



MUNICIPAL FIBER FEASIBILITY STUDY

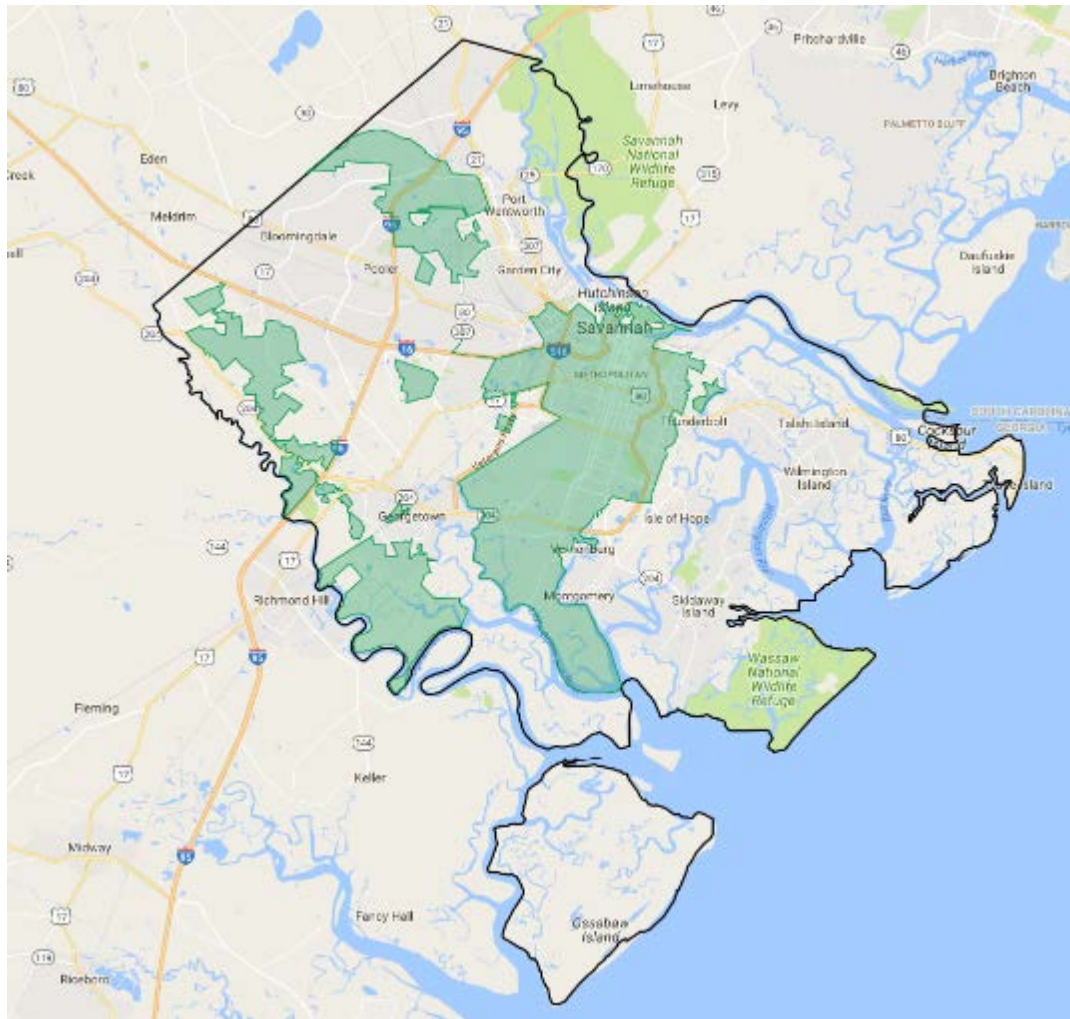
Agenda

2

- **Feasibility Study Overview**
 - Demographic and economic overview
 - State of Broadband in Savannah
 - Stakeholder meetings and survey results
- **Preliminary Network Design**
- **Overview of Financial Models**
- **Discussion and Q&A**
- **Recommendation and Proposed Next Steps**

Savannah and Chatham County

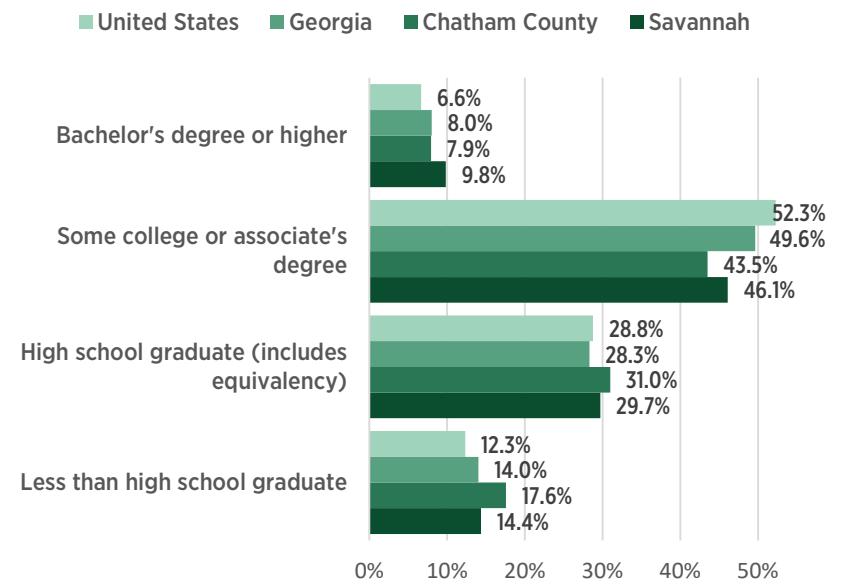
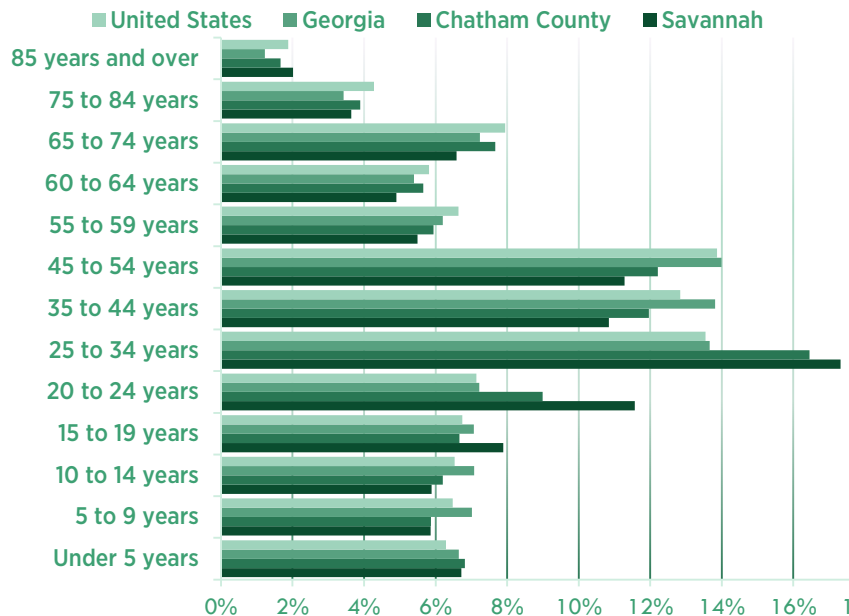
3



Demographic and Economic Overview

4

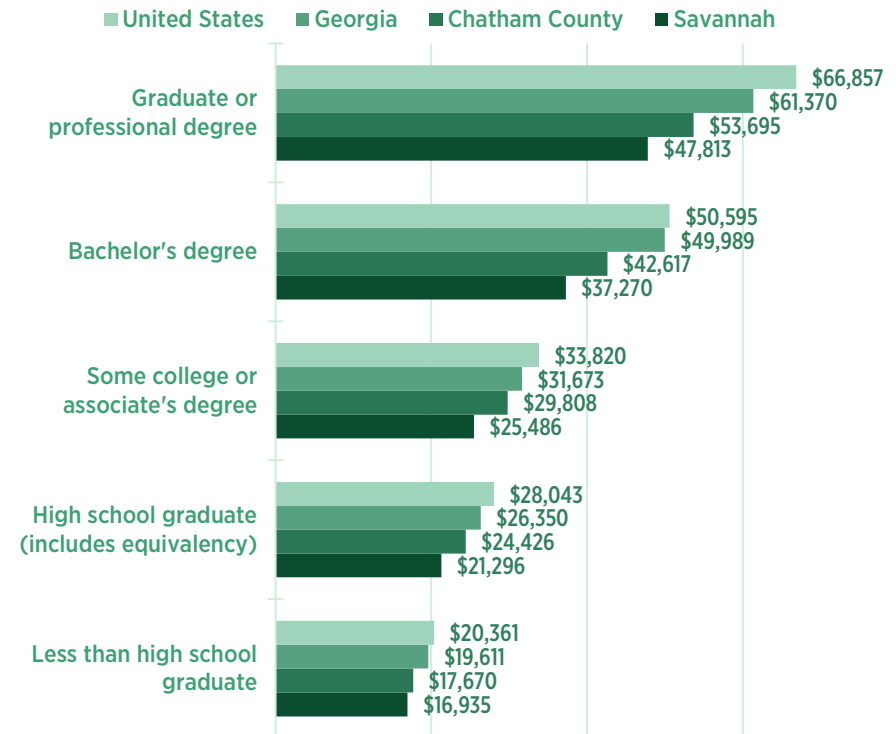
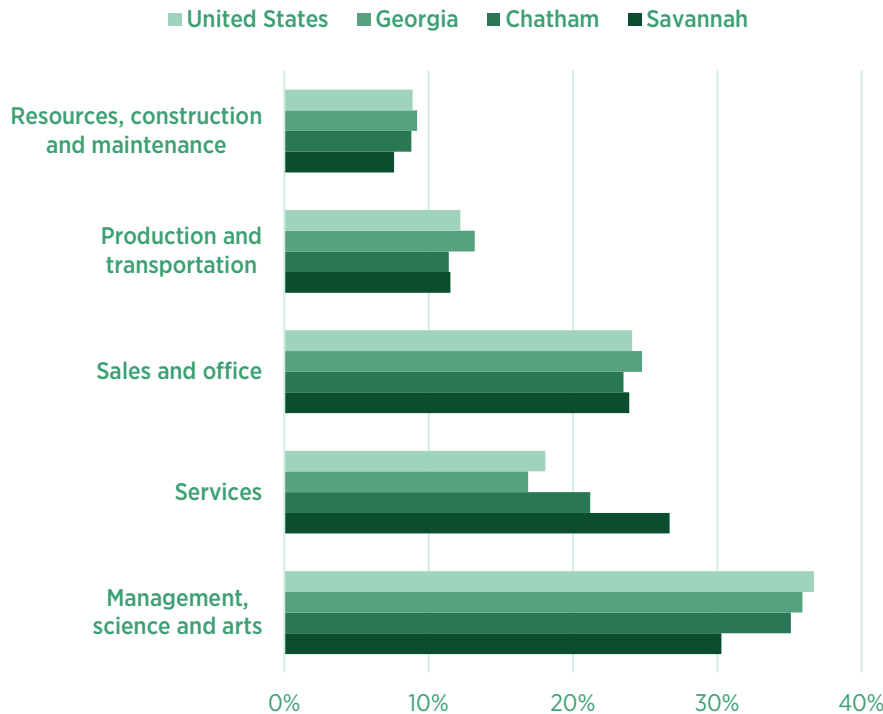
- Relatively high levels of:
 - Young adults, ages 15 to 34
 - Educational achievement (Source: US Census Data)



Demographic and Economic Overview

5

- Strong in hospitality, arts, education, entertainment, food services, recreation and retail trade (Source US Census Data)



State of Broadband in Savannah

6

- **Nominally strong, but inconsistent, residential offerings, including fiber-based services**
 - Median: “up to” 300 Mbps/25 Mbps for \$150/mo.
 - Minimum: 1.5 Mbps/.768 Mbps for \$30
 - 75% of locations survey had no competitive options
- **Fewer retail offerings for business**
 - Business Median: “up to” 150 Mbps/25 Mbps for \$264/mo.
 - Many locations with no competitive options
 - Incumbent and independent providers offer services on an individual case basis

Areas that Meet Broadband Definition

7

Shaded areas represent areas that meet the 25Mbps/3Mbps FCC definition of broadband.

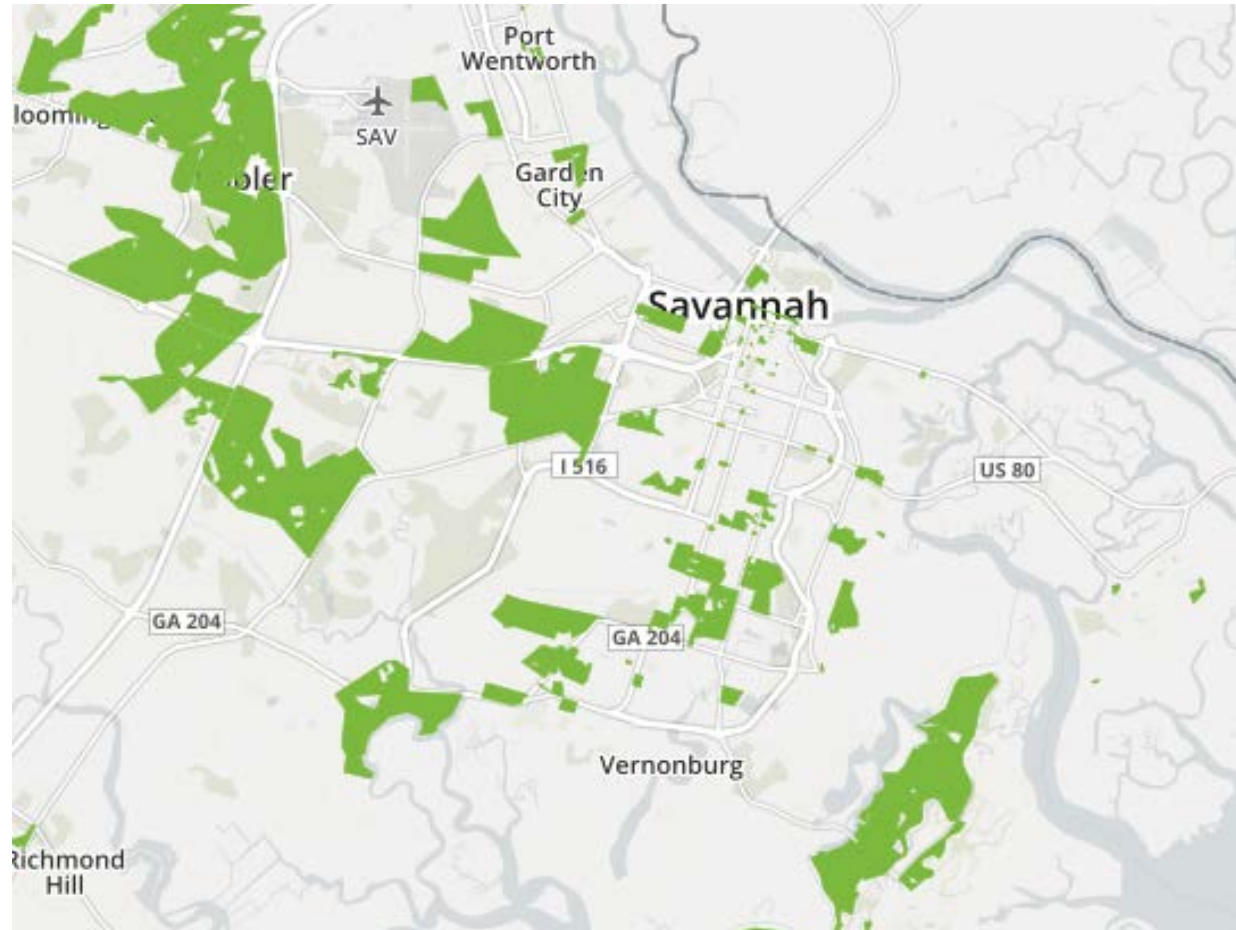
These data rates can be provided by several technologies other than Fiber, but have upper limits to speed increases.



Areas with 3+ Non-Wireless Providers

8

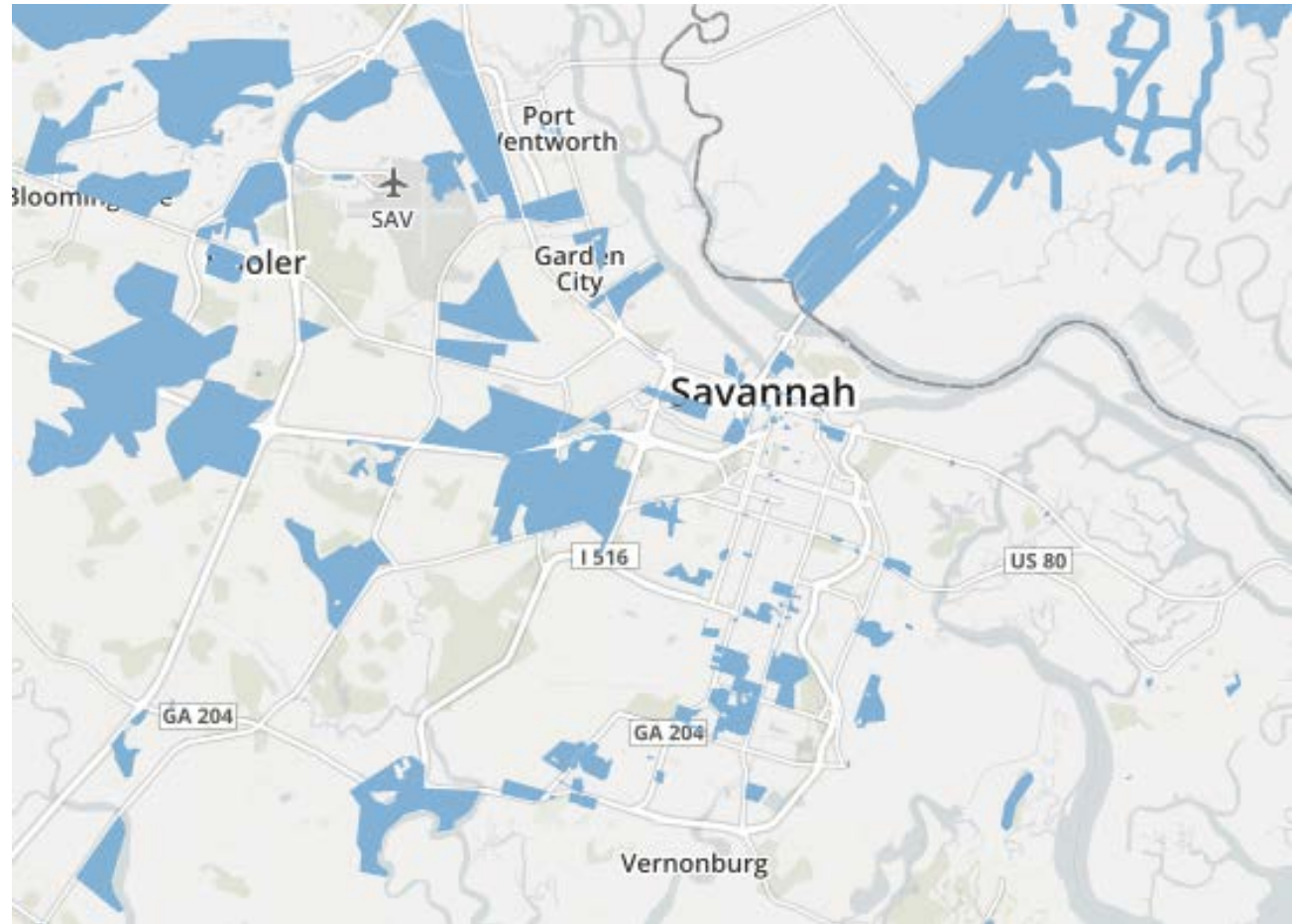
Shaded areas represent areas that are serviced by at least 3 non-wireless providers that include copper wire, coaxial and fiber.



Areas with Fiber-Optic Service

9

Shaded areas are served by Fiber Optics and have capability to provide speeds up to twenty times faster than the 25/3 FCC definition of broadband. Also capable of full symmetrical service.



Survey Responses

10

Surveys promoted across County and City webpages, with printed surveys collected throughout county to randomly acquire voluntary responses.

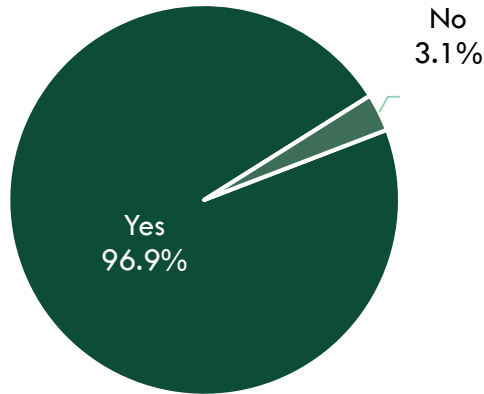
- **Household Responses: 1,135**
- **Business Responses: 134**

Excellent response rates yield high statistical relevancy of data.

- **Households: 95% confidence level with a $\pm 3\%$ margin of error**
- **Businesses: 95% confidence level with a $\pm 8\%$ margin of error**

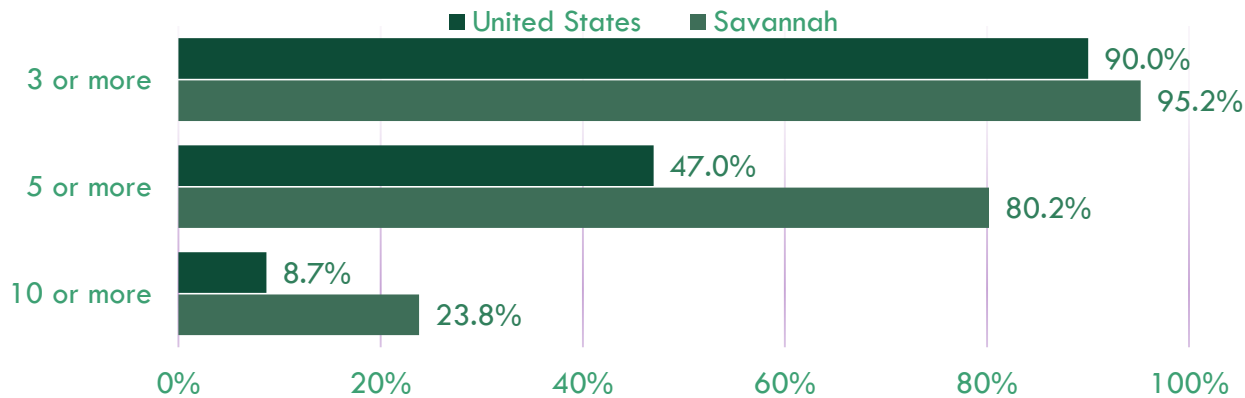
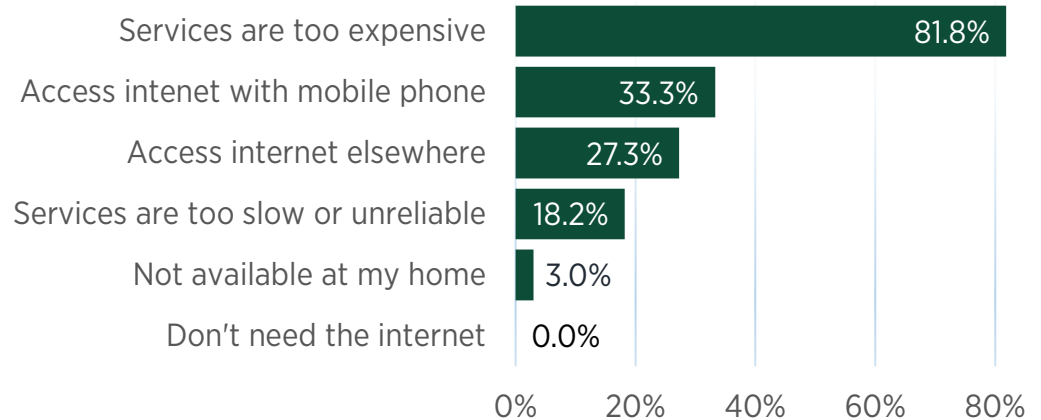
Household Survey Findings

11



Households with internet access

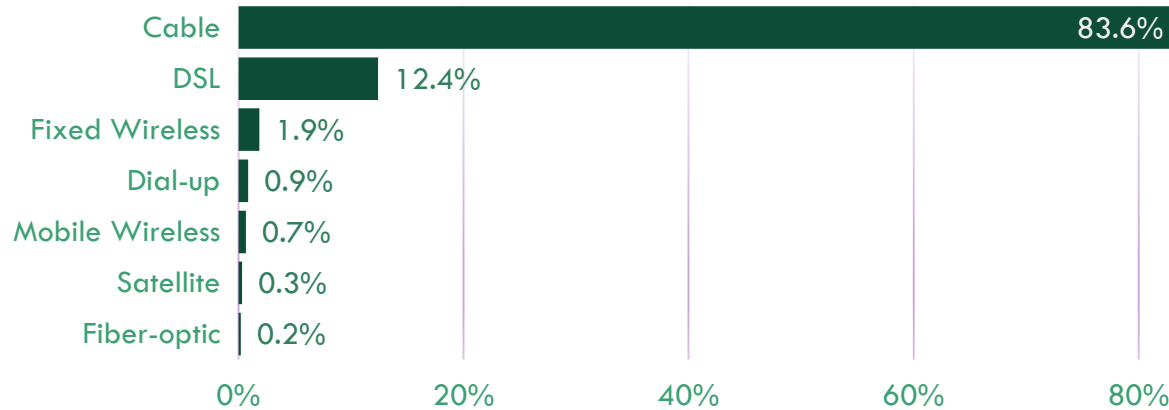
Reasons for not having internet access



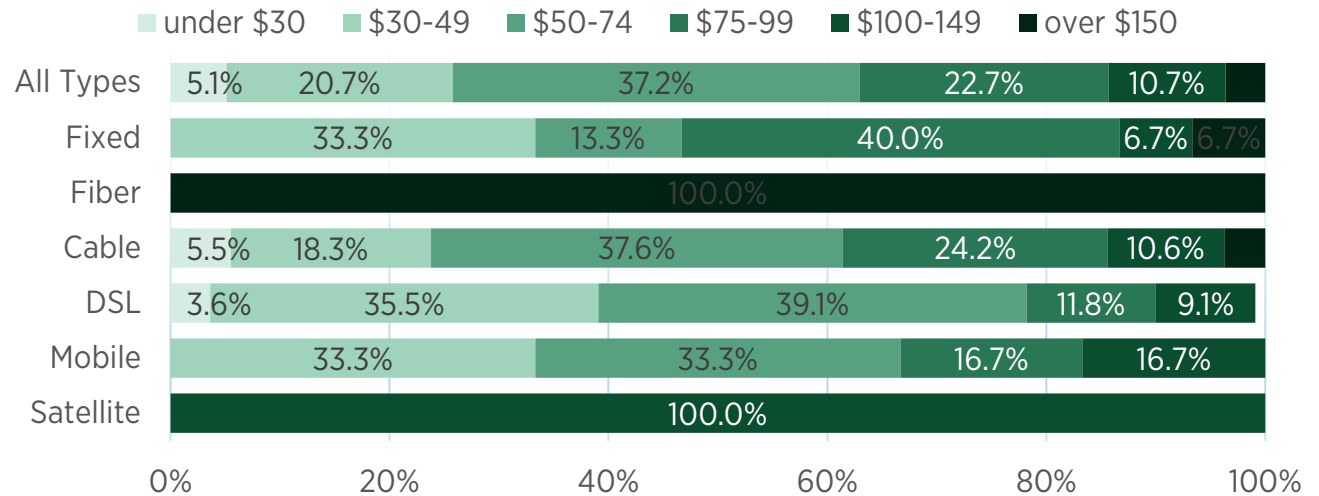
Internet-enabled devices in U.S. vs. Savannah households

Internet Access and Satisfaction

Connection method of Savannah households...

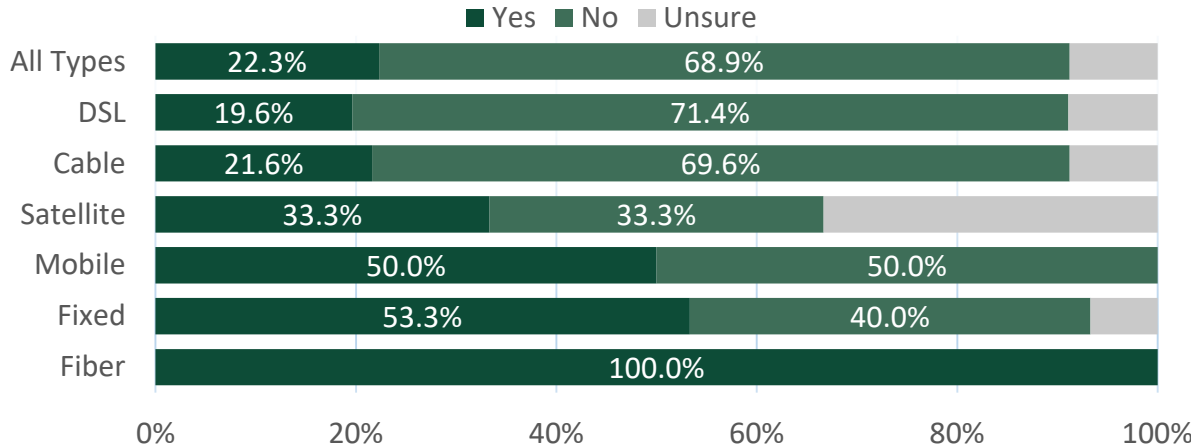


... and what it costs them.



Household Broadband Satisfaction

13



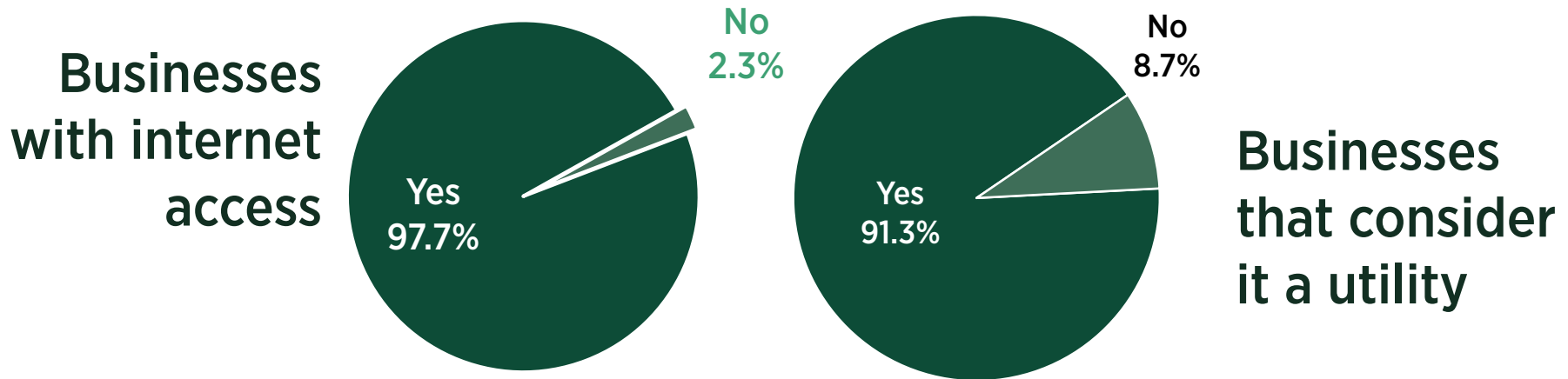
Does your current broadband meet your household needs?

Support, services, and price are major issues

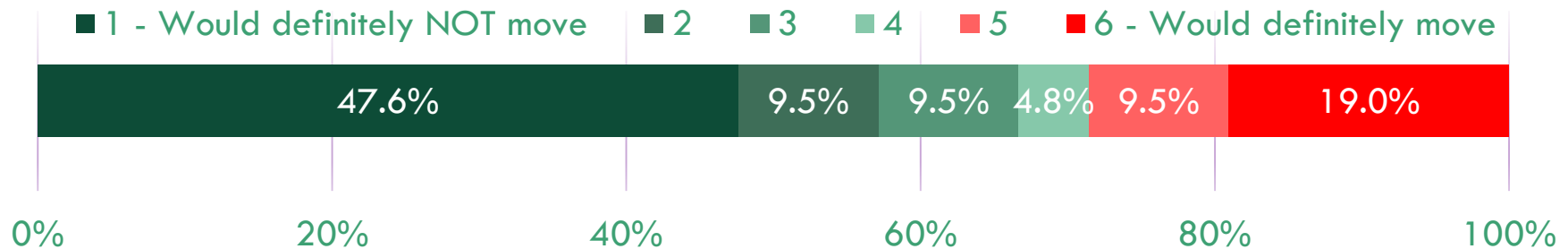
	Not Satisfied ----- Completely Satisfied						Trend
	1	2	3	4	5	6	
Price	30.4%	29.3%	21.4%	11.3%	6.0%	1.6%	
Speed	16.7%	18.8%	18.0%	19.9%	22.3%	4.4%	
Reliability	13.6%	19.7%	17.7%	21.2%	24.0%	3.8%	
Support	37.7%	21.2%	13.1%	15.5%	10.5%	2.0%	
Services	29.8%	20.2%	19.8%	19.3%	9.2%	1.7%	

Business Survey Findings

14



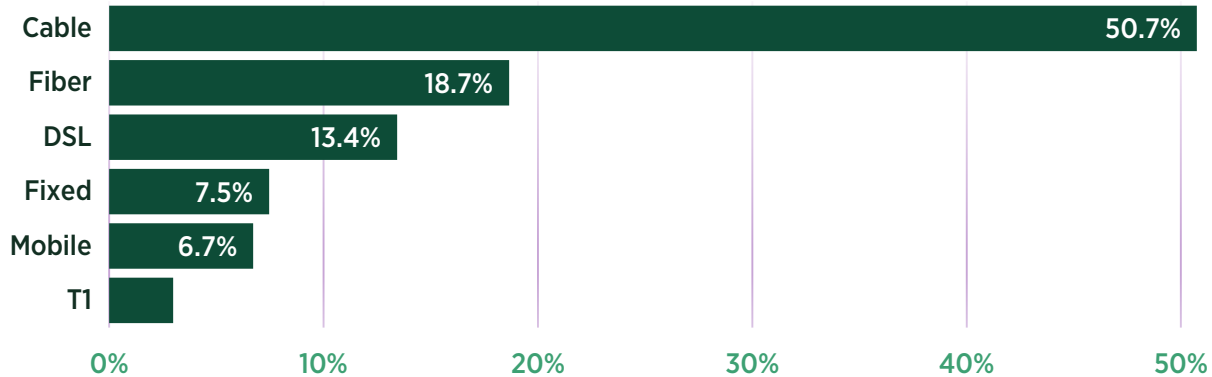
Businesses that would move for better internet access



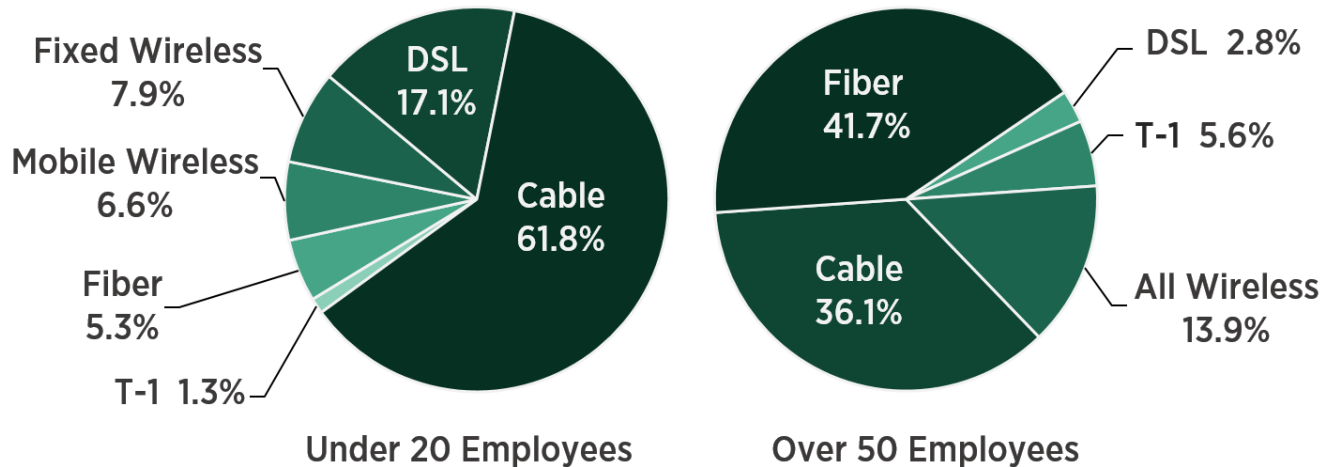
Business Internet Access

15

How businesses access the internet

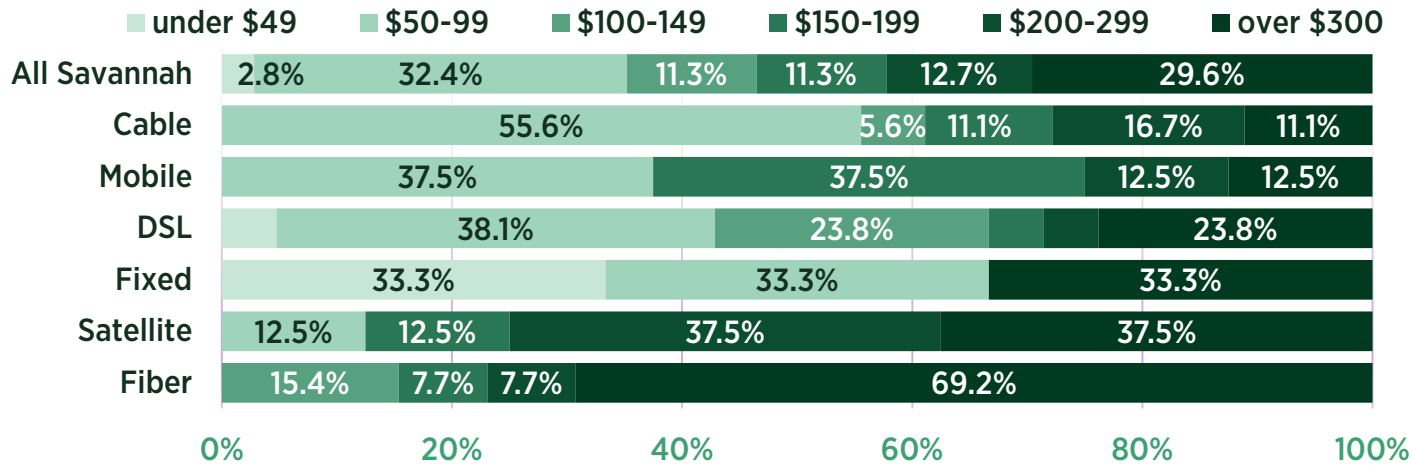


How different sized businesses access the internet



Business Internet Access

16



What businesses are paying

How satisfied they are

	Not Satisfied ----- Completely Satisfied						Trend
	1	2	3	4	5	6	
Price	13.4%	13.4%	23.2%	28.0%	13.4%	8.5%	
Speed	13.1%	19.0%	17.9%	20.2%	21.4%	8.3%	
Reliability	13.1%	17.9%	13.1%	25.0%	22.6%	8.3%	
Support	25.3%	7.2%	22.9%	20.5%	16.9%	7.2%	

Fiber Infrastructure Principles

17

- **Enhance Economic Development**
- **Increase Broadband Adoption and Utilization**
- **Improve Public Efficiency and Effectiveness**
- **Reduce Communications Spend**
- **Support Reliability and Performance**

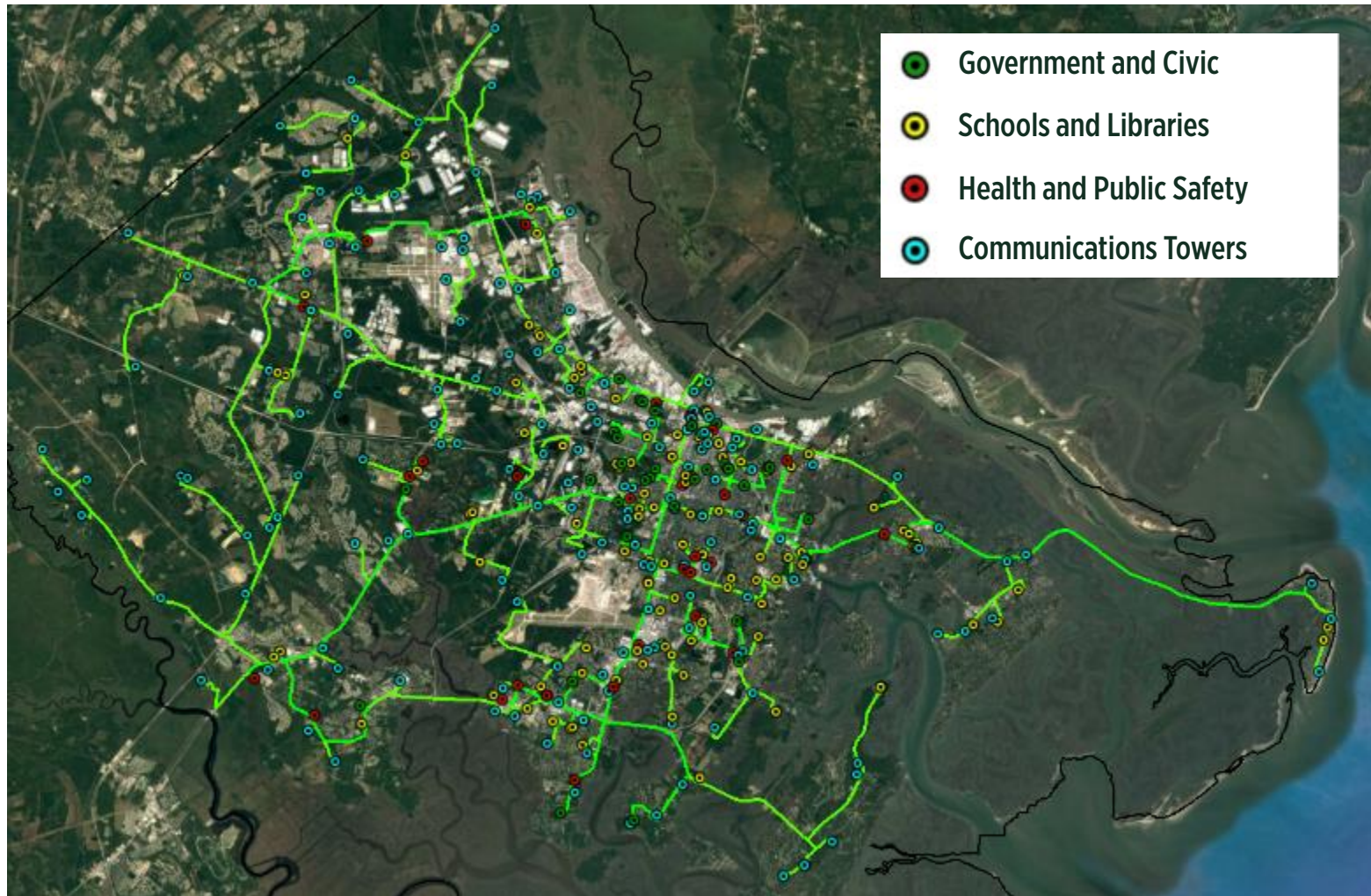
Business Model Guidelines

18

- **Fiber-optic networks are long-term infrastructure rather than one-time projects.**
- **Local support from stakeholders and community is essential**
 - **Education of the opportunity and how it meets their needs**
- **Focus on the benefits of broadband rather than technology**
- **Balance community benefit and financial sustainability to remain successful over the long-term.**
- **Focus on organizational strengths when evaluating solutions**
 - **Build on current competencies and resources**
 - **Consider public and private partnerships to address weaknesses**

Network Design Phased Over Time

19



Business Model Options

20

Public Services Provider

- Owns network
- Provides fiber to community anchors
- Sells dark fiber to retail providers

Joint Ownership

- Jointly owns the network with partners
- Provides fiber to community anchors
- Retail partner would serve customers

Retail Fiber To The Premises

- Fully owns network
- Provides retail broadband services to customers

Public Services Provider Model

21

	Public Services Provider
Projected Community Anchor Institution Sites	45
Estimated Cost of Annual Services from Service Providers	\$122,157
Construction and Equipment Costs	
Backbone Fiber	\$11.04M
Electronics, Core and CPEs	\$350K
Cabinets and Splitters	\$259K
Data Center	\$500K
Estimated Total Cost of Network	\$12.14M
5% Municipal General Obligation Bond, 20 Years	
Estimated Total Bond Amount Needed	\$12.64M
Estimated Annual Payment, Principal and Interest	\$986K
Estimated Annual Net Revenue	\$112K
Estimated Annual Operations and Maintenance	\$15K
Estimated Total Payback Principal and Interest at 20 Years	\$19.7M
Estimated Annual Revenue needed to Achieve 20 Year Payback	\$1.12M

Public Services Provider Model

22

- Network deployment to anchors alone is estimated to be \$12.14M.
- Additional \$500K operating and contingency fund
- Using bonds to fund \$12.64M, annual payment would be \$986K.
- Recovered savings from community anchors would be \$112K, with revenue from fiber lease or swap estimated at \$36K, creating a shortfall in annual bond payments by **\$838K** annually.
- Model never achieves cash flow positive, nor is there payback in a 20-year horizon.
- To make Public Services Provider model work over 20 years, the City would need to bring in about \$94,000 each month in revenue, or about \$1.12M per year.
- Should the City choose to improve outlook for the Public Services Provider model, it would need to significantly increase revenue opportunities.
 - Could look to the school system and successfully bid for the SCCPSS E-Rate contract.
 - Could increase dark fiber leasing, leased on order of \$35-\$40 per fiber strand per mile. Given conceptual network design, potential earnings could be as much as \$450k per year but may still stay in a negative cash flow position.

Joint Ownership Model

23

	Joint Ownership Model
Projected Community Anchor Institution Sites	45
Current Estimated Cost of Annual Services From Provider	\$122K
Construction and Equipment Costs	
Backbone Fiber	\$5.5M
Electronics, Core, and CPEs	\$350K
Cabinets and Splitters	\$250K
Data Center	\$500K
Estimated Total Cost Of Network	\$6.6M
5% Municipal General Obligation Bond, 20 Years	
Estimated Total Bond Amount Needed	\$7.1M
Estimated Annual Payment, Principal and Interest	\$571K
Estimated Annual Revenue	\$112K
Estimated Annual Operations and Maintenance	\$12K
Estimated Annual Fiber Lease or Fiber Swap	\$36K
Estimated Total Payback Principal and Interest at 20 Years	\$11.4M
Estimated Annual Revenue Needed to Achieve 20 Year Payback	\$449K

Joint Ownership Model

24

- In this model, a service provider partner would contribute 50% of the backbone fiber cost to a shared network.
- Assuming partner fiber contribution, deployment estimated to be \$6.6M.
- Assuming an additional \$500K for operations and contingency.
- Using bond to fund \$6.6M, annual bond payment would be \$571K.
- Recovered savings from community anchors would be \$112K, with revenue from fiber lease or swap estimated at \$36K.
- Revenue projection of \$148K annually creates an annual shortfall in missing annual bond payments by **\$423K** annually.
- Model never becomes cash flow positive, nor payback in a 20-year horizon.
- Should the City choose to improve outlook for the Joint Ownership model, would need to increase revenue opportunities.
 - With this model, broader opportunity for dark fiber lease revenue is lost as City would be competing with private sector partner for dark fiber customers. As such, dark fiber revenue opportunities are limited.

Joint Ownership with SPLOST Funding

25

	Joint Ownership Model
Projected Community Anchor Institution Sites	45
Current Estimated Cost of Annual Services From Provider	\$122K
Construction and Equipment Costs	
Backbone Fiber	\$5.5M
Electronics, Core, and CPEs	\$350K
Cabinets and Splitters	\$250K
Data Center	\$500K
Estimated Total Cost Of Network	\$6.6M
Estimated Annual Revenue	\$112K
Estimated Annual Operations and Maintenance	\$12K
Estimated Annual Fiber Lease or Fiber Swap	\$36K
Annual Gross Margin and Free Cash Flow	\$136K

Joint Ownership with SPLOST Funding

26

- In this model, a service provider partner would contribute fiber to a shared network.
- Assuming partner fiber contribution, deployment estimated to be \$6.6M.
- Recovered savings from community anchors would be \$112K, with revenue from fiber lease or swap of \$36K.
- Estimated annual O&M expense \$12K
- Shared revenue projection creates an annual gross margin and estimated free cash flow of \$136K.
- Model is cash flow positive from year one .
- Should the City choose to improve outlook for the Joint Ownership model, would need to increase revenue opportunities.
 - With this model, broader opportunity for dark fiber lease revenue is lost as City would be competing with private sector partner for dark fiber customers. As such, dark fiber revenue opportunities are limited.

Full Retail FTTP Revenues

27

	Full Retail FTTP Model
Total Households Passed	52,800
Total Business Passed	12,600
Estimated Subscription Rate at 4 years	30%
Household Subscribers to Calculate Revenue	15,840
Business Subscribers to Calculate Revenue	3,803
Est. Annual Revenue from Triple Play Services End of Year 4	\$23.98M
Est. Annual Revenue Business Data and Voice End of Year 4	\$11.9M
Estimated Total Annual Revenue at End of Year 4	\$35.88M
Estimated Net Revenue at End of Year 4	\$11.12M

Full Retail FTTP Costs

28

	Full Retail FTTP Model
Construction and Equipment Costs	
Backbone Fiber	\$15.2M
Distribution Fiber	\$64M
Drop Fiber and CPE	\$29.7M
Electronics and Core	\$5M
Cabinets, Splitters, POPs	\$2.5M
Data Center	\$500K
Estimated Total Cost of Network	\$116M
Estimated Total Bond Amount Needed	\$157.5M
Est. Cover Startup Losses and Operating Expense first 5 Years	\$41M
5% Municipal General Obligation Bond, 20 Years, Annual Payment	\$12.87M
20-Year Payback Using Free Cash Flow	Not achieved
Estimated Cost of Goods Sold; General Operations and Maintenance Cost	
Content Acquisition and Delivery	42% of Gross Revenue
Sales, General and Administration	18% of Gross Revenue
Operations and Maintenance	9% of Gross Revenue
Initial 3 Year Operating (Startup) Costs	\$2.72M

Full Retail Fiber-to-the-Premises

29

- High cost to deploy fiber across city, mostly buried underground and where no fiber or open conduit is available, network deployment is estimated to be \$116M.
- Using bond financing, annual payment would be \$13M.
- With an optimistic subscription rate of 30% after four years, the net revenue would be less than the annual bond payment.
- After thorough analysis and experimental scenarios of the FTTP model, there is not a way to achieve payback.
- Subscription rate to achieve a 20-year payback would require 43% of all households and businesses to subscribe to services within four years, which would prove challenging and expose City to high degree of risk.

Recommendations

30

Magellan recommends that Savannah pursue a Joint Ownership model in a multi-year planned phased approach in conjunction with Chatham County and a Private Partner.

- **Formalize a Broadband Infrastructure Program**
- **Develop and promote Broadband-Friendly Public Policies**
 - Dig Once, Joint Trenching, GIS inventory, evaluate permitting processes
 - Make it easier to encourage fiber growth from retail service providers
 - Share duct assets, include at least three ducts for City and partner leverage
 - Focus on Economic Development projects and corridors for conduit placement
- **Explore state and local strategic partnerships**
 - Establish guiding principles, invite retail service providers to partner
 - Pursue Fiber Infrastructure project in SPLOST VII referendum

Next Steps

31

1

Come to shared local consensus (City and County) that fiber is a long-term infrastructure, necessary the long term sustainability.

2

Formalize a Broadband Infrastructure Program and governances including the adoption of Broadband-Friendly Public Policies

3

Develop a RFI for partnership recruitment, establish terms and conditions, vetting process, begin negotiations.

4

Develop a Memorandum of Understanding leading to formal contract with potential partner(s).

5

Pursue SPLOST VII funding



THANK YOU