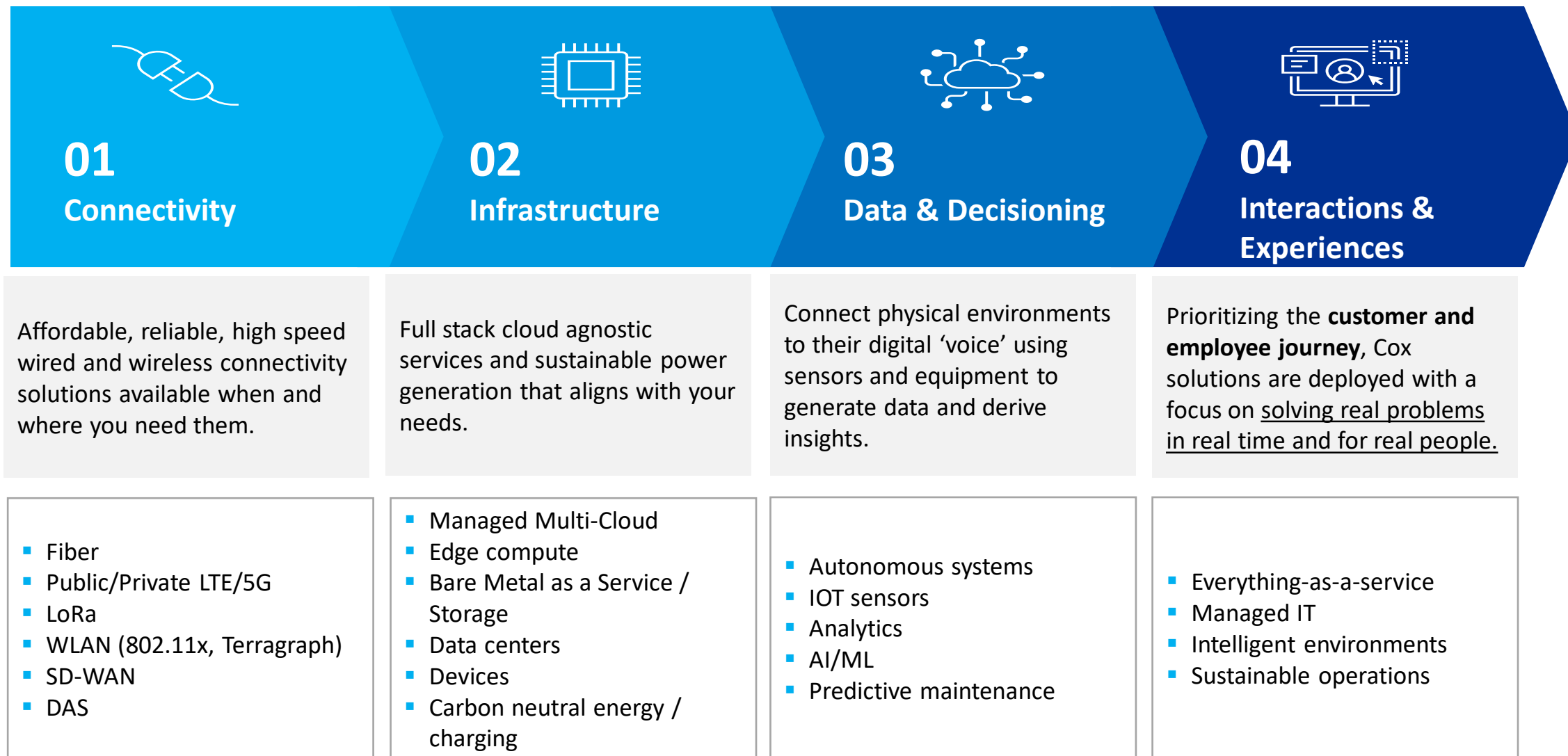
TYPICAL MICROTRENCH
(COLD APPLIED LIQUID RESIN INFILL)

TILSON

Cox's Connected Environments toolset will deliver the future of Smart Communities

01 Connectivity

Affordable, reliable, high speed wired and wireless connectivity solutions available when and where you need them.

- Fiber
- Public/Private LTE/5G
- LoRa
- WLAN (802.11x, Terragraph)
- SD-WAN
- DAS

02 Infrastructure

Full stack cloud agnostic services and sustainable power generation that aligns with your needs.

- Managed Multi-Cloud
- Edge compute
- Bare Metal as a Service / Storage
- Data centers
- Devices
- Carbon neutral energy / charging

03 Data & Decisioning

Connect physical environments to their digital 'voice' using sensors and equipment to generate data and derive insights.

- Autonomous systems
- IOT sensors
- Analytics
- AI/ML
- Predictive maintenance

04 Interactions & Experiences

Prioritizing the **customer and employee journey**, Cox solutions are deployed with a focus on solving real problems in real time and for real people.

- Everything-as-a-service
- Managed IT
- Intelligent environments
- Sustainable operations

Cox Private Networks

Cox Managed Service | End-to-End Delivery

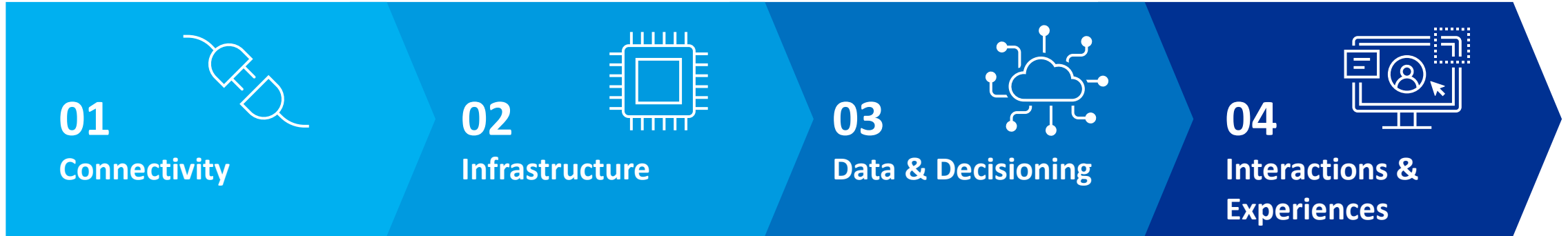**Cox will deliver and end to end solution for our Private Network customers in order to solve their 'pain points'**

Customer Education

- Educate customer
- Commence commercial contact

Customer Discovery

- Conduct deep dive into customer pain-point

Solution Design *(incl U/E & Applications)*

- Network Design
- Endpoint / Application Selection
- Technology Selection

Procurement

- RAN/Core Acquisition
- Endpoint / Application Acquisition

Solution Deployment

- Permitting
- Network + Solution Installation

Solution Configuration

- RAN/Core Configuration
- Endpoint / Application Integration

Solution Turn-Up

- Ensuring deployment completed as-planned
- Seamless transition from deployment to operation

Solution / Network Management

- Proactive Network Monitoring
- Break/Fix

Cox Private Networks

Cox brings a full ecosystem of operating businesses to deliver the next generation of 'Connected Environments'

| 01 Connectivity	02 Infrastructure	03 Data & Decisioning	04 Interactions & Experiences
Cox Private Networks	Cox Edge	COX 2M	COX BUSINESS Smart Communities
COX Mobile	RapidScale	Cox Prosight	level
COX Communities	SEGRA	COX Homelife	ELITE GAMER
HN Hospitality Network	logicworks		

Cox Private Networks

Question 3: Of the following factors, which is most important to you regarding broadband internet accessibility?
Answered: 2,773 Skipped: 5
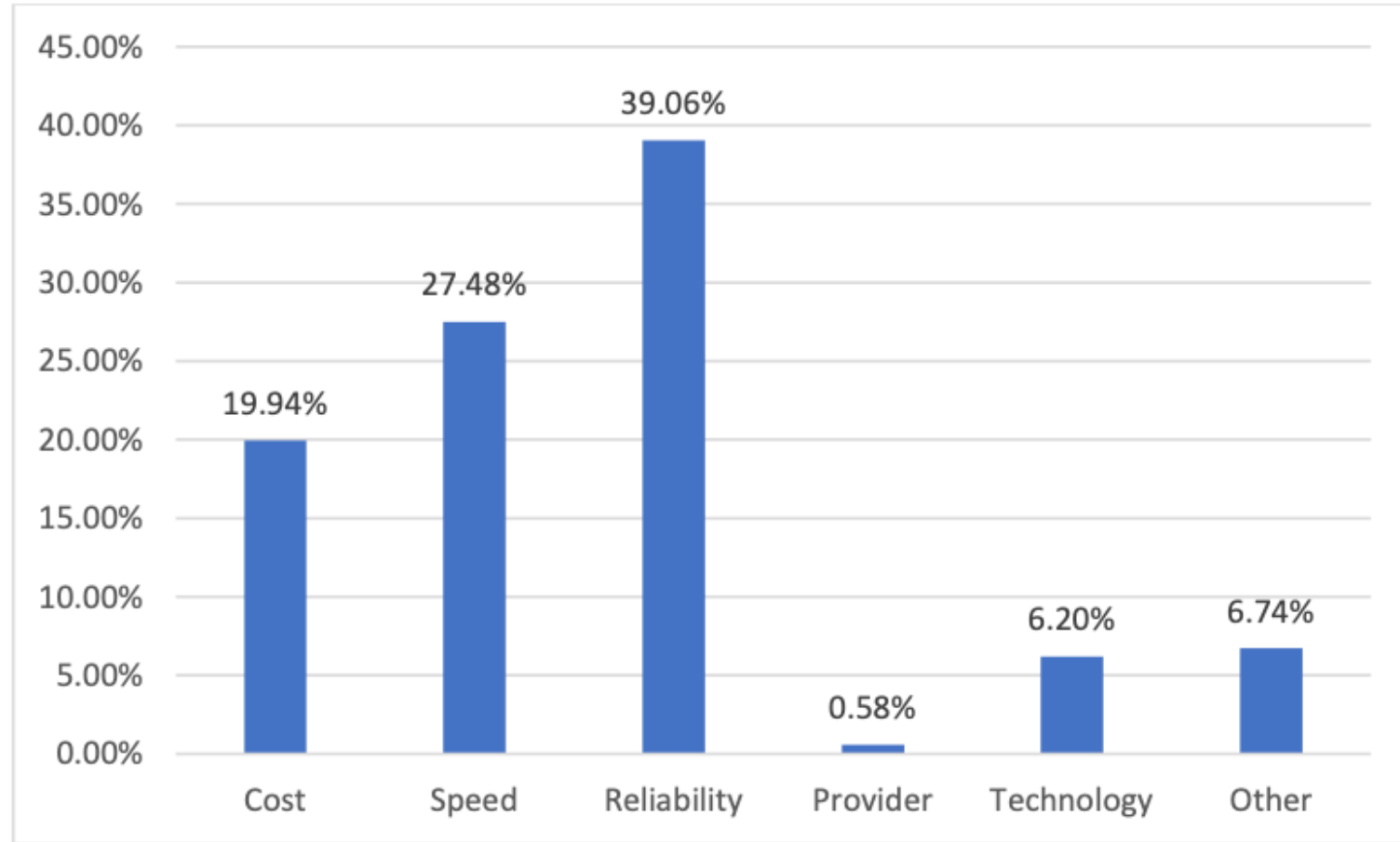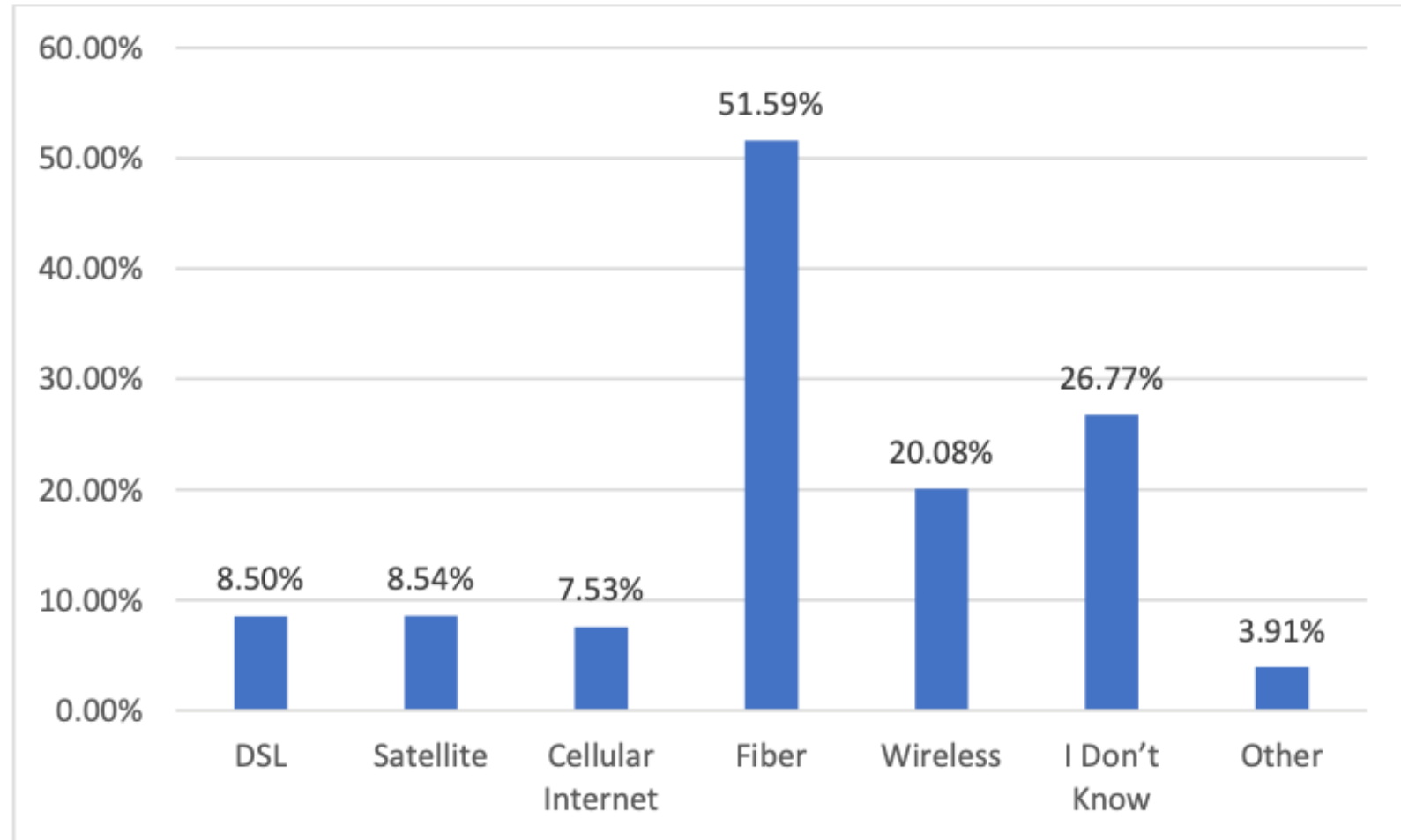
Key Considerations-5-year Broadband Plan

- Stakeholder Engagement-LTPT

- Data Collection-Demonstrate Need
  - Inventory
  - Mapping
  - Surveys

- Digital Equity
  - Devices-New and Repurposed
  - Literacy and Skills
  - Helpdesk
  - Workforce Program Development
  - Telehealth
  - Community Engagement-Adoption and Affordability

- Grant Administration

- Broadband Infrastructure Planning

- RFP Development, Deployment and Fulfillment

- Ongoing Technical and Program Support

DenseNetworks.com

17

Orange County, Florida

$16.1 Million in ARPA Funds

**Broadband Infrastructure and Digital Equity Programs
Community Driven/Local Technology Planning Team (LTPT)**

- Residential Broadband-Eliminated Unserved Homes
  - Availability, Adoption, Affordability, Ability
- **County Anchor Institution Fiber Optic Network and Connectivity**
- **Community Center-Dark Fiber, CBRS, Wi-Fi, Routers, Telehealth Station**
- Digital Connectivity and Devices
- Programs-Digital Equity, Telehealth, Workforce Development

  - Digital Literacy Courses

  - Telehealth Station with Orlando Health

  - Digital App for Social Services

  - Workforce Development Program for fiber optic and wireless technicians.

DenseNetworks.com

How can we address digital enablement?

Availability, Adoption, Affordability and Ability

Broadband and Digital Equity Planning Matrix

How

| Functional Locations	Devices	Networks	Programs	Funding
· Community Centers	· Computers	· Fiber Government	· Literacy	· State-BOP
· Hospitals and Clinics	· Tablets	· Fiber Service Provider	· Individual Devices	· Federal-State-CPF
· Libraries	· Smart Phone	· Cellular	· MDU Infrastructure	· Federal-State-BEAD
· Senior Centers	· Wi Fi	· Wi Fi	Workforce and Skills	· Federal-State-Digital Equity
· Parks	· Telehealth Booth	· Private	· Telehealth	· Federal Digital Equity
· MDU & Group Homes	· Digital Boards	· LAN	· Helpdesk/Navigators	· E-Rate

Digital Super Center
Fiber Optics, Wi Fi, Devices, Programs

Telehealth and Social Services
Support existing Social Services Leaders
Non-Profits/Community Centers/Clinics

Workforce Development
Skills, Literacy, Job Applications,
Partners
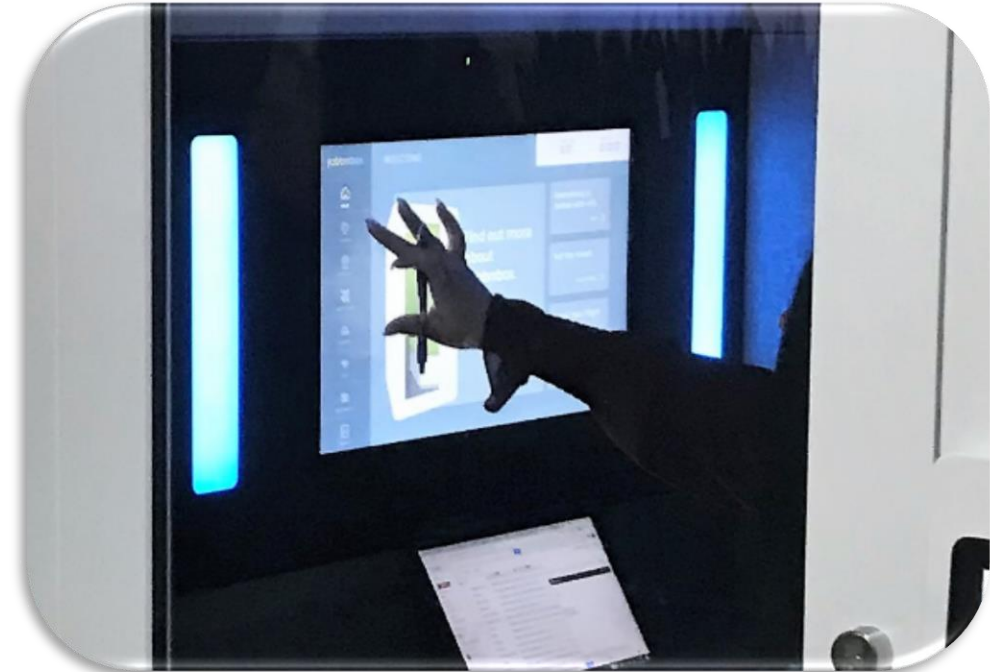
Sample Broadband Plan
Seeking Funding

www.leegov.com/broadband
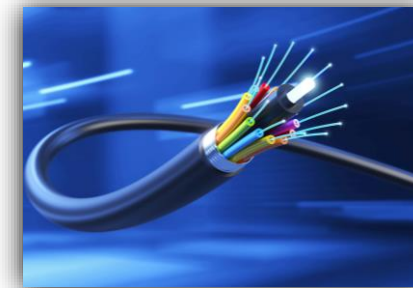
3 BOP Applications Awarded
Cover 14,000 Homes
$8 million grant + $10 million in matching funds

Lee Broadband-Christine Brady, Kevin Loucks and Kevin O'Malley

Evaluating Local Broadband Capabilities (leegov.com)

3 Focus Areas
Determine Fundability

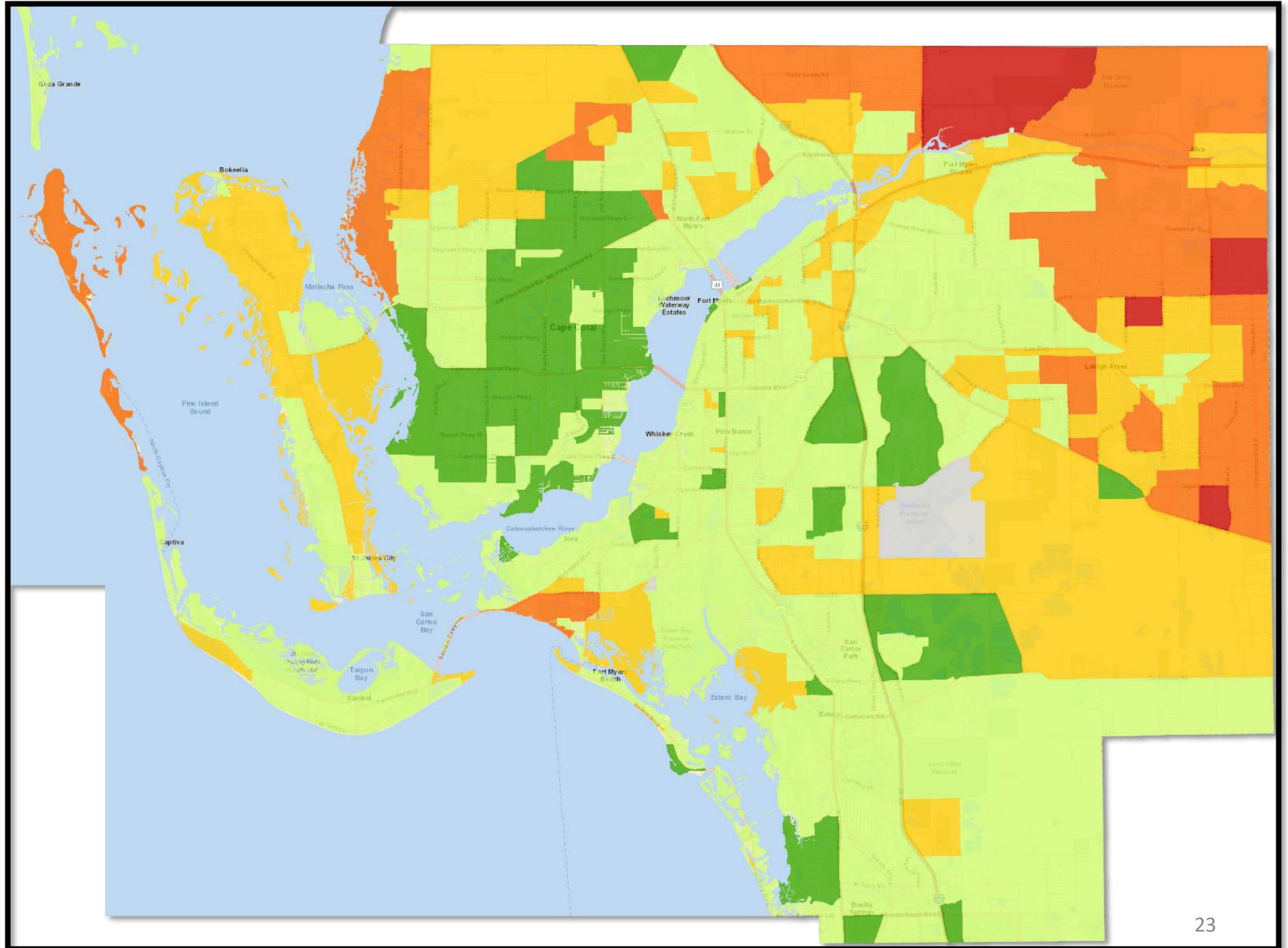|	
Unserved Areas-Residential Focus	**Broadband Service Provider** • Availability • Affordability • Adoption
Programs-Digital Equity, Telehealth, Workforce development	**Enablement through broadband:** • Devices • Literacy and skills • Wireless • Fiber optic infrastructure
County Anchor Institutions	**County or Providers** • Fiber Optic • Wireless

Block-Group Ratings

- Below 10/1
- Below 25/3
- Below 50/10
- Below 100/20
- Above 100/20
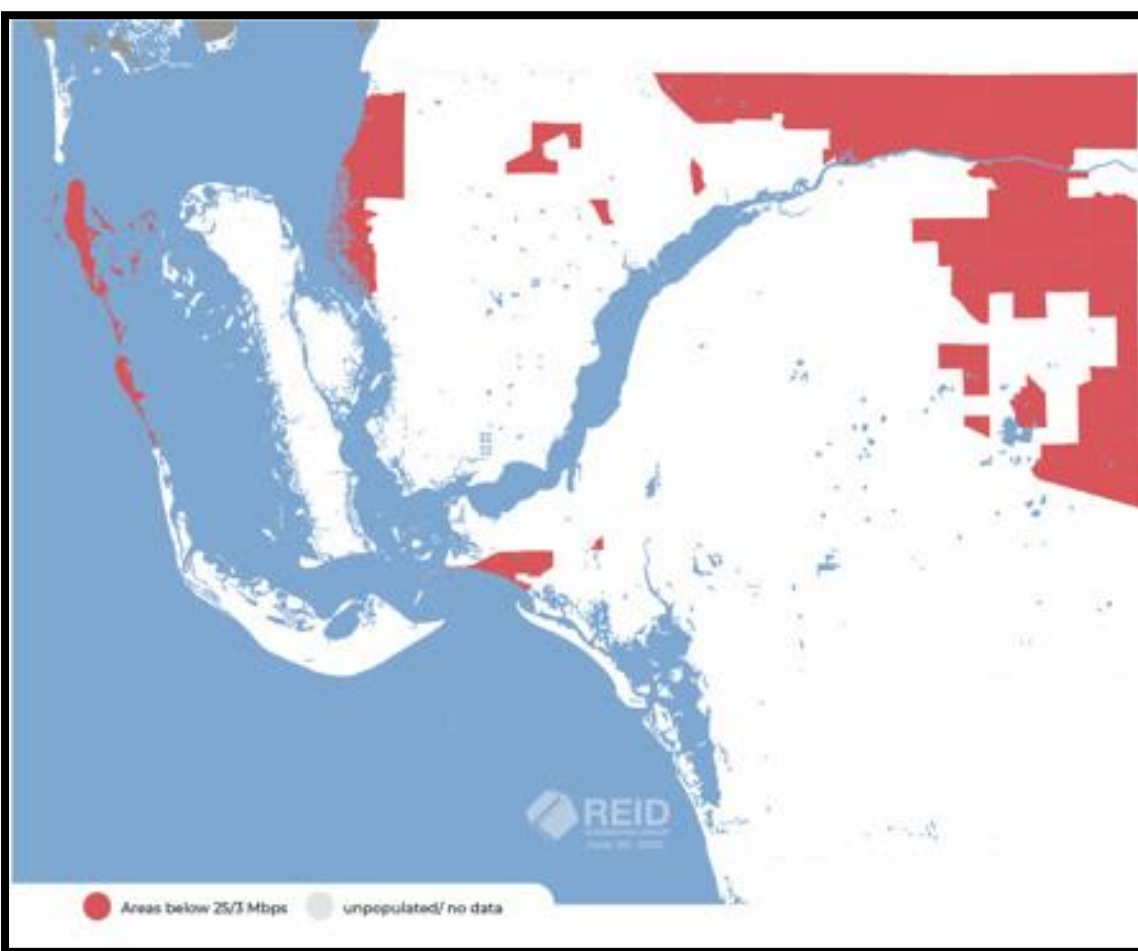
Unserved <25/3

Underserved <50/10
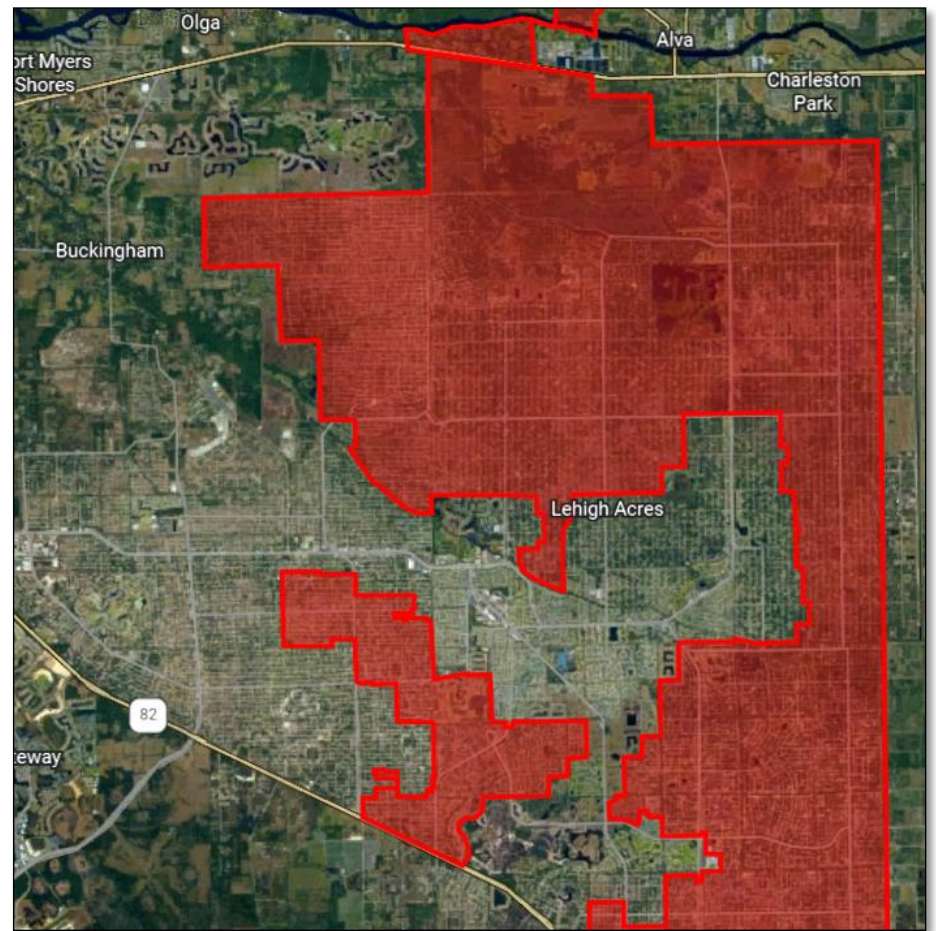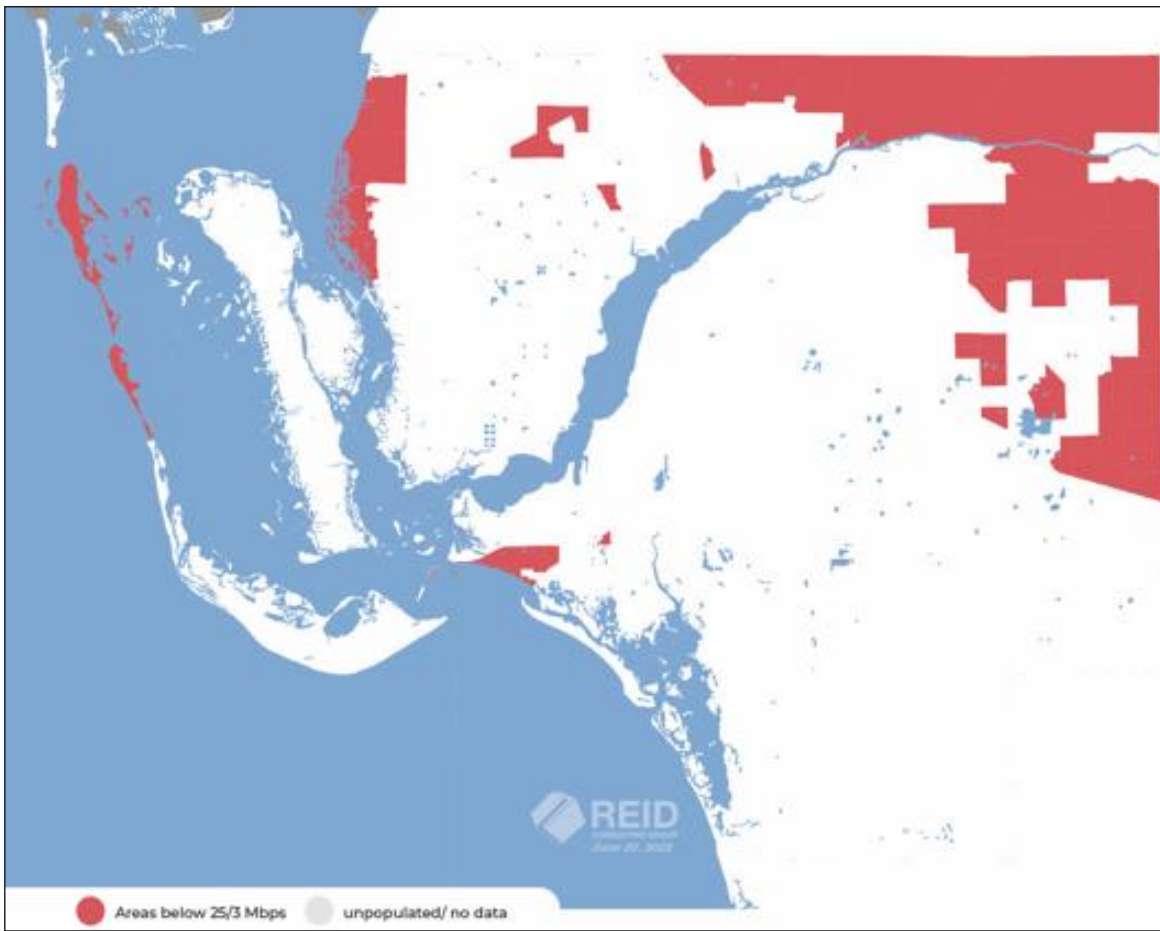
Unserved Comparison with Comcast

Library Inventory and Speeds

Branch	Bandwidth per IT	Staff PC - Download	Staff PC - Upload	Public PC - Download	Public PC - Upload	Staff Wi-Fi - Download	Staff Wi-Fi - Upload	Public Wi-Fi - Download	Public Wi-Fi - Upload	Provider	Result from PC Test
Boca Grande	20M	17.37	18.2	16.89	17.34	10.71	17.87	10.62	10.18	Lumen	
Bonita Springs	100M	35.17	73.22	53.75	71.86	17.59	37.91	23.53	22.89	Lumen	85
Cape Coral	50M	20.05	39.11	13.14	37.81	15.71	41.83	26.49	26.9	Lumen	120
Captiva	10M	8.58	8.1	9.02	8.05	8.1	7.43	4.78	7.71	Lumen	15
Dunbar	50M	86.48	88.78	45.81	41.43	131.9	163.03	75.9	74.15	Lee County	40
East County	50M	86.69	95.46	78.6	87.96	64.12	62.68	10.85	10.07	Crown Castle	115
Fort Myers	100M	619.84	530.37	620.02	400	190.26	187.84	182.73	187.63	Lee County	160
Lakes	100M	658.1	489.71	89.15	78.14	66.63	62.37	68.98	72.4	Lee County	100
North Fort Myers	150M	68.28	77.47	53.73	88.21	77.21	84.32	80.78	77.89	Lee County	80
Northwest	100M	44.87	86.52	44.09	86.02	35.61	83.09	42.11	75.37	Crown Castle	110
Pine Island	50M	48.33	47.14	49.54	46.05	46.44	38.48	47.6	41.64	Crown Castle	20
Riverdale (Closed)	50M	-	-	-	-	-	-	-	-		-
Alva (RL Temp Site)	200M	n/a	n/a	n/a	n/a	234.34	22.74	234.34	22.74		
South County	100M	790.41	295.25	91.87	92.23	10.56	10.4	10.74	10.23	Lee County	85
Library Admin	1G	699.37	238.78	n/a	n/a	177.64	208.27	146.52	197.49	Lee County	35

Library Broadband - Inventory and Speeds

Legend ===> | Strong | Moderate | Weak

Pennsylvania Challenges

• Infrastructure Availability: Due to a lack of available infrastructure, at least 250,000 locations do not have access to 25/3 Mbps, and an additional 140,000 locations do not have access to 100/20 Mbps broadband.

• Affordability & Adoption: Prior to the establishment of the Emergency Broadband Benefit Program and the Affordable Connectivity Program (ACP), approximately 537,500 households (9.7%) did not have access to a wired low-cost home high-speed broadband subscription (ranks as 18th lowest percentage in U.S.) The ACP, coupled with other plans that are offered by many providers, provides access to high-speed broadband at low or no cost to qualifying Pennsylvanians, yet the program is undersubscribed and more can be done to increase enrollment and reduce barriers to participation.

• Devices: There are an estimated 1.6 million households (31.2%) without a computer and smartphone (ranks as 34th lowest % in U.S.)

• Digital Literacy: As many as 1.2 million (14.6%) adults may lack the digital literacy required to begin taking advantage of critical digital services.

Pennsylvania Broadband Office Focus Areas

Anticipated Pennsylvania Broadband Grant Awards

NTIA IIJA : $1.3 B - $1.4 Billion

for broadband grants (anticipated). Affecting factors include network speed and population.

Treasury CPF: $278.8 Million

for broadband grants (anticipated).

This Plan focuses on four challenge areas and opportunities for universal broadband access in Pennsylvania:

- BROADBAND SERVICE INFRASTRUCTURE AND AVAILABILITY
- DIGITAL EQUITY AND AFFORDABILITY
- DEVICE AND TECHNOLOGY ACCESS
- DIGITAL LITERACY AND TECHNICAL SUPPORT

Philadelphia

Office of Innovation & Technology

DEVICES	CONNECTIVITY	TRAINING & WORKFORCE	ECOSYSTEM
Philadelphians can access appropriate and affordable technology devices.	Philadelphians can access and afford the internet connectivity they need.	Philadelphians develop the digital skills necessary for work and life.	Philadelphia grows and sustains the capacity and infrastructure required to increase digital equity.

Figure 2: E-rate Funded construction projects in NV – 2017-2019

91.89% INCREASE IN APPLICANT PARTICIPATION

$36.1M IN TOTAL FEDERAL E-RATE FUNDING RECEIVED

219% INCREASE IN FUNDING RECEIVED

$ 2.8M IN STATE MATCH AND BROADBAND GRANTS FUNDING

1,643,753 FEET OF NEW FIBER-OPTIC CABLE FUNDED

$3,796,838 E-RATE FUNDING FOR NEW FIBER DEPLOYMENT
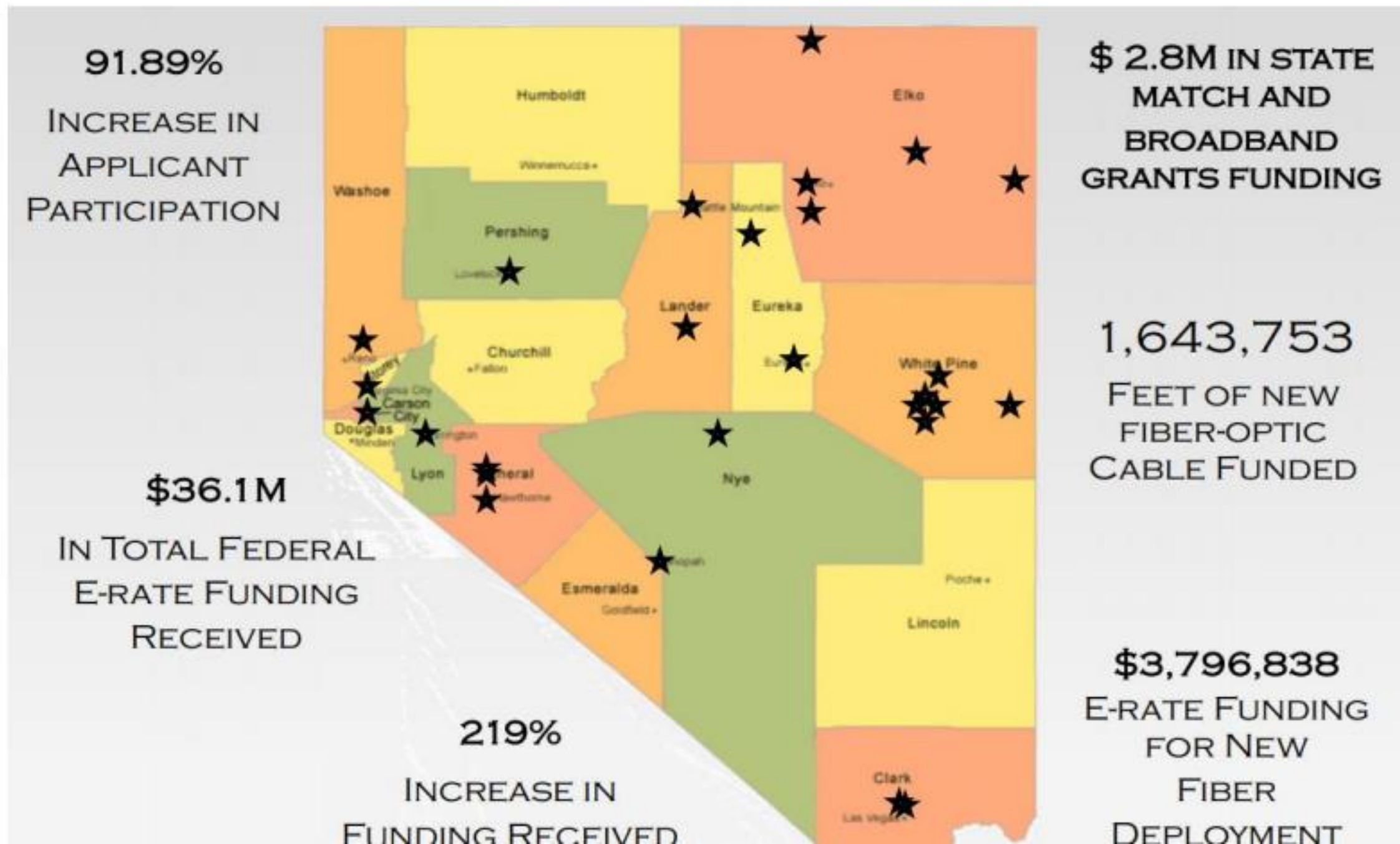
Potential Structure

Private	Third Party: A service provider owns the network and provides retail and wholesale services
	Wholesale (i): A private operator builds and operates a wholesale network
Public-Private Partnership	P3 Open: Network owned by PPP, has an open wholesale network and may provide retail services
	P3 Not Open: Network owned by PPP, not necessarily an open wholesale network but must provide retail services
Public	Wholesale (ii): A public entity owns or funds part of the infrastructure
	Wholesale (iii): A public entity completely owns the network infrastructure