



# Providence Fiber Feasibility

## 17 June 2020

- Data usage nationwide has increased 47% since COVID-19
  - Working from home
  - Video communications for work, family and friends (i.e., Zoom, etc.)
  - Netflix, etc. to stay entertained
  - Telemedicine
  - Social media traffic
- Gigabit subscribers = 1.9% of total subscribers at the beginning of 2019
- Gigabit subscribers = 3.75% of total subscribers 1Q 2020
- Studies suggest that the average home will require gigabit speeds by 2030
- Terabyte users = 4.2% of users at the beginning of 2019
- Terabyte users = 10% of users 1Q 2020
- Average home value nationwide increases 3.1% with fiber optics

- Infrastructure and Installation
  - Generally paid for with municipal debt covered by monthly infrastructure fees
- Network Operator
  - Maintenance and operations of fiber system
  - Manages and recruits ISPs
- Services – Independent Service Providers (ISPs)
  - Cost - based on level of service (LOS) provided
  - Can be a direct payment to ISP

- UTOPIA
  - City pays for infrastructure but does not own or operate the system
- Utility Model
  - City pays infrastructure costs
  - City owns the system
  - City may operate system or contract for a network operator
  - ISPs provide service; City can be an ISP
- Partnerships
  - Light Hub example

- Fiber installed to subscribers only
  - Includes fiber lines down every street and lateral lines (FTTH) to subscribers
  - One-time infrastructure costs of \$5,314,000
- City only responsible for infrastructure costs and bond payments
- UTOPIA acts as network operator indefinitely
- Open-access network with multiple ISPs
- UTOPIA owns infrastructure
- UTOPIA keeps any net revenues
- Subscribers pay \$30 month infrastructure fee + \$35 (est.) per month for service provision

<b>City</b>	<b>Current Take Rate</b>
Brigham City	39.0%
Centerville	41.1%
Layton	25.1%
Lindon	49.9%
Midvale	13.5%
Morgan	45.0%
Murray	28.5%
Orem	27.3%
Payson	32.3%
Perry	38.0%
Tremonton	34.9%
West Valley City	15.8%
Other	41.6%
Total	27.0%
As of June 2020	

# UTOPIA PROPOSAL – 38% Take Rates

Year	TOTAL, Years 1- 20	1	2	3	4	5
<b>Revenues</b>						
Service Fees	\$10,732,723	\$432,260	\$441,724	\$451,766	\$461,529	\$471,882
Infrastructure Fees	\$9,199,477	\$370,508	\$378,620	\$387,228	\$395,596	\$404,471
<b>Total Revenues</b>	<b>\$19,932,201</b>	<b>\$802,768</b>	<b>\$820,344</b>	<b>\$838,995</b>	<b>\$857,125</b>	<b>\$876,353</b>
<b>Operating Costs</b>						
Service Fees (UTOPIA and ISPs)		(\$432,260)	(\$441,724)	(\$451,766)	(\$461,529)	(\$471,882)
<b>Capital Costs</b>						
Land - 20' x 20' - equipment shelter	\$0					
Subscriber installation costs after initial year	(\$322,856)		(\$12,485)	(\$13,796)	(\$12,989)	(\$14,353)
Annual debt payments	(\$7,957,123)	(\$397,856)	(\$397,856)	(\$397,856)	(\$397,856)	(\$397,856)
<b>Total Costs</b>	<b>(\$19,012,702)</b>	<b>(\$830,116)</b>	<b>(\$852,065)</b>	<b>(\$863,418)</b>	<b>(\$872,374)</b>	<b>(\$884,092)</b>
<b>NET REVENUES - City Obligation</b>	<b>(\$106,480)</b>	<b>(\$27,348)</b>	<b>(\$31,721)</b>	<b>(\$24,424)</b>	<b>(\$15,249)</b>	<b>(\$7,738)</b>

# UTOPIA - PROVIDENCE NET REVENUES

<b>Take Rates</b>	<b>Total, Years 1-20</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
27%	(\$1,215,283)	(\$112,523)	(\$115,949)	(\$110,107)	(\$104,174)	(\$98,150)
38%	(\$106,480)	(\$27,348)	(\$31,721)	(\$24,424)	(\$15,249)	(\$7,738)
50%	\$0	\$0	\$0	\$0	\$0	\$0



## Option 1

- Fiber installed to 100% of residents and businesses (street lines and lateral lines)
- Strata acts as network operator (responsible for emergencies and outages)
- Strata acts as ISP for initial term
- Every location receives basic broadband service as part of infrastructure fee
- All locations choosing the ISP service (from Strata only) will receive the gigabit service and pay that fee
- Includes customer premises equipment – router/WiFi
- All residents and businesses pay a monthly utility infrastructure fee of \$30
- Subscribers pay a monthly fee of \$40 in addition but get gigabit service
- One-time infrastructure costs to Providence City
  - \$8,064,938

# STRATA OPTION 1 – 38% TAKE RATES

Year	Total, Years 1-20	1	2	3	4	5
<b>Revenues</b>						
ISP Fees to Strata - subscribers only	\$12,265,970	\$494,011	\$504,827	\$516,304	\$527,461	\$539,294
Infrastructure Fees - all connections	\$26,141,525	\$975,175	\$996,679	\$1,018,885	\$1,041,436	\$1,064,715
<b>Total Revenues</b>	<b>\$38,407,494</b>	<b>\$1,469,186</b>	<b>\$1,501,506</b>	<b>\$1,535,190</b>	<b>\$1,568,898</b>	<b>\$1,604,009</b>
<b>Operating Costs</b>						
Strata network operator fee	(\$18,056,342)	(\$656,554)	(\$677,675)	(\$699,633)	(\$722,199)	(\$745,652)
ISP Service Cost	(\$6,132,985)	(\$247,006)	(\$252,414)	(\$258,152)	(\$263,731)	(\$269,647)
<b>Capital Costs</b>						
Annual debt payments	(\$9,684,128)	(\$459,241)	(\$459,241)	(\$459,241)	(\$459,241)	(\$459,241)
<b>Total Costs</b>	<b>(\$33,873,455)</b>	<b>(\$1,362,801)</b>	<b>(\$1,389,330)</b>	<b>(\$1,417,027)</b>	<b>(\$1,445,171)</b>	<b>(\$1,474,541)</b>
<b>NET REVENUES</b>	<b>\$4,534,039</b>	<b>\$106,386</b>	<b>\$112,176</b>	<b>\$118,163</b>	<b>\$123,727</b>	<b>\$129,469</b>

# STRATA OPTION 1 – NET REVENUE COMPARISONS

<b>Year</b>	<b>Total, Years 1-20</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>27% Take Rates</b>	\$2,759,587	\$34,878	\$39,218	\$43,487	\$47,555	\$51,526
<b>38% Take Rates</b>	\$4,534,039	\$106,386	\$112,176	\$118,163	\$123,727	\$129,469
<b>50% Take Rates</b>	\$6,472,176	\$184,439	\$191,988	\$199,763	\$207,142	\$214,727

## Option 2

- Fiber installed down 100% of streets
- Fiber installed (lateral connections FTTH) to 38% of residents and businesses with capability to install service to up to 100% of residents as subscribers are added
- Strata acts as network operator (responsible for emergencies and outages)
- Multiple ISPs
- Subscribers pay a monthly infrastructure fee of \$30 and a monthly service fee (for gigabit service) of approximately \$40 (will depend on ISP)
- Includes customer premises equipment – router/WiFi
- One-time costs to Providence City
  - \$6,402,938

# STRATA NETWORKS OPTION 2 – 38% TAKE RATE

Year	Total, Years 1-20	1	2	3	4	5
<b>Revenues</b>						
ISP Service Fees	\$6,133,323	\$247,044	\$252,492	\$258,118	\$263,831	\$269,728
Infrastructure Fees	\$9,933,779	\$370,567	\$378,738	\$387,176	\$395,746	\$404,592
<b>Total Revenues</b>	<b>\$16,067,102</b>	<b>\$617,611</b>	<b>\$631,230</b>	<b>\$645,294</b>	<b>\$659,576</b>	<b>\$674,320</b>
<b>Operating Costs</b>						
Strata network operator fee	(\$7,200,000)	(\$360,000)	(\$360,000)	(\$360,000)	(\$360,000)	(\$360,000)
Installation Fee (after initial setup)	(\$333,260)		(\$16,160)	(\$16,540)	(\$16,540)	(\$16,920)
<b>Capital Costs</b>						
Annual debt payments	(\$8,950,378)	(\$424,445)	(\$424,445)	(\$424,445)	(\$424,445)	(\$424,445)
<b>Total Costs</b>	<b>(\$16,483,638)</b>	<b>(\$784,445)</b>	<b>(\$800,605)</b>	<b>(\$800,985)</b>	<b>(\$800,985)</b>	<b>(\$801,365)</b>
<b>NET REVENUES</b>	<b>(\$416,536)</b>	<b>(\$166,835)</b>	<b>(\$169,376)</b>	<b>(\$155,691)</b>	<b>(\$141,409)</b>	<b>(\$127,046)</b>

<b>Year</b>	<b>Total, Years 1-20</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>27% Take Rates</b>	(\$5,328,427)	(\$361,520)	(\$364,484)	(\$354,760)	(\$344,612)	(\$334,407)
<b>38% Take Rates</b>	(\$416,536)	(\$166,835)	(\$169,376)	(\$155,691)	(\$141,409)	(\$127,046)
<b>50% Take Rates</b>	\$4,711,850	\$45,550	\$43,469	\$61,475	\$80,267	\$99,166

**Bandwidth capability of fiber line** – Strata would install a 100% fiber network down every street with initial capacity of multiple gigabits per customer

**Bandwidth capability of supporting infrastructure/hardware** – Responsibility of network operator to provide and upgrade

**Bandwidth of the ISP** – Depending on the model selected by the City, ISP bandwidth may vary. Strata has multiple 100 Gbps connections into multiple Points of Presence (PoP's)

**Simultaneous Users (upload v. download)** – Strata model allows 100% of users to utilize their connections simultaneously

Fiber-optic infrastructure has a “refresh” rate of 20-30 years

Network equipment has a “refresh” rate of 5-7 years

Operators need to provide a cost breakdown



5G deployments are fiber intensive – micro-cells need to be placed about every city block

Will require 6-12 fiber strands per carrier

Limitations exist with current FTTH plan; additional capacity may be needed in the future

Operators can work with the City to design for 5G – added cost

Could impact take rates for FTTH negatively

No FCC licensing or regulatory costs

Customer service provided by ISPs, with oversight by network operator

Fee recovery during outages - negotiated

Proposals include all costs for bandwidth

Dedicated access circuits for business hosting could be sold, using the infrastructure proposed; no costs have been established

Spanish Fork, UT

Sandy, OR

Ammon, ID

American Fork, UT

LightHub Fiber

- Spanish Fork owns and operates its own fiber utility
  - Is the operator and ISP
  - Private system – no other ISPs on Spanish Fork system
- Provides internet, phone and TV
- Generates about \$1.2 million net revenues which are currently being applied to capital costs
- Cable TV is not profitable – wouldn't do TV again
- Cost:
  - \$68/month for internet (if subscribe to cable TV as well)
  - \$75/month without cable TV
  - All internet is 1 gigabyte service

- Currently doing FTTH upgrades and should have all locations complete by 2021 – upgrades paid for through net revenues
- Take rate for internet = 78% (some also include voice and video)
- Breakeven estimate for internet = 45%
- Other providers in the area include Comcast, CenturyLink and wireless
- By next year will have FTTH for every location in the City; active ethernet for each home (i.e., no shared fiber lines)
- No fees are paid unless a subscriber
- 5G – not a threat; fiberoptic speeds are better
- Need to constantly upgrade the system

- City-owned and operated as a non-profit public utility
- 100% coverage FTTH
- 74% take rate
- 300 Mbps for \$41.95/month
- 1000 Mbps (gigabit) \$59.95/month

## **Installation Options**

- Optional participation
- 1-time cost of \$3,300; OR
- Financed over time (20-yr bond) = about \$250 per year (\$22.50 per month)

## **Maintenance and Operations**

- Only charged to those participating

Installation	\$22.50
Maintenance & Operations	\$16.50
Services (100 Mbps)	\$10.00
<b>Total Monthly</b>	<b>\$49.00</b>
Services (1 Gbps)	\$25.00
<b>Total Monthly</b>	<b>\$64.00</b>



- City responsible for infrastructure costs and bonding
  - Includes fiber lines down every street and lateral lines to every home
  - Monthly bill estimated at \$9.95 for infrastructure only
  - Billed as utility costs for infrastructure
- City will contract with a network operator that will manage all ISPs
- Free basic internet service comes with monthly utility infrastructure fee of \$9.95
  - Monthly utility fee covers not only the infrastructure costs but also allows the City to choose an ISP with whom to contract for basic internet service for all residents and businesses
  - Free basic service allows for looking things up on the Internet and checking e-mail
- Additional bandwidth available through individuals contracting with ISPs
- Open access network

- Each city is responsible for its own infrastructure costs and debt, but may bond through the Interlocal, thus keeping the debt off of their books
- Collective purchasing for lower costs
- Sharing of resources and expertise