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Welcome to the

Update on Tucson's Fiber to the Premises Program

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Welcome

- Presenter Introductions
- Goals for Today's Session

Chris Mazzarella
Chief Information Officer
City of Tucson

Randall Luening
Project Consultant
Brennan Group

Sal Acuna
Project Consultant
Brennan Group

2

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Agenda
Tucson Fiber to the Premises
June 26,2024

- City of Tucson Goals & Objectives

- Findings & Insights from Internal Assessments

- City of Tucson Actions to Date

- Next Steps Forward

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Today is an Outbrief Only.
Please submit follow-up questions via QR Code /
https://forms.office.com/g/LNnzsLfwTp?origin=lprLink

3

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The RFI posted June 2023.
What has Tucson been doing ?

- Data Gathering
  - Regulations, Agreements & Laws
  - City Standards, Operations & Processes
  - Tech / Utility Standards
  - Future City Direction
- Request for Information from Vendors
- Research from other Cities and Best Practices
- Investigating Funding Options
- Alignment and Coordination with County and State
- Conceptual Operating Model & Processes Drafted
- Working with Consultants for Expedited Planning

4

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FTTP Program
Goals & Objectives

Goals:
- Fiber coverage to all premises for current & future bandwidth needs
- Help make Tucson more attractive to newcomers
- Become part of the framework for future Smart City initiatives

Objectives:
- 100% coverage fiber to all premises within city limits by 2029
- Equity in rollout and service
- Reasonable prices and increased speed

5

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KEY OBJECTIVE:
100% Fiber Deployment
to Every Premise

INITIAL TARGETS & CORE BELIEFS
- Achieve 100% fiber optic coverage, delivered equitably to all residents.
- Aspire internet service should be available to all, including those unable to afford it.
- Any new investment to result in same or lower prices & increased speed offerings.

INSIGHTS GLEANED – Major areas of interest impacting City (internal ops)
- Connect growing City assets (including facilities, signalized intersections, bus stops, pedestrian crossings, IoT, etc.) to leverage commercial fiber optic network(s).
- Internet access to City sites & assets desired at no expense to City (in kind at cost).
- Ensure operations in our streets performed safely while minimizing disruption to the travelling public, residents and businesses.
- Protect our major investments in Tucson's streets (still underway) through minimal cuts & bore/tunnel under new roads, coordination with remaining new roadways
- Effectively coordinate fiber deployment with major public and private projects to avoid duplicative costs and scheduling delays, challenges with limited space.

6

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CITY OF TUCSON FTTP
Internal Assessment Findings

- Key Regional Considerations

- Economic Development Perspective

- Current Broadband Infrastructure

- Community Readiness and Understanding Market

7

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Regional Broadband Considerations

Directional

Enabling City Growth	**Tucson as a Digital Hub**
Business Access & Attraction	Digital Equity, Inclusion and Literacy
Enabling Community Anchor Institutions	Workforce Development
Enhancing the Value of the City	Digitally Inclusive Services
	Smart City Innovations

Practical

Connecting Organizations	**Connecting & Enabling Greater Tucson Region**
City Enterprise Locations	Tucson IXP
Major Local Industries	Pima Fiber Ring
Affordable CAI Connections	Local Data Centers
New Business Startups	AZ DOT Highway Fiber
Advocating Connect Pima	

8

Insights - Office of Economic Initiatives

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- Business Attraction & Retention

- Workforce Development, Innovation, and Technology

- Small Business Support

- International Trade and Investment

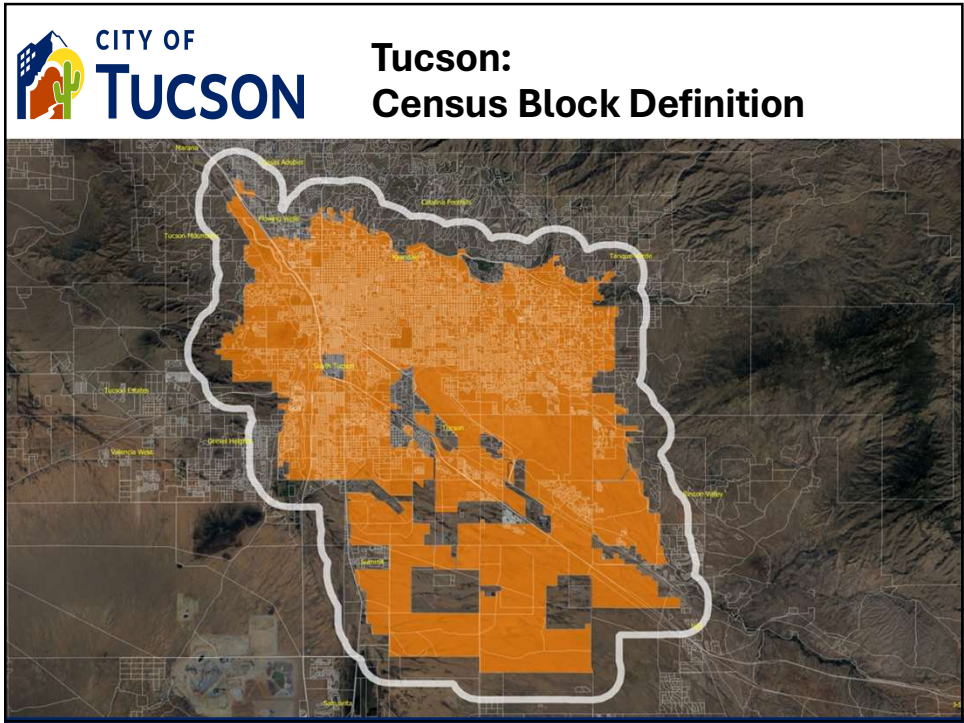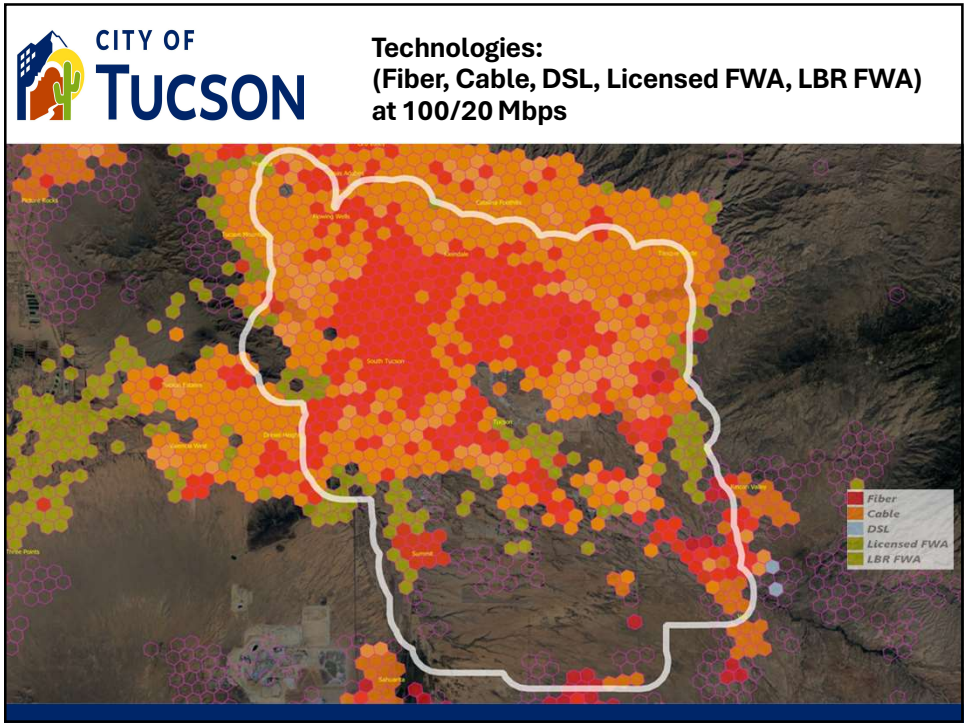- Real Estate and Infrastructure Development

9

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CURRENT BROADBAND ENVIRONMENT:

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Existing Infrastructure in City & Region

10

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Tucson:
Census Block Definition

11

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Technologies:
(Fiber, Cable, DSL, Licensed FWA, LBR FWA)
at 100/20 Mbps

Fiber
Cable
DSL
Licensed FWA
LBR FWA

12

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Broadband Serviceable Locations (BSLs) by FCC L8 Hex

13
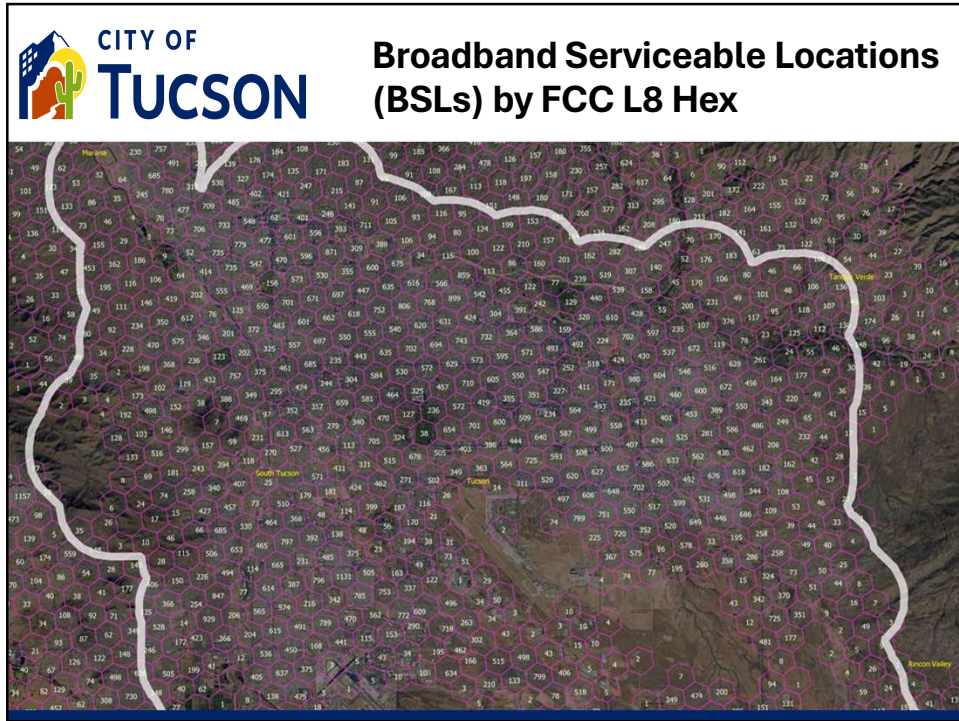
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Competitive Landscape in Greater Tucson (Fabric v4)

Provider	Brands	Hex Count	DSL	Cable	Fiber	Lic FWA	LBR FWA	Unlicensed*
					BEAD-Eligible Technologies			
130228	CenturyLink, Quantum Fiber	517	Yes	No	Yes	No	No	No
130360	Cox Communications	505	No	Yes	No	No	No	No
300057	Fatbeam	2	No	No	Yes	No	No	No
130804	MCC Broadband Data	1	No	Yes	No	No	No	No
131191	Simply Bits	500	No	No	No	No	Yes	Yes
130235	Spectrum	3	No	Yes	No	No	No	No
130403	T-Mobile	506	No	No	No	Yes	No	No
131386	TPx Communications	8	Yes	No	No	No	No	No
350105	Triad Wireless	206	No	No	No	Yes	No	Yes
131425	Verizon	550	No	No	No	Yes	No	No
130317	Xfinity	81	No	Yes	Yes	No	No	No
130982	Zayo Group	14	Yes	No	Yes	No	No	No
					NO Eligible Technologies			
300019	Bluespan Wireless	565	No	No	No	No	No	Yes
460049	Kwikbit Internet	6	No	No	No	No	No	Yes
410014	Rincon Wireless	73	No	No	No	No	No	Yes
131016	TWN Communications	89	No	No	No	No	No	Yes
270115	Webhiway Communications LLC	24	No	No	No	No	No	Yes
460092	WeLink Communications, Inc.	2	No	No	No	No	No	Yes

Considered unserved. Likely to be overbuilt by BEAD.

Competitive broadband providers vary in their geographic footprint, in the technologies deployed, and in their performance (not shown above)
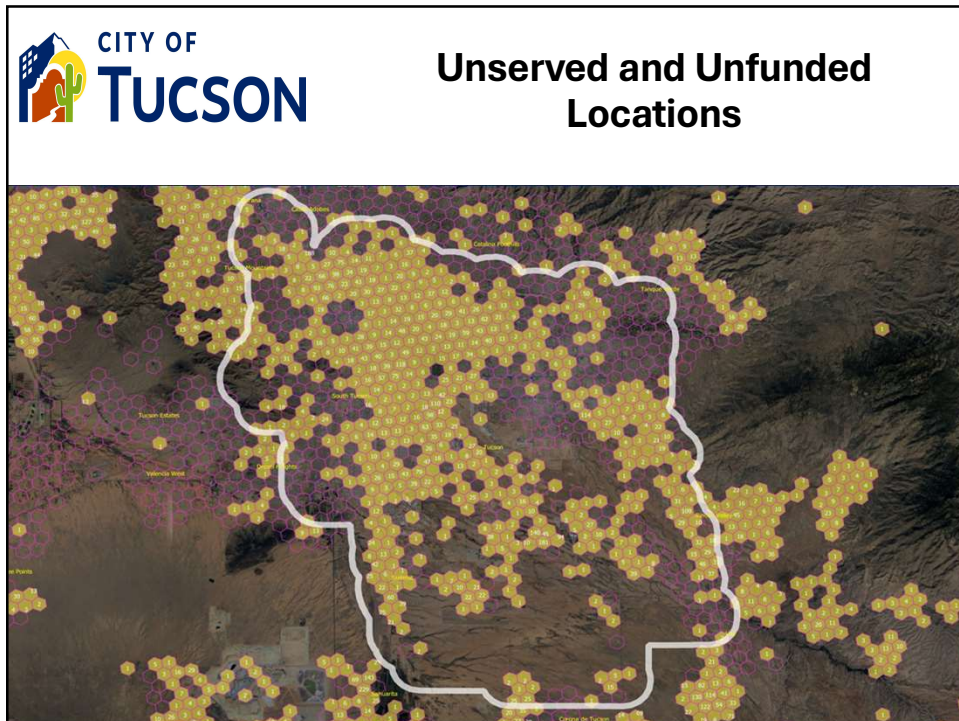
14

Concepts: Served, UNDERserved, and UNserved

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BEAD Concept	Definition	Meaning	% of Locations in Tucson**
Fully Served	(>= 100 Mbps down) AND (>= 25 Mbps up) AND (low latency) AND (reliable technology*)	No action required	% 95.74% (165,461 / 172,828)
Underserved	Exceeds unserved Falls short of served	*May* be covered under BEAD, if funds are available	% 1.96% (3,395 / 172,828)
Unserved	(< 25 Mbps down) OR (< 3 Mbps up) OR (not low latency) OR (not a reliable technology*)	*Must* be covered under BEAD	% 2.30% (3,972 / 172,828)

* Fiber, cable, licensed fixed wireless, licensed-by-rule fixed wireless, and DSL
** Total locations estimated from v4 BDC data

Most states have adequate funding, under BEAD, to cover both UN and UNDERserved, mostly with fiber, subject to the state's choice of an appropriate "extremely high cost threshold".
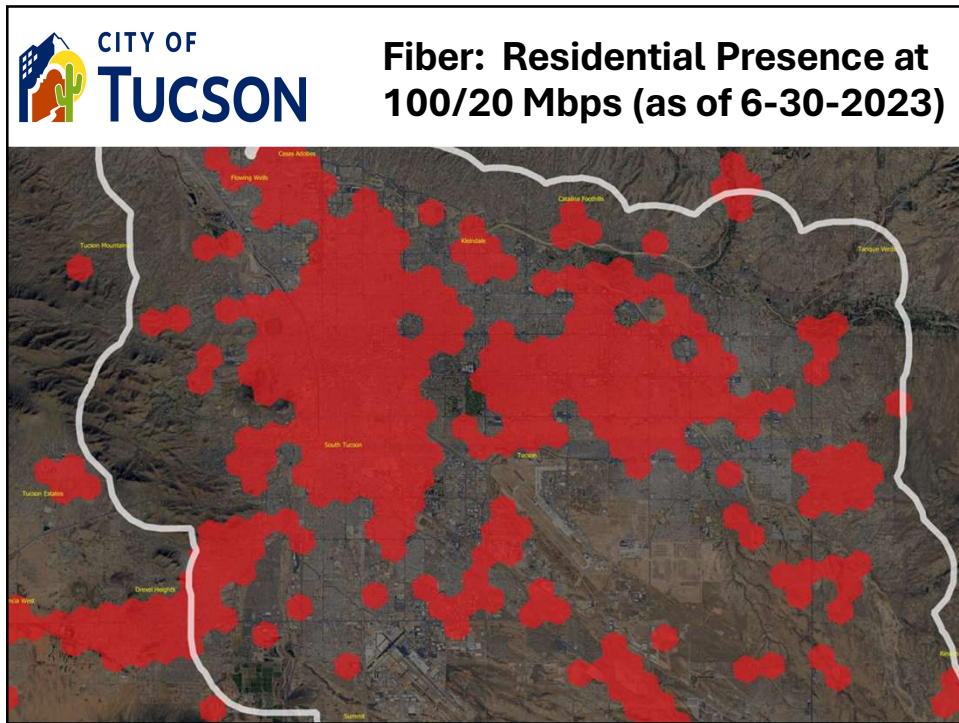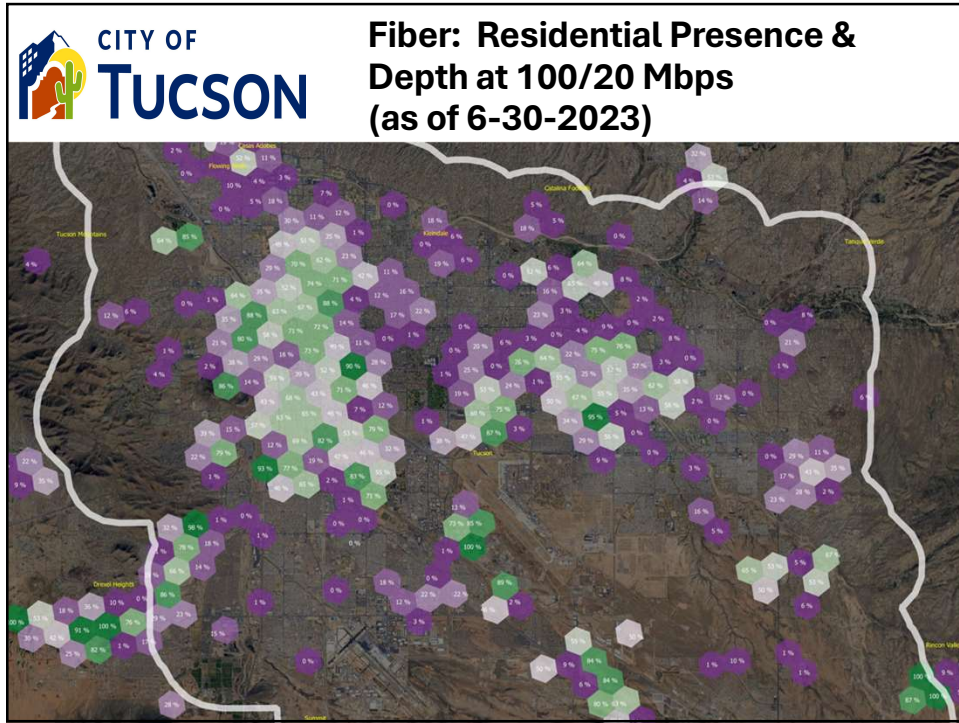
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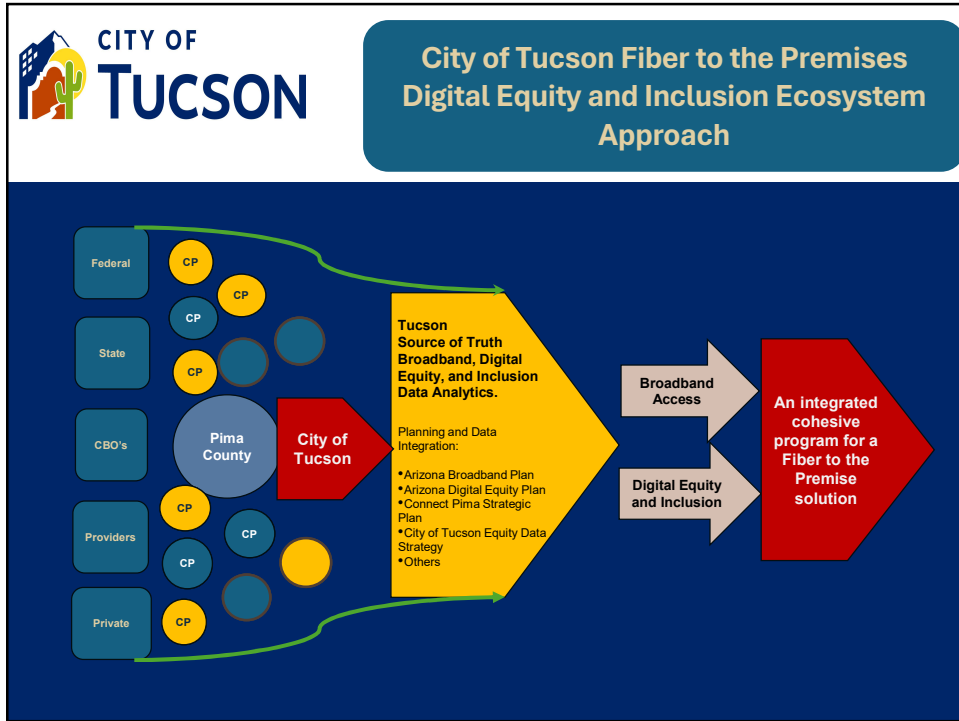## Unserved and Unfunded Locations

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16

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(Unserved or Underserved) and Unfunded Locations

17

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Fiber: Residential Presence at 100/20 Mbps (as of 6-30-2023)

18

Fiber: Residential Presence & Depth at 100/20 Mbps (as of 6-30-2023)
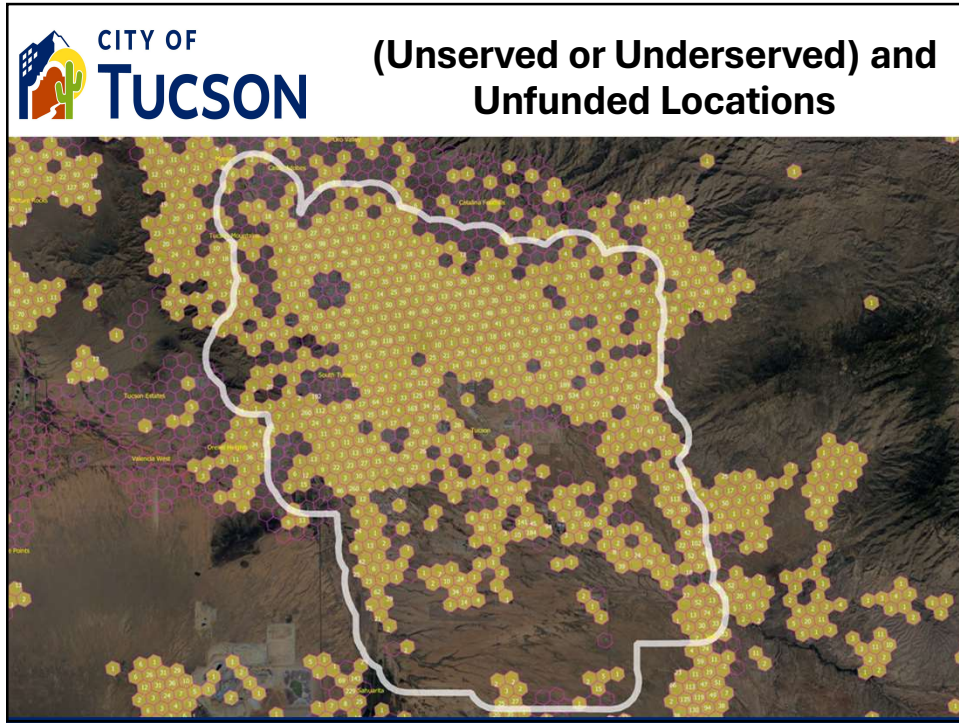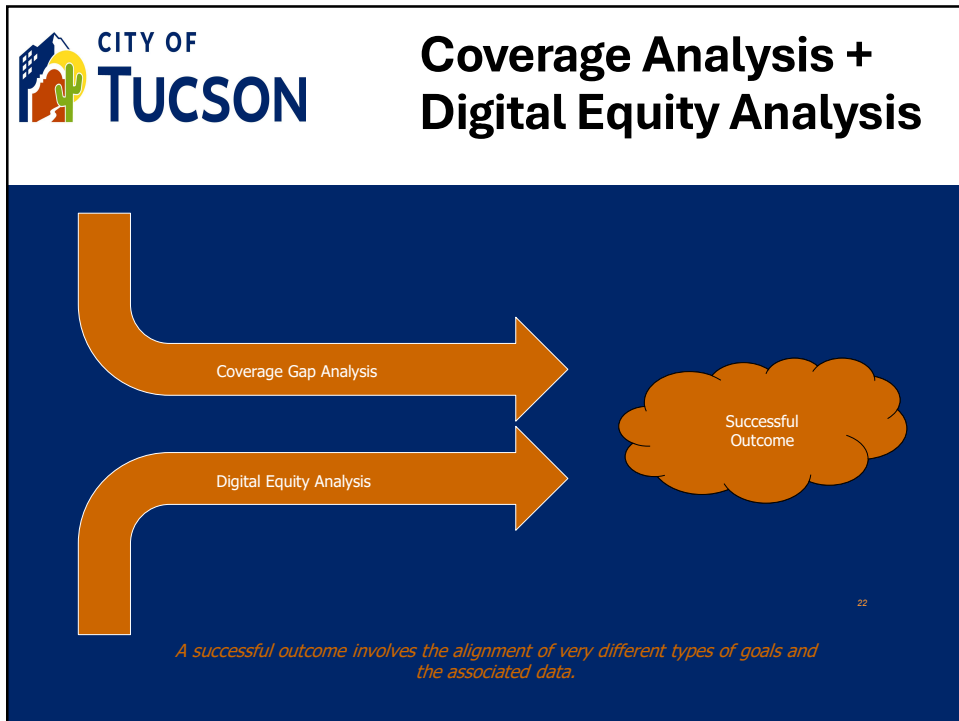
19

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CURRENT
BROADBAND
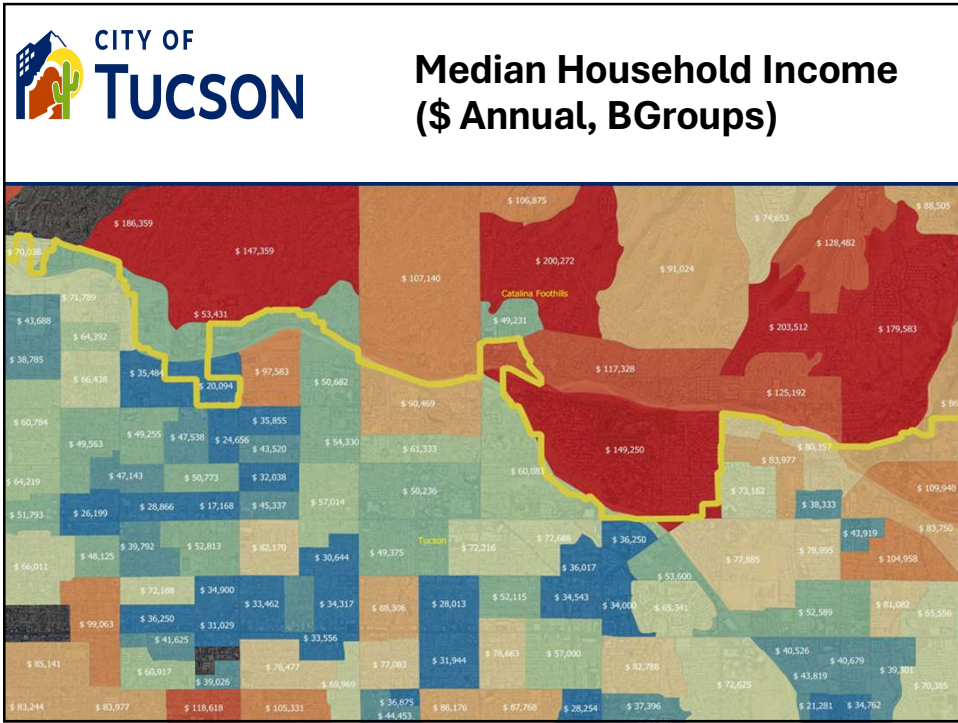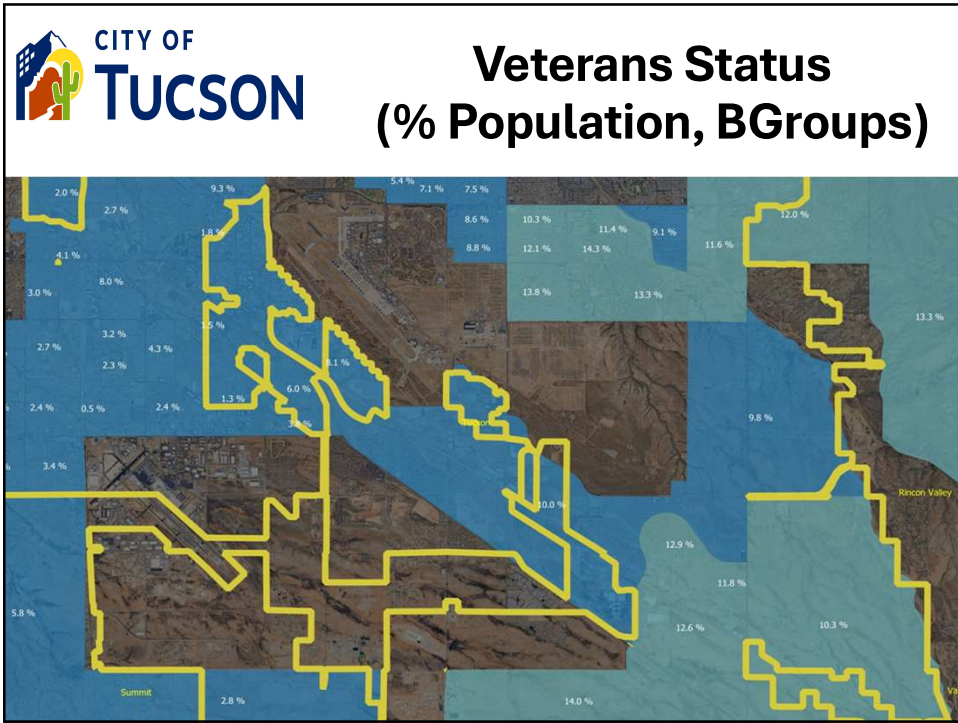# ENVIRONMENT:

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**Digital Equity
Stakeholders
Ecosystem**

20

City of Tucson Fiber to the Premises Digital Equity and Inclusion Ecosystem Approach

21

Coverage Analysis + Digital Equity Analysis

Coverage Gap Analysis

Digital Equity Analysis

Successful Outcome

A successful outcome involves the alignment of very different types of goals and the associated data.

22

English Learners
(% Population, Tracts)

23

No Computing Device (Not even a smartphone, BGroups)

24

Median Household Income
($ Annual, BGroups)

25

Veterans Status
(% Population, BGroups)

26

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INITIAL WORK, FINDINGS & PLAN

Review of work completed, initial decisions, & directional guidance

27

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CONTEXT: Current State

Which Licensing Types Currently Exist @ Tucson?

☑	☑	☒
Territorial Telecom Licenses (predating Statehood)	Cable Providers	Internet Service Providers / Fiber Carriers

28

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CONTEXT: Exclusivity

ARIZONA
LAW

——

**Prohibits exclusive
agreements for
telecommunications
companies in the right-of-ways**

29

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**CONTEXT: Operating /
Business Models**

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FTTP MODEL**

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Private Sector Approach

**Role of the Enabler /
Public Policy**

**Fair and Equitable
Rollout for all
Interested
Parties**

30

FINDINGS: What the City Heard from Providers

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Insights Shared

- Costs
  - Materials Rising
  - Limited Labor & Equipmnt.
  - Start & Stop Delay Costs / Red Tape
  - Model & Speed to Rollout
- Revenues
  - Target Market
  - Take Rate
  - Impacts from Last Mile Costs

Potential Opportunities?

- Streamline Processes
- Fast Start of Program
- Sustained Rapid Rollout
- Help Grow or Sustain Market, Total Take Rate
- Consolidate Shared Costs (dig, materials)
- Encourage Last Mile
- Grant Applications (BEAD)

31

FINDINGS: City's Logistical Challenges to Fiber Goals

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Challenges

- Disruptions to Area During Install
- Damage to City Assets (through full asset life)
- Logistical Coordination Needs w/ Limited Staff
- Skilled Labor Availability
- Licensing, ROW, Utilities Manual

Potential Opportunities?

- Coordinate digs with 411
- Coordinate digs w/ utilities
- Early pre-hire labor & train
- Consider outsourced labor
- Logistical Oversight / Coordination
- Make Dig/Trench/Bore less costly & faster
- Update City Docs / Processes
- Design to Minimal Disruption

32

FINDINGS: Capital Funding Sources & Open Access Fiber

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- Investment Funding Sources
    - Tucson Industrial Development Authority (IDA)

- Grants or Similar
    - State of Arizona BEAD funds
    - Digital Equity Funds

- Open Access / Connection Opportunities
    - Pima County Middle Mile
    - AZ DOT Broadband

33

PLAN: Updating, Reviewing and Revising City Procedures for Broadband

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Licensing Agreement
- Creating license agreement for telecommunication (broadband) infrastructure

Coordination of Projects
- Working to coordinate construction projects to reduce potential conflicts
- Evaluating ways to minimize road cuts and reduce street crossings

Right of Way Permitting
- Evaluating ways to streamline the permitting process for ease of access to market
- Ensuring there are sufficient resources to ensure an efficient permitting process (submission, approvals, inspections)

Construction Standards
- Ensuring the City of Tucson Public Utilities Administration Manual covers methods needed for telecommunication infrastructure installation

34

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PLAN: City's Roadmap

Work Breakdown Roadmap
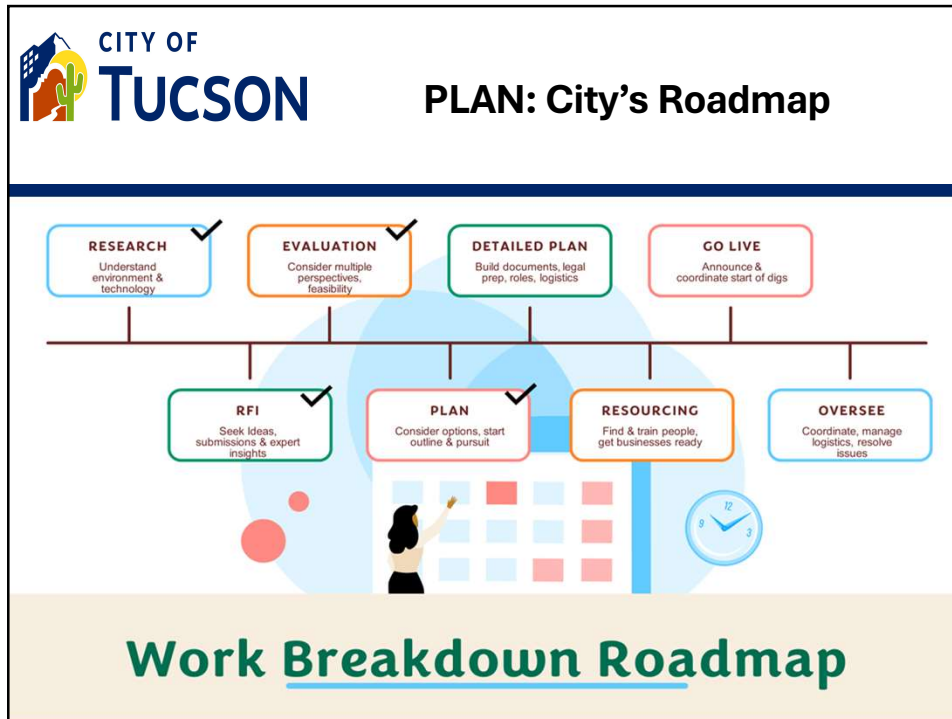
35

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Immediate Next Steps

Ideation: What Opportunities did we miss?

Insights: What can you share to help us build a well-informed solution?

Process Improvements: Are you interested in joining a focus group to provide feedback?

What is still unclear or could use attention?

36

We value your feedback

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The City Needs your help--- We are looking for input especially on:

- Dig Once
- Open Access
- Achieving the 100% market coverage
- Process Improvement Opportunities
- Good incentives to your program which worked in other communities

Updates @ https://www.tucsonaz.gov/Government/ Programs/Fiber-to-the-Premises-FTTP-Program

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FAQ's

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Questions received

38

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Q: Is City attempting to change any existing licenses?

No. Telecommunication companies may continue to operate per their existing license agreements. Cox and Comcast have state-authorized Video Service Provider licenses to operate as cable tv providers.

Our current work is focused on a NEW license type to address the specific needs of Fiber to the Premise (FTTP), .

39

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Q: Will City accept permit applications ahead of license agreement?

Tucson City Code, Chapter 7B requires a license agreement before commencing operations. We are also required to act on a permit application within a certain time.

At this time, we cannot consider doing this.

40

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Q: Will the City be adopting a microtrench standard, understanding one does not exist today?

Yes. We see the benefits of adopting a microtrenching standard, however it's use is anticipated to only be permitted on a case-by-case basis for specific locations and road conditions. We are assessing standards and experiences nationwide to inform this and appreciate any information to support our effort.

41

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Q: What is the purpose of the third-party consulting firms?

We've brought in external consultants to help us supplement our staff, due to our desire to complete this program as quickly as possible.

42

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Q: Will City be revisiting any of its ordinances as a result of new license agreement?

This will have to be determined after the license agreement is defined, to assess if necessary.

43

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Q: Will City's scalable resources be managed by City or permittee? How does reimbursement happen?

We absolutely expect additional staffing will be needed during the preparation, launch, and near-term post-completion of the installation period. The City is looking at the associated costs and fees commensurate with those expenses. This exact charging and payment model is not yet determined and subject to the operational concept being better defined first.

44

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Q: Would you consider regional Pima County muni. approach or do you see this as a standalone Tucson initiative?

This initiative is specific to Tucson (and given the model selected, we only have oversight and authority within city limits), however we constantly seek to align with regional partners. We have a very strong interest in connecting to Pima's Middle Mile, as well as looking for opportunities to standardize processes and experience for those operating in the area due to the benefits of standardization.

45

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Q: Does City desire conduit, dark fiber, or both for City infrastructure?

We expect to have an in-depth working session in the next few months to fully design the future vision for connecting City assets. At the moment, our vision is to leverage the commercial internet offerings (perhaps encrypted or via dedicated strands), and supplement key areas with our City owned private network. We are open to exploring conduit and/or dark fiber and other fiber services for our private network.

46

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Q: Will there be a limit on how many MSOs will be chosen to build?

No. A competitive process, such as an RFP, will not be issued for the program.

From a practical standpoint, there is not enough ROW to accommodate all the companies who have individually expressed interest in building in Tucson.

Coordination and communication amongst providers and the City will be key in best managing the limited ROW resource for stakeholders and Tucson citizens.

47

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END

Thank you for attending. We look forward to your insightful feedback!

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48