City of Fort Collins

MUNICIPAL RETAIL FIBER-TO-THE-PREMISE (FTTP)

BUSINESS PLAN
EXECUTIVE SUMMARY

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Overview

The Broadband Business Plan is a high level planning document that outlines the data, assumptions, critical success factors, financials and risks of a City of Fort Collins Municipal Broadband venture. The full Business Plan provides information for all community constituents, and everyone is encouraged to read it. This Executive Summary highlights the key assumptions associated with the City launching a broadband business. The Business Plan primarily focuses on the City creating a standalone Broadband Utility; however the City also continues to explore providing these services with a partner or 3rd party. The Business Plan helps provide a framework for evaluating various third-party options without including details about who would fulfill that role.

Broadband Services

The City has been exploring ways to improve the reliability and speed of internet services in Fort Collins since 2010 when it partnered with Colorado State University (CSU) to apply for the Google Fiber challenge. Though Fort Collins was not selected by Google Fiber, the broadband discussions continued and were incorporated into the 2014 Fort Collins Strategic Plan. The updated 2016 Strategic Plan includes broadband under Strategic Objective 3.9: "Encourage the development of reliable, high speed internet services throughout the community."

Surveys consistently rank the incumbent broadband providers poorly in terms of customer satisfaction. Additionally, subsequent conversations with the top two providers indicated that both believed their existing speeds were adequate to meet existing consumer needs. Neither was willing to commit to when a full fiber network system to all premises would be implemented. [see chart] As the current private sector providers are unable or unwilling to meet the needs identified by the community and the City's Strategic Plan, the City of Fort Collins developed the Broadband Business Plan to address these unmet needs.

The November ballot would authorize, but not require, City Council to establish a broadband business. If residents vote yes, Council, by ordinance, may direct staff to move forward with either a retail or third-party option. Under the retail model, the City could borrow up to $150 million, begin the detailed network design and planning, and ultimately implement gigabit broadband services to all premises within the city limits. Construction would begin in 2018 with services anticipated to begin in 2019. As neighborhoods are installed over the estimated five-year project, residents and businesses would have the option to purchase high quality broadband internet services directly from the City at competitive rates.

Operating Plan

The Operating Plan section of the Business Plan highlights the basic operating components to successfully provide high speed fiber services to the community. Critical operational success

factors have been identified, including providing outstanding customer service, hiring the right people, and having a time-sensitive governance structure.

The City may borrow up to $150 million using Light & Power revenue bonds to meet capital requirements. The largest component of the capital requirement is the network construction cost, currently estimated at $80 million, not including design costs. This amount rests largely on the per premise passed cost ("passing cost"), as shown in the table below.

Estimated Miles of Fiber	# Residential Premises	# Commercial Premises	Average Passing Cost per Premise
800	62,000	8,000	$984

Residents and businesses would be able to sign up for and purchase broadband services from the City once fiber has been installed in their neighborhood. For modeling purposes, the Business Plan uses the pricing in the tables below. The pricing was developed based on both municipal offerings across the country and incumbent provider offerings. This pricing reflects published prices as of March 2016. Pricing is very dynamic within the market and can change frequently. Prior to launch, the market will be analyzed and pricing set accordingly. Businesses will also have options for high capacity dedicated connections and other custom internet services.

Model Residential & Commercial Pricing

Residential Options	Residential Price
50 Mbps	$50 per month
1Gbps	$70 per month

Residential speeds are symmetrical (same speed for download and upload)

Commercial Options	Commercial Price
25 Mbps / 5 Mbps	$59.95 per month
50 Mbps / 10 Mbps	$69.95 per month
100 Mbps / 20 Mbps	$89.95 per month
1 Gbps / 500 Mbps	$599.95 per month

Commercial speeds are listed as download / upload. Symmetrical options will be available for additional price.

The City of Fort Collins recognizes that providing outstanding customer service is a key factor to the success of a broadband business. In the Uptown Consultants survey of customer satisfaction with communications and utility companies within the city, Fort Collins Utilities ranks the highest. A key component to gaining and retaining customers is the service and support

they receive. The overriding goals of customer service are to resolve customer issues with the initial call and remain accessible to customers at all times.

The Customer Service Plan outlines how the broadband business will continue this tradition of outstanding customer service by hiring the right people in the right positions. For example, the City will implement performance metrics such as 99.9925% reliability of the network, an average call center wait time of no more than two minutes, and a two-hour mean time to repair (during daylight hours only).

Network Architecture

The City will deploy Fiber to the Premise (or FTTP) technology, which is used by all types of service providers. Compared to many existing internet installations, this technology uses fiber all the way to the customer's premise. Fiber optic cables are made up of strands of glass, as thin as a human hair, that transmit digital information using pulses of light. Specifically, the Gigabit Passive Optical Network (GPON) standard will be used to make fiber available to every customer's premise.

In contrast, many internet services today are transmitted over copper wires, which carry low voltage electrical signals. Unlike fiber, bandwidth over copper wires is constrained by distance and subject to electrical and radio source interference. Wireless technologies have also been considered; however, current WiFi and 4G standards do not support high levels of bandwidth, and future technologies such as 5G and millimeter wave are still in development and years from deployment. To meet next-generation broadband needs, wireless technologies will be dependent upon fiber backhaul.

Fiber will meet the City's broadband needs for the next 20+ years and upgrades to the network's electronics, anticipated every five to seven years, will allow speeds to increase significantly as needed within the market.

Net Neutrality, Privacy, and Security

The City believes very strongly in its stance toward Net Neutrality and privacy. Both are potential market differentiators for the City in providing services against competitors.

Net Neutrality is the principle where services are not blocked, slowed down, sped up, or otherwise manipulated based on who is accessing the internet or from where. The City of Fort Collins is committed to the principles of Net Neutrality.

Additionally, the City is fully committed to protecting personally identifiable information and customer privacy. As a utility service provider, the City is sensitive to customer privacy concerns and will extend its utility policies and procedures to the new broadband business.

In order to achieve a reliable and secure network, the City will work with third parties and vendors during (and continuing after) the design of the core network. Mechanisms such as access control, firewalls, anti-spoofing filters, and others will be implemented and continually updated over time. While network security is a key component, physical security is also a risk. To help mitigate this, best practices will be implemented for secured, hardened sites and equipment in the field. Other security topics such as anti-virus and parental controls, for example, are primarily associated with end-users and provide additional opportunities to market services to customers.

Financial Model

Key components in the financial model include capital requirements, service pricing, and market share or take rate.

Capital costs are highlighted in the table below. These costs are based on third-party and consulting estimates. The largest cost is the network construction cost, estimated at $80 million. Estimates for construction costs are based on a neighborhood cost analysis of installing fiber aggregated into an estimated total construction cost.

Capital Requirements	Amount
Network Construction	$80M
Bond Issuance Fees, Capitalized Interest, Financing Misc.	$13M
Contract Installation	$7M
Facility & Vehicles	$6M
Fiber Drop, Powering, ONTs	$6M
Fixed Equipment	$5M
Engineering, Design, Inspection	$4M
Back Office Systems & Capital	$1M
Subtotal	**$122M**
Working Capital	$10M
Contingency	$18M
TOTAL	**$150M**

Pricing varies by marketplace; however, $70-$80 per month for 1Gb service is the general norm across multiple markets. A $70 per month for 1Gb service rate was used in Fort Collins market surveys that estimate a take rate of approximately 28% if competition is also providing a similar service at $70 per month.

The current take rate used in the Business Plan is based on a conservative research technique from the packaged goods sector. Uptown Consultants have conducted several surveys over the past couple of years, and as market conditions have changed the latest take rate, based on Comcast's release of DOCSIS3.1 and Fort Collins' setting a price of $70 per month. Uptown's analysis of the survey revealed an expected 28.2% take rate.

The financial model within the Business Plan is based on dozens of detailed assumptions including costs of similar municipal deployments, estimated residential take rates of 28.2% (45% for commercial), 70,000 total premises, and competitively priced services. Current projections within the Business Plan indicate that operating income will become positive in Year 3 and ranges from $0.5 million to a high of $18.7 million. In Year 14, the City will have a positive net cash flow, $26 million in annual revenue, and will have paid off the up to $150 million dollars originally borrowed. [Operations Phase Table]

Risks

The City recognizes the risks associated with borrowing up to $150 million, and with building and managing a citywide broadband business. Overall, despite the many risks inherent in such operations, this Business Plan outlines how the City would mitigate the risks by using existing City resources where practical, hiring the right people, providing outstanding customer service and reliable internet, and providing those services at competitive prices.

In the worst case scenario, the operation would borrow the full $150 million, would not sign up any customers, and closes shop. In this scenario the Fort Collins Light & Power customers could each pay up to an estimated $16 per month until the debt is paid off. Pages 63 to 66 of the Business Plan outline several sensitivity scenarios and the graph on page 65 illustrates the change in payback timing associated with each of these scenarios.

Conclusion

A tremendous amount of work and due diligence has been performed in evaluating various business models and options to meet the requirements of Strategic Objective 3.9 in the 2016 Strategic Plan. All constituents are strongly encouraged to read through the full Business Plan and other information posted online to learn more.