City of Palo Alto

City Council

At Places Memo Item #20

(ID # 15049)

Meeting Date: 12/19/2022 **Report Type: AT PLACES**

Title: AT-Places Memo Regarding the Updates Related to Financing Options for Federal Tax Issues Raised by City of Palo Alto Dark Fiber Network Expansion and Fiber to the Premises

From: City Manager

Lead Department: Utilities

This memorandum provides additional information for Council to consider regarding the potential issuance of debt financing to fund the City of Palo Alto's dark fiber optic backbone expansion and fiber-to-the-premises (FTTP). In addition, staff is responding to questions from Councilmember DuBois.

Staff have continued to refine financing options with the City's legal counsel and financial advisors regarding this project. Based on this evaluation, we have been advised that if the City elects to launch a FTTP line of business using either a hybrid or fully outsourced organizational structure, tax-exempt bonds may not be feasible. Federal tax law imposes numerous constraints on property financed using tax-exempt bonds. These constraints would limit the terms and conditions the City would be able to negotiate in any contract between the City and a prospective service provider/franchise operator, most notably regarding compensation structure and the degree of oversight and control over FTTP business decisions retained by the City. The City will need to decide how it wants to balance the cost advantage of tax-exempt bonds against the potential disadvantages in decreased flexibility in management and business decisions while the bonds are outstanding.

Should the City lose its federal tax exemption status, interest from the bonds will no longer be exempt from federal income taxation, which could greatly impact the cost estimates in Table 1 of the staff report. Below is a high-level summary demonstrating the greatest range in difference between taxable and tax- exempt outcomes as of Dec 2, 2022 evaluations for a utility bond based on $98M project funds.

Table 1 Tax-Exempt vs Taxable Debt Service

Bonds Secured by	Rated	Tax Status	Project Funds	Issuance Costs and 3-year Capitalized Interest	Debt Service Reserve Fund	All-In True Interest Rate	Average Annual Aggregate Debt Service	Total Debt Service
General Fund	AA+	Tax-Exempt	$98.0 M	$17.3 M	None	4.4%	$7.2 M	$198.9 M
Fiber Fund	Unrated	Taxable	$98.0 M	$30.0 M	$13.3 M	6.7%	$11.2 M	$297.5 M

Compared to the scenarios modeled in August, rates mostly rose at the short-end of the curve due to the Federal Reserve raising its Federal Funds rate (which is the short-term loan of last resort for banks); so because of the 3-year Capitalized Interest period we are using (no bond maturities in first 3 years, interest-only paid by borrowed bond proceeds) these short-term rate increases largely do not affect the financing scenarios in Figure 1. By contrast, medium and longer term rates (maturities of 5+ years) have not risen nearly as much and have been trending downwards recently, resulting in an inverted yield curve (e.g. 1-yr rate higher than 2-yr rate) in Figure 2.

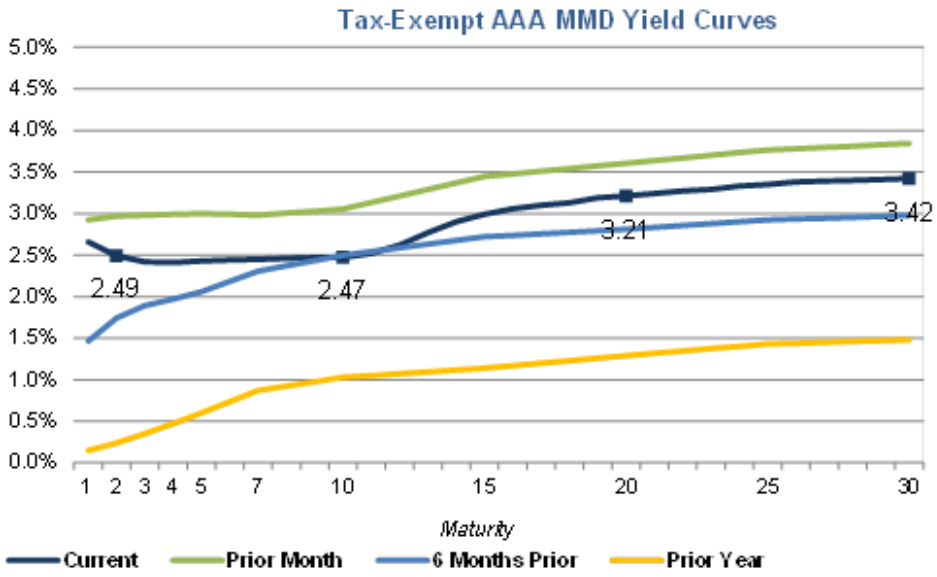

Figure 1. Tax-Exempt Yield Curve

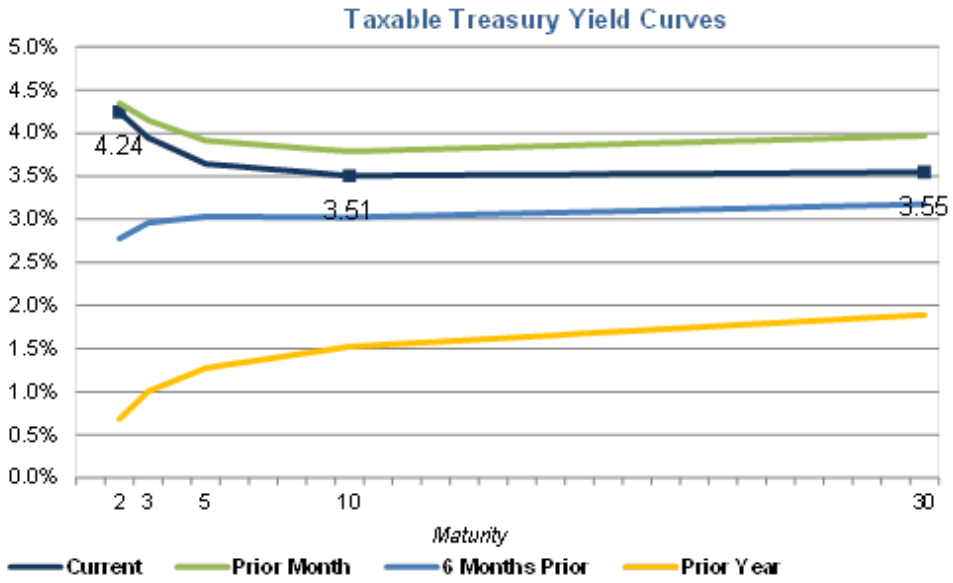

Figure 2. Taxable Yield Curve

In addition, please find below the staff response to questions from Councilmember DuBois on agenda item 20: Staff and the Utilities Advisory Commission (UAC) Recommend the City Council Approve Option 2 for Building Fiber-to-the-Premises (FTTP) Under a Phased Approach.

1. The UAC report on 11/2/2022 said there was no city doing what Palo Alto is doing. However there are at least 28 cities in California providing some form of fiber broadband service to at least some residential customers or are building out in phases. Can staff update the report to acknowledge these other cities providing residential service?

   Response: Although a lot of cities are offering fiber services, either the fiber infrastructure is not city-owned, or the services are limited by area/customer type. For example, most services are limited to only commercial customers and others are limited to only new developmental areas. Of those which provide fiber to residential areas, these build outs are incremental (Rancho Cucamonga, Santa Cruz, Santa Monica).

2. There appear to be 83 citywide muni networks in the US and more than 315 publicly owned networks provide at least some form of 1GB or higher service. Why is the report focused only on California? Is there something unique about CA vs other states?

   Response: The State of California does not have any laws or regulations that prohibit or restrict municipal broadband networks. Common approaches to preempting municipal broadband networks in other states range from straightforward bans to confusing financial restrictions and complicated legal requirements. With limited resources to

verify the business models of each municipal network, staff focused on well-known municipal networks or municipal networks with easily accessible public information in California since unique legal conditions in each state substantially impact the deployment of broadband networks state to state. We have added some non-California municipal utilities in the comparison table.

3. Microtrenching was stated to reduce construction costs by 40-50% and time by a factor of 3-4 X. The staff report to UAC said it is not recommended. Can we get a more nuanced consideration since the savings are so great? Are there no streets throughout the city where it would work? Perhaps very quiet cul-de-sacs? What if it was used on local streets only but not arteries for example? The savings are so high, more detail is needed here.

   Response: The cost savings and efficiency gained by using micro trenching, is achieved when it is used in large volume. To realize the full savings of micro-trench, the City would have to utilize micro-trenching for largest part of underground construction. One of the advantages that allows micro trenching to be less costly is the depth placement of conduit, which is also a disadvantage to operating and maintaining the network. The conduit is placed at is 12-18" when micro trenching as compared to the 36" depth when bored. This would place the fiber at risk of being compromised or hit by other construction or paving work. The City does not recommend using micro-trench for the fiber backbone or FTTP distribution network because of the risk associated with a shallow network. The cost to mobilize equipment and crew to micro-trench small segments and/or service laterals would potentially outweigh construction cost savings combined with high risk of future outages.

   In regard to horizontal boring, there is minimal cost differential to increase the depth from 24" to 36". The cost from the contractor is based on time and material.

4. Magellan has designed a large portion of the network but there are few details shared. Some details about the number, size and location of huts would be helpful.
   a. Is the architecture proposed Active Ethernet or PON?
      Response: The architecture proposed is PON. 99% of all fiber to the home networks are designed using PON architecture as it is the most efficient and economical technology.
   b. What choices were made?
      Response: PON is utilized by all major carriers and nearly all municipal FTTP networks.
   c. Can some of the design be shared with the council, perhaps the logical layer?
      Response: Magellan can share both logical and physical diagrams if needed.

5. In the UAC options 1, 2, 3 and what is assumed in terms of pole replacement? If Council goes with option 3, would the Electric Utility need to replace poles as part of grid modernization?

   Response: Yes, Electric will need to replace some poles for the grid modernization project. The City will need to conduct a comprehensive engineering to design to quantify the number of poles that need to be replaced and heightened.

   If a pole is in poor condition and does not meet General Order 95 rules for Overhead Electric Line Construction, the electric utility is responsible for 100% of the pole replacement. Based on the joint pole agreement, AT&T is responsible for about one-third of the cost because Electric has control of majority of the usable space on the pole. AT&T controls only three feet of the pole in the communication space.

6. How many poles need to be replaced based on Magellan's survey and the age/condition of poles regardless of this project?

   Response: Magellan has surveyed approximately 90% (5,400 of 5,900) of the poles. They need to obtain access or re-survey 500 poles. Magellan is estimating 5% - 10% or 300 - 600 poles will need be replaced.

7. How long does it take from council approval of a bond to having the financing available? If Council concurs with the UAC on Option 2 and early data is positive so that Council desires to continue/accelerate the buildout, how long would it take to bond to have construction funds to continue?

   Response: Typically, bond issuance takes three to four months to process. Sometimes it takes longer when tied to a main construction contract Invitation for Bid (IFB) being issued, receiving proposals, and evaluating bids to determine the lowest responsible bidder. The IFB process needs to be substantially completed to determine the final amount of the bond issuance since this result can substantially differ from the Engineer project cost estimate.

   If Council approves option 2, it will take about two months to complete financing for the remainder of the project because an IFB and financing documents for subsequent phases will be prepared and near completion.

8. Could the bond be a different length of time, and what impact does it have on the project? Say a 30 yr. bond vs a 15-year bond?

   Response: Yes, bond duration can be different, however, to significantly differ from a 30 year standard structure may complicate the bond issuance which could lead to higher issuance and potential (interest rate) borrowing cost. A 15-year bond duration will result in higher annual debt payments (e.g. from $6 million to $12 million annual debt

service payments). The fiber utility may need a loan or subsidy from the General Fund in the early years to fulfill the 15-year debt obligation.

9. In Option 3,
    a. Why is expansion of the dark fiber backbone needed if there is no FTTP?
    b. Is there a business plan to expand the dark fiber business?
    c. What drives this large expense if there is no FTTP?

    Response:

    a. The existing fiber backbone is approaching 30 years and will require more maintenance and repair to continue providing existing and new dark fiber services. There are segments in the fiber backbone that have either reached or is approaching maximum capacity, thus we cannot serve City departments or new customers in those areas.
    b. Palo Alto is a unique hub for technological and business innovation. Dark Fiber is a niche business which requires specialized IT resources and equipment to light the fiber. The City plans to expand the dark fiber business with the addition of a dedicated fiber market analyst and fiber engineer. The forecasted growth rate is 5-10% per year.

    c. Below is a breakdown of the new 44 miles backbone including contingency.

UNDERGROUND - BURIED LABOR	74.6%	$19,395,319.74
AERIAL -STRAND/LASH LABOR	2.2%	$577,833.23
SPLICING LABOR	3.7%	$951,107.93
PATCH PANELS/CABINET LABOR	0.0%	$2,914.31
GENERAL LABOR	1.9%	$481,953.79
FIBER MATERIAL	7.9%	$2,054,144.16
UNDERGROUND MATERIAL	8.9%	$2,324,161.10
CLOSURES MATERIAL	0.4%	$101,942.52
PATCH PANELS/CABINETS	0.2%	$61,783.34
AERIAL MATERIAL	0.1%	$15,933.98
AERIAL - STRAND/LASH	0.1%	$32,905.90
GRAND TOTAL		$26,000,000.00

10. In other cities with municipal fiber networks to some residential neighborhoods, how have incumbent providers responded? In CA or outside CA? Please provide some examples.

    Response: Common incumbent responses to municipal broadband networks include:

    - Network upgrades that enhance existing services and facilitate new service offerings. For example, Comcast's migration from DOCSIS 3.1 to DOCSIS 4.0 to

offer 1-Gig and multi-Gigabit symmetrical speeds. Both AT&T and Comcast expediting deploying more fiber in their networks. AT&T incentivizing existing DSL customers to switch to AT&T Fiber through discounted long-term promotional offerings.

- Improved customer service response times (e.g., expedited installation and service appointments, improved phone response times, improved network maintenance to mitigate outages.
- Customer retention programs that include short-term promotional pricing, service upgrade promotions, new service offerings such as a cellular product, door-to-door sales campaigns, increased advertising and marketing campaigns.

Most municipal networks face strong opposition and competitive responses from the incumbent providers. An example of a city in California where the incumbents strongly responded to a municipal network is Alameda Power & Telecom's (now Alameda Municipal Power) Hybrid Fiber/Coax network launched in 2001. The HFC network was sold by the city to Comcast in 2009.

11. A UAC member proposed the city offer charter member pricing deals, perhaps 3 months free. Other network build outs have offered special rates if you sign up while construction is occurring. Please include a discussion about a rollout plan to optimize adoption and construction.

    Response: Yes, we can include some strategies on how the City can optimize adoption during the build out. For example, free installation, free equipment rental for x years, no contract term, free speed upgrade for x months, and/or promotional pricing for one year.

12. In prior discussions over the years, Council has been told that fiber funds are not restricted by any utility ordinances and money can be transferred to the general fund as desired. Lately, legal staff have said it is unclear. This is a huge area to understand - with potentially millions of dollars accumulating as free cash flow within 10 years, Council needs to understand whether those funds must stay within a new fiber utility or will be considered general fund dollars. Can staff provide more clear guidance on this question of how fiber revenue can be used under the laws today? And steps Council might want to take to ensure transfers can be made to the general fund in the future.

    Response: The existing dark fiber reserves may be used for capital expenditures related to the fiber network, including the FTTP buildout, or as unrestricted funds. However, potential uses for future surpluses—particularly from a FTTP line of business—are less clear. The legal landscape for local government revenues, especially revenue contemplated for expenditure on general municipal services, is complex and frequently changing either through ballot initiatives or litigation over the meaning and application of existing laws.

13. Can staff look at potential community benefits from cost savings of having multiple providers - perhaps from other cities offering residential service where private providers also exist.
    a. Does that drive prices down for all users?
    b. Does it slow rate increases?
    c. Does Magellan have any data on this?

Response: Municipal providers try to provide service at the lowest cost possible. This generally has the net effect of driving down the competition's prices as well. A good example from Longmont NextLight in Colorado (population of 100,000). As of January 1st, standard residential gigabit Internet access rates dropped from $99.95 per month to $69.95 per month. In addition to this most recent price reduction, NextLight offers a loyalty bonus for subscribers who obtain service for 12 continuous months. Gigabit subscribers who qualify have rates reduced to $59.95 per month. Charter Members — residents who subscribe for services within three months that service is available within their area — are able to receive gigabit connectivity for $49.95 per month as long as they keep their services. https://muninetworks.org/content/longmont-reduces-rate-residential-gig

Some other examples from studies: https://www.techdirt.com/2020/07/21/study-community-broadband-drives-competition-lowering-costs/