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LETTERS FROM CITIZENS TO THE
UTILITIES ADVISORY COMMISSION

From: [Jeff Hoel](#)
To: [UAC: Council City](#)
Cc: [Hoel, Jeff \(external\)](#)
Subject: TRANSCRIPT & COMMENTS -- 08-03-22 UAC meeting, item VII.3 -- FTTP
Date: Wednesday, August 17, 2022 4:42:07 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Commissioners and Council members,

On 08-03-22, at item VII.3, the Utilities Advisory Commission discussed an item about FTTP.

Agenda:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/08-03-2022/08-03-2022-agenda-and-packet.pdf>

Staff report:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/08-03-2022/08-03-2022-id-14582-fiber.pdf>

Video:

<https://midpenmedia.org/utilities-advisory-commission-31-832022/>

Below the "#####" line is a TRANSCRIPT of this item, with my COMMENTS (paragraphs in red beginning with "###").

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
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#####

TRANSCRIPT:

Attended by Vice Chair Johnston and Commissioners Forssell, Smith, Bowie, and Metz, and Council Member Cormack. Absent were Chair Segal and Commissioner Scharff.

1:07:50:

Vice Chair Johnston: We'll move on to our next agenda item, which is the Discussion of Preliminary Internet Survey Results and Financial Business Models for Palo Alto Fiber. And I think on this, we'll take the public comments next. So, I understand, Tabatha, you have at least one card.

1:08:21:

Tabatha Boatwright: Yes, Vice Chair Johnston. I do have a public speaker in the Chambers. Mr. Jeff Hoel.

1:08:28:

Vice Chair Johnston: OK. Mr. Hoel. Welcome.

1:08:34:

Jeff Hoel: Thanks. First, I want to say I support citywide municipal fiber to the premises. Just so you don't get confused by my subsequent comments.

It seemed to me like the -- at some point, staff should report what all of the survey questions were, and the flowchart for how the survey --

I should have finished this thought. Staff should provide a flowchart for how the survey skipped over some questions, depending on how the responder answered previous questions.

I answered the question(s) about who pays the bills and do you have home internet. So I said no. And after that, the only question the survey would allow me to see or answer was, well, why not? And I -- You know, I didn't get a chance to say what I wanted if for. It just seems like I didn't get my chance to participate.

The survey was supposed to educate us about some things, and I just wanted to comment on whether it's done that already. For example, it was concerned about the CPAU brand. So there are some questions in there that allow experts to figure that out. But the data wasn't presented. And so, if there could be a discussion of that, that would be cool.

At one time, I think somebody was hoping that, as the result of the survey, we'd get to know where AT&T already had fiber. But I think you didn't ask participants where they lived, and so I don't think you got that information. And so, I just want to confirm that.

At 1:23:26, John Honker says the survey DID ask for the participant's address. So, I was wrong.

Also, what about TV? My own feeling is, most municipalities have figured out now, you don't have to do TV. But I just hope the survey data confirms

that.

It would be interesting to know how invitees there were to the residential and the business surveys -- separately. And could people take the survey multiple times? I thought, at one time, there was supposed to be a mechanism where you were invited and then the response sort of said whether you were invited or not. But the way it ended up, I think you could just go to the internet and click on a URL, and go take the survey. And, hopefully, nobody took it multiple times. Thank you.

1:11:37:

Vice Chair Johnston: Thank you.

1:11:40:

Tabatha Boatwright: If anyone else from the public would like to speak on this item, please raise your hand. Or, if you're on the phone, press *9.

1:11:53:

Vice Chair Johnston: I don't see any other hands. Do we have any others?

1:11:56:

Tabatha Boatwright: No, Vice Chair. It doesn't look like we have any hands raised.

1:11:59:

Vice Chair Johnston. OK. So, I'll turn it to the staff, or to John Honker, for the presentation.

1:12:13:

Dave Yuan: Good evening, commissioners, and Council Member Cormack. Tonight, we present to you the preliminary internet survey results, and the financial business models for fiber to the premise, or FTTP. Next is the agenda, John, if you don't mind changing.

1:12:21:

Slide 2: Agenda (which can be found on PDF page 4 of the staff report)

So, as of April, we were about somewhere between 50 to 75 percent complete with the engineering design for FTTP, community engagement, and also the business -- ISP business models. As of today, we are about 90 percent complete, with all three of those tasks. On June 23rd, we launched a Palo Alto internet survey and deposit program. Tonight, we'll be presenting a snapshot of the survey results, as of July 13th. We shared these preliminary results with the UAC Fiber Subcommittee on July 20th. So, special thanks to Commissioners Johnston, Metz, and Smith for meeting with us in advance of this meeting. We will also take another snapshot of the results shortly, and update the competitive market analysis, for the Joint Council/UAC Study Session in September.

1:13:19:

We evaluated three business models: the Insource, the 100 percent City staff; and the Outsource, which is primarily strategic vendors; and a Hybrid, which is a combination of both Insource and Outsource. Tonight, we'll focus more on both the Insource and Outsource models. The Hybrid model is a little more difficult, because there are so many variations, or compositions of City and house staff and also vendor contracts. So, that's actually a moving target. For the Hybrid model that we did model, we did a 70 percent Insource and a 30 percent Outsource, to ensure that we have representation in every core function, to provide a City ISP model. The total staffing and vendor costs for the Hybrid model was almost the same as the Insource model. And so, tonight, we see input and feedback from the UAC, and also Council Member Cormack, for the Joint UAC session. And we are planning to bring this back to the full UAC in October, as an action item, and recommendation to Council.

Interesting. When would it come back to Council as an action item? Would that be when Council makes its "go/no-go" decision?

So, now, let me hand this over to John Honker, from Magellan Broadband.

1:14:25:

John Honker: Great. Thank you, Dave. And good to see everyone again. Commissioners. Vice Chair and Chair.

Chair Segal was absent.

My name is John Honker. Good to be back in front of you again this evening, with a project update for fiber to the premise.

1:14:41:

Slide 3: Project Update

Just a quick update on the actual progress of the project. Dave kind of summarized this. So, our scope in this is really to help guide the City through the entire business planning process, to get to a point, here shortly, where you'll have important decisions to make on the best strategy to move forward with -- or -- and how to move forward with Palo Alto Fiber. What the best business operational and -- um -- the best way to effectively run the business would be, inside of Palo Alto. Right? As Dave mentioned, we've looked at multiple models, and have presented the -- are going to be presenting the ones that are really the most effective for the City to consider. Ultimately, it's your decision. We will guide you through the process of looking at -- from a pretty early business perspective, which models make the most sense for the City, given its strengths, some of its constraints. And look at maybe, potentially, even blending some of those together, to ensure that Palo Alto Fiber can be as successful as possible, and serve the community with the best services around.

1:15:55:

We're going through the regulatory review currently, which is going to look at state agencies like the CPUC, as well as federal agencies that have specific compliance and regulatory requirements for providing internet service. One thing that's good about internet service is that it's still considered an information service, and it's -- we call it a lightly-regulated service, when compared with things like telephone and television.

What's "good" depends on your point of view.

In 2015, the (Obama) FCC classified internet service as a telecommunications service under Title II of the Communications Act. <https://arstechnica.com/information-technology/2017/06/to-kill-net-neutrality-rules-fcc-says-broadband-isnt-telecommunications/#:~:text=An%20information%20service%2C%20by%20contrast,definition%20%22includes%20electronic%20publishing%2C%20but> Then, in 2017, the (Trump) FCC classified internet service as an information service under Title I of the Communications Act.

Senators Markey and Wyden, and Representative Matsui, have introduced legislation that would reclassify internet service as telecommunications service. And that would make clear that the FCC has the right to insist on net neutrality. <https://www.markey.senate.gov/news/press-releases/senators-markey-wyden-and-rep-matsui-introduce-legislation-to-reinstate-net-neutrality-reverse-damaging-trump-era-deregulation> <https://www.cnet.com/home/internet/congressional-democrats-introduce-net-neutrality-bill/> FCC Chair Rosenworcel believes the FCC has the authority to reclassify internet service as a telecommunications service and reestablish net neutrality even without the proposed legislation. But until a fifth FCC commissioner is appointed, there may not be enough FCC votes to do this. <https://www.nexttv.com/news/jessica-rosenworcel-fcc-has-authority-to-adopt-net-neutrality-rules>

The City shouldn't mind complying with the principles of net neutrality.

We have gone through with ASD and the City's -- City staff governance and operational models, to really tease out what the opportunities and constraints are around staffing and job descriptions and departments. We've put together pro-forma financials. At this point, we're sort of at a -- as Dave mentioned -- a 90 percent complete on the financials. We do have some updated pricing coming in for construction of the network, from local vendors. As you know, the market for any construction has -- is very volatile currently. So, we feel it's important for you to have the latest pricing for both materials and labor for Palo Alto Fiber. So, we've gone out for another revisit with construction contractors, to get the most accurate pricing for you, come this September joint meeting.

And, finally, as Dave mentioned, the engineering design. 90 percent complete. We're rounding the corner to the 100 percent completion mark, which will put you in a position -- depending on your decision. If you decide to move forward with Palo Alto Fiber, it will put you in a position to immediately put that out to bid, on the street, for -- with a -- competitive RFPs, for construction of the network.

1:17:49:

Slide 4: Preliminary Survey Update

So, the first -- and, really, I think, one of the key aspects that we're looking at tonight -- is really the survey. Right? The survey, as Dave mentioned, has been out since June 23rd. This is a bit of an update from your packets. We took a snapshot of the survey results today. I have to say, first, the survey results have been really astounding. You know, great engagement from the Palo Alto community, from citizens and households. It's a very engaged City. Engaged population. And they want to express their -- you know, their views on Palo Alto Fiber. So, as we launched the survey, we originally had 21,925 emails -- almost 22,000 emails -- that went out to individual households across the City.

Is this saying that 21,925 people were invited to take the residential survey? If so, how many people were invited to take the business survey?

Using the Utility email database.

Who's in this database, and who isn't?

As of today, the snapshot of completed surveys today is about 3,200.

The slide shown at the meeting said 3,241 as of 08-03-22. The slide in the staff report said 3,177 as of 07-20-22.

That's a -- Congratulations to the community for responding. Because it's a huge number. Almost 15 percent response rate. And, in addition to that, about 700 \$50 deposits have been received to date for Palo Alto Fiber.

The slide shown at the meeting said 703. The slide in the staff report said 652 as of 07-20-22.

To put this in perspective, the last two, you know, rows on this slide are really important.

The Slide 4 in the staff report doesn't have these two rows:
Original Goal For Statistical Validity 95% Confidence Interval, 5% Margin of Error
Realized Statistical Validity 99% Confidence Interval, 2.2% Margin of Error

So, as we look at the survey, the goal is to get to a strong confidence interval, with as small as possible margin of error. And, typically, for statistical validity, we're looking for, you know, a 95 percent confidence interval, with a 5 percent margin of error. That means, effectively -- In layman's terms, that means that the results of a small group of the population -- that's been randomized, right? Because, effectively, we've surveyed the entire population. It creates a large random sample -- that -- we want to be close -- very confident that those samples are representative of the rest of the community. So, our original goal on the survey was to get to about 380 surveys. That would put us in a 95th percent confidence interval with a 5 percent margin of error. Because we really saw a huge response from the community, and we have 3,241 unique surveys, right now, you're at a 99 percent confidence interval with a 2.2 percent margin of error. And that means, you know, the representativeness of the sample is even greater than we expected. And the margin of error, meaning the result's differing from what you would traditionally see in a smaller sample, are even lower than we expected. So, this sets up for very good -- a very good result. Very good, statistically relevant results, in the residential population.

1:20:48:

Slide 5: Preliminary Survey Update -- How much do you pay each month for your internet services ...

So, as we look at this -- and this snapshot is really just some high points.

1:20:56:

Back to Slide 4

You know, as we've taken our snapshot today, we will utilize this, really, to run the whole survey analysis, and the results of this survey. On each and every question. As well as run the quantitative analysis that tells us what take rates should be expected, based on different pricing levels. Right? Because a major part of the residential survey was to go in and say, at these pricing levels, which would be your preferred provider. And, among existing providers in the community, including Palo Alto Fiber, what price levels are most attractive to you, at what speeds, and from which provider. So, that combination of brand, speed, and price will allow us to run what we call a conjoint analysis on this survey, to determine the best -- the most effective pricing model service tiers and speeds, to warrant the greatest take rate. And that is the analysis that you're going to see coming out in the coming weeks, before the joint meeting coming up in September.

1:22:11:

Back to Slide 5

A couple of high points from the survey, from direct questions, are, really, in terms of pricing. And I'm going to talk about these in comparison to some other peer communities that we've seen, or other similar survey work that we've done in other communities. So, in terms of pricing, how much are you paying for your internet services, not including television and telephone.

Is there any way of knowing whether the price is an everyday price or promo price?

This is a pretty normal distribution for internet -- for, let's say, mid-size cities. Right? Most of our pricing comes in our \$41 to \$60 a month band, and the \$61 to \$80 a month band. So, if we look at those two together, we have about 60 percent of the population that's paying, basically, between \$40 and \$80 a month. We have a little bit of a premium -- about 20 percent of the population is paying about \$81 to \$100 a month. And we'll look at this data to determine what service that is, as well as where they're located and what provider they're using. Because, as we look at this, this may be -- this may be existing AT&T, where they have fiber-to-the-home deployed, and they're charging a premium for those service. Or it may be a Comcast 1 [gigabit] or 2 gigabit service.

I wish we'd get into the habit of specifying both download and upload speeds.

So, this helps us understand where these services are available. Because we understand -- we know, from the survey data, addresses for each individual household that responded to the survey. That will be an important next step. So, we think this is a preview of things to come, of what a pricing model will look like for Palo Alto.

1:23:44:

Slide 6: What company provides your internet service at home?

What company provides your internet service? As we look at the results here, Comcast is dominating -- around 67 percent. AT&T at 24 percent. What's interesting here is, we know that AT&T has deployed some fiber, because, when we look at the percentage difference, you know, we see Comcast owning a smaller percentage of the market than we do in other communities, where AT&T, or the existing telephone company, hasn't deployed a fiber-to-the-home product. So, the market's a little more of a duopoly here, in terms of high-speed internet, than purely a monopoly, which Comcast holds in a lot of other markets. So, you know, this higher percentage -- typically, in a normal community, we would see this -- the telephone company owning between 10 and 15 percent of the market, while Comcast, or the cable company, would own closer to 75 percent or 80 percent of the market. You do have a few smaller providers here. Nothing unusual. You know, a few providers, that make, you know, 5 to 6 percent of the total market share.

1:24:54:

Slide 7: Do you purchase other service with your home internet services?

Um. We heard a comment earlier about other services being purchased -- in cable television specifically. You know, our thoughts on this were -- We were expecting these results. When we looked at the survey -- When we look at Palo Alto as a rel- -- as a high tech community. And what I think -- This data confirms our suspicion that cord-cutting is a big part of Palo Alto. Meaning, as we look at what other services residents are purchasing with their internet service, you know, cable television is very low. Under 30 percent. Home telephone is even lower, at 25 percent. And then, 54 -- 55 percent reported that they're only providing internet. Now, this question we can't take on its own, because there's a lot of false positives in it.

1:25:50:

Slide 8: If you use cable TV at home, ...

So, the next question is really important. If you use cable TV at home, would you consider switching to an internet service like Netflix or Hulu over the next year? So, out of the 30 percent that say they still subscribe to cable TV, from the prior question, we look at the percentage here who say that they would cancel, and just use internet streaming. We've got about 17 percent. 54 percent already subscribe to streaming. A few peo- -- you know, 12 percent would keep their cable TV, and ADD streaming. And then, 2.7 [percent] would just keep their cable TV. And then, there are some people who are not sure, as well. But what's really important is, you know, when we take a minority of the population that's subscribing to cable TV, and we say, we know that there's some more people that are going to be cancelling service, it tells us that that trend in Palo Alto is MUCH further along than it is in other communities. For example, in the Southeast -- And it's very regionalized. In the Southeast, cord-cutting has a much lower rate, typically, than in the Mountain West, or in the Northwest. Right? So, as we look at Palo Alto, this makes a lot of sense. And it also -- What's important about it is, it infers to the fact that cable TV is not a highly-demanded service by Palo Alto citizens. And that for Palo Alto to potentially offer that would, more than likely, not be necessary. We'll look at the data more. But the reason that we ask these questions is, we want to understand if the City would need to offer cable TV as part of its package. Because if it didn't, and these numbers were higher, you know, would you lose customers because you didn't have that bundled package? The data's telling us that, no, there's enough of a majority that doesn't subscribe to cable TV today that it wouldn't affect -- adversely affect take rates for Palo Alto Fiber.

1:28:00:

Slide 9: Please rate your overall satisfaction with your home internet service

Um. We asked -- There's some some satisfaction and importance level questions in there. So, you know, here's our global satisfaction question. How satisfied are you with your home internet today? We look at -- The dissatisfied percentage is about 30 percent. And those are really typically going to be more of the early adopters for a new fiber-to-the-home provider which has a better brand, in terms of, let's say, customer service. In terms of speeds. In terms of symmetrical service. Right? The same speeds up and down. And reliability. So, we have 30 percent, which we would look at as -- think about that as more of your captive market, that, you know, you want to really go after and be able to attain. Then, there's the remaining percentage. Right? 12.5 percent -- almost 13 percent -- that are neutral. And then, about 58-60 percent that are somewhat satisfied or very satisfied. So, we have to think about that in marketing terms, in that, you know, this population here, in the neutral, can probably be incentivized to switch. We're going to have to work harder on the somewhat satisfied and very satisfied customers. And what we'll look at there is, as we get that survey analysis done, what factors are most important to them. Right? Is it in-home technical support? Is it speed? Is it reliability? We all know price. Everyone wants a lower price. So, that's a common denominator across all options. But what other levers can we pull, in Palo Alto Fiber, to make it a better value proposition to the customer? And to try to pick up some of the market share that's in the neutral or the customers who are apparently satisfied with their service.

1:29:47:

Slide 10: ... please select the top 3 reasons why you would switch

This is another control question, which is really important. Because we just ask it a different way. It helps us reinforce what IS important to Palo Alto customers. And we ask them, you know, if Palo Alto Fiber were going to provide high-speed internet to your home, what are the top three reasons you would switch from your existing provider? Right? We look at speed and price being very close, with reliability being third. But speed and price are almost always, you know, the top two. Sometimes, price is above speed. Sometimes, speed is above price. But we just need to be focusing on those as really core. So, the goal here, again, is, as we think about how to ensure strong take rates, ensure community satisfaction with the service, it's all about setting prices at the right rate, and delivering higher speeds, and, finally, a higher-reliability product. And that reliability can be in the form of just uploads and downloads. Right? Making sure there's consistent speeds across the network when you're surfing. So that you don't -- You know, you're not on a Zoom, like we're on tonight, and all of a sudden, my video goes out. Or my audio goes out. So, it could be that. It could be reliability in terms of access, or in terms of customer service. So, we have to think about all those different dimensions as we're building a value proposition for the customer. Or for the citizen.

1:31:22

Chair Johnston: John, if you've kind of gone over the survey, maybe we can take a pause here, and just see -- I know Commissioner Smith has a question. I don't know if it relates to this. But this might be -- If it's OK, could we, maybe pause for some questions sat this point?

1:31:36:

John Honker: I think it's a great time. Absolutely, Vice Chair. Commissioner Smith. Happy to answer any questions.

1:31:43:

Commissioner Smith: Thank you. Thank you both. And, first of all, stellar results. Thrilled. Even from the last time we met. I'm thrilled. I guess understanding the numbers is very important. But going all the way back to the number of responses that we received ...

Slide 4 again

and the statistical validity, that's GREAT. But are those 3,200 responses -- are they reflected in the rest of your slides? Or -- Have we updated those slides?

1:32:19:

John Honker: They're trending the same way. So, your numbers may change a little bit, as you can see here. You know, different levels of customers -- Because it's not all -- Not every question is a required question. So, in some cases, we'll have, you know, we'll have less than 3,400 responses. Like, here in this question, you have 2,800.

Slide 5 again.

But these [percentages] get adjusted, based on the responses, for the margin of error and the confidence interval.

I assume Honker means that the percentages are relative to how many people answered the specific question.

1:32:47:

Commissioner Smith: Fantastic. Um. Just a general comment. I, too, am pleased that our statistics are showing that half of the population have already cut the cord.

1:33:03:

Slide 8 again.

They are really most concerned about broadband internet. Half the population. Within that -- You know, to your point, with a 99 percent statistical validity. Basically, half the population don't need a telephone. Or, at least, a landline. And they don't need Comcast for some kind of cable TV. We can, to your point, use streaming services. So, thank you. That's all I had. Thank you, Vice Chair.

1:33:31:

Vice Chair Johnston: Thank you. I did have one question on the slide that you have up here. Oh, I'm sorry, on the slide that has the various pricing levels. Maybe slide 5.

1:33:47:

John Honker. Um. Sure. Slide 5.

1:33:49:

Slide 5 again.

Vice Chair Johnston: This one. Do we know what the speeds are that people are getting with those various pricing levels?

1:34:00:

John Honker: We do, actually. So, as we run the post-analysis, you'll get a -- We'll -- We calculate what we call a price per megabit.

I think he means price per Mbps, but I'm not sure.

Meaning, how much speed are you getting for a dollar. For every dollar that you spend.

I'm not convinced that that particular statistic is all that illuminating.

So, it will tell you -- and it's really important to look at this. It will tell you, as leadership, how much people are spending on internet, and how much they're getting for their money. And then, we can build that value proposition to say here's how much more they would get with Palo Alto Fiber. And we can put that in dollar terms. So, that will be, really, an important part -- I'm glad you picked up on that, because it's really important as we look at the overall business plan for the network.

1:34:41:

Vice Chair Johnston: But the point being, it -- Well, that -- That's great. I mean, it's fabulous. But it sounds like you really can break these -- a lot of these numbers down, more finely, based on the service that that particular respondent is getting.

1:34:58:

John Honker: That's correct. So, what you'll see coming, in the coming weeks, are the speed tiers of the people who responded to the survey, and the prices that they're paying for those speed tiers. So, for example, one gigabit [per second]. Maybe a 500 megabit [per second]. And a hundred megabit [per second].

Don't forget about upload speeds.

And you'll see what the existing providers are charging for those. And what the customers are paying. And then, we'll line that up against what Palo Alto Fiber should look -- be charging. To have -- run sort of a competitive analysis, to make sure pricing and rate setting is appropriate for the market in Palo Alto.

1:35:40:

Vice Chair Johnston: I understand Commissioner Forssell has a question.

1:35:44:

Commissioner Forssell: Yeah. Thank you, Vice Chair. My question is about -- survey respondents -- those questions that are -- that are matters of their perception. 'Cause I noticed in the survey, there's like a speed test, so that you could actually, you know, measure what their internet service was. And price is not a matter of perception. But reliability, especially, is something people kind of feel like they have reliable internet or not. And I'm wondering if you have any intuition for -- or any survey data showing -- whether their perception of reliability comes from their internet service provider, or if it is their in-home wireless setup. It's like, I get the feeling a lot of people blame their internet service provider when maybe their Wi-Fi is not configured particularly well. And if you have any sort of insight on how that affects this whole process.

1:36:43:

John Honker: Well, that's a great insight to begin with, Chair Forss -- Commissioner Forssell. Reliability is somewhat subjective as we look at it. There's some tools inside the speed test that will give us performance measures of their internet service. Because most people -- most households -- don't have their computer directly wired into their internet modem. They have wireless. Right? We all have wireless. I'm on wireless right now. We always have that variable that we have to control for. Right? We always have a wireless service, which may interfere. Right? Maybe I have, you know, a metal plate in my wall. Or a riser. Or a steel column. I can't do anything about that. I'd love to blame it on the internet. Right? I'd love to blame it on my ISP. So, rather than using that as sort of a measure of, let's say, control -- or a measure of how we determine, you know, a service package, let's say, for internet, we want to look at bigger trends. How often has your internet service provider been down? Right? As we look -- There's tools on the internet that we can use to determine, within the existing providers, how often have they been down, how often have they had network issues. And that's true quantitative data. Right? And if we can prevent some of that with Palo Alto Fiber, of course, that will create a more -- a higher reliability. What we can't control is what's behind the router. Right? Which we call behind the meter on the electric side. We can't control what's happening on the wireless networks.

1:38:28:

Commissioner Forssell: I basically agree with you, except maybe to point out that that would be a differentiator, if Palo Alto could provide some in-home consulting around really optimizing the setup -- "behind the meter." You know, in the home, or in the business, that actually is a potential differentiator.

1:38:47:

John Honker: No, that's actually a great point. And most municipal utilities do that. Because of exactly that problem. If you can control the environment inside the home. Meaning, if I'm the service provider, and I have control over the wireless network inside the home, I know when there's an issue. And I can be proactive with a customer, and call them if there is an issue. Because it helps them fix it. And it keeps your reputation really strong with the customer. So, that usually also avoids, you know, a call to the call center. And in some cases, it avoids a truck roll. Meaning that if, you know, a customer has continued problems, eventually, the utility will have to dispatch someone. Right? And that's expensive. And that, you know, 1) the customer's really frustrated, and 2) you're having the expense of a truck roll to go fix a problem that, truthfully, is in the customer's home. So, if you have access to that equipment, which most of the broadband systems of today allow, you can control that environment, and preemptively

improve reliability.

1:40:02:

Commissioner Forssell: Thank you.

1:40:03:

John Honker: You're welcome.

1:40:04:

Vice Chair Johnston: OK. Any more questions at this point? Or should let John go on?

1:40:10:

Council Member Cormack: Oh, somebody's echoing. Um. Chair Johnston, might I ask a quick question?

1:40:16:

Vice Chair Johnston: Sure.

1:40:17:

Council Member Cormack: Thank you so much. In the presentation so far, about location -- neighborhood-specific streets, my sense, from talking with people, is that it varies greatly, depending on where you are in the City. Have you found anything so far of interest in the data about specific areas within the City that might be more or less likely to be interested in participating in this program?

1:40:45:

John Honker: Commissioner,

Council member.

we will find that out here in the coming weeks, as we start to look at the data behind the survey. As the survey -- You know, as we collect the data. We have all the addresses. So, one thing that we're doing now is building heat maps, to understand the different dynamics around, you know, what cust- -- where customers are located, what prices they're paying, what providers that they have in the City today. So, you'll be seeing that come out here in the coming weeks, as we -- as our snapshot of the survey is done. As we start to pull that out. We've already started to work with your team to get a preliminary heat map out of the survey responses. Right? Just to show, generally, where people have responded. While not giving away specific addresses. It's going to be very sanitized and generalized. But, behind the scenes, we'll have data on providers, speeds, prices, and locations of each survey respondent. And that will go a long way in helping you develop the best business case for Palo Alto Fiber.

1:42:01:

Council Member Cormack: Yeah. I -- My personal belief is that it's going to be about speed. Everything I've read, everybody I've talked to, you know, other play- -- when I've been at other people's houses and vice versa, there is great differentiation in the City on that. And so, I think that's an opportunity. Thanks.

1:42:21:

John Honker: You welcome.

1:42:45:

Vice Chair Johnston: OK. So, I think it was actually helpful to have that pause, and be able to talk about the survey. And now we can move into the financials.

1:42:38:

Slide 11: Competitive Analysis

John Honker: Great. So, we've really covered this slide here, which is the competitive analysis. And that analysis, we've talked through that. Great questions.

Slide 12: Staffing/Vendor Resources

We'll go through, now, sort of the business models, and an update on the financial analysis. So, as we look at it, let's think about the business model generally in two parts. One, we have the cost estimates for the network. Right? The capital, and the investment that's going to be necessary to build Palo Alto Fiber's network, and ensure it has the capital it needs to continue over time, in terms of renewal and replacement, and reserves. On the operating side, we want to -- you know, we're looking -- well, we've looked at the business models surrounding the network. So, what really -- And the goal is to determine the best mix of resources, and -- both internal and external, for Palo Alto Fiber. And I think, as you're looking at these slides, and you're thinking about business models for Palo Alto Fiber, there's no right and wrong way to do it. Right? It's all a matter of controlling cost and quality, among some different options. We talked about, as Dave mentioned, the insource model, which is effectively full Palo Alto employees staffed for the entire construction and operation of the network. Meaning your employees are managing the network. You're providing service. You're running the business. You're running the utility.

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The opposite of that would really be more of an outsource model, where, you know, all the key functions of the network are outsourced to third parties, either because of internal capabilities aren't there, or there's a cost savings in outsourcing versus insourcing. And then there's some in-betweens.

Right? There's some opportunities to insource -- meaning to staff some positions directly as employees -- and there's opportunities to outsource certain functions. So, as we look at that, this matrix kind of gives you an idea of how that work was carried out by the project team. Because we looked at, you know, where existing resources made the most sense to leverage and utilize with Palo Alto Fiber. Things like Finance and Accounting, General Management, Billing, Customer Service, and Legal. Areas where the City has existing capabilities and could scale those capabilities into the broadband business. We think about new hires as those areas essential to the operation of the business. In an insource model, you're hiring the entire staff. Right? All employees. In an outsourced model, you're outsourcing most of it. But even in that model, you can't really outsource the entire network to a third party and not have inside resources to manage that third party. It's also very difficult to make a business successful -- a broadband business successful -- if you don't have some core functions that are managed from within. Right? Functions that are really core to the organization. Things like Sales and Marketing, you know, Operations Management, Field Services, Customer Service, and Quality Control. Now, these don't have to be staff level positions. But in a more outsourced model, or a hybrid model, you may have inside management, who's controlling this, but then outsourced vendors who are actually fulfilling the work. And operating the network.

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And then, finally, strategic vendors. We look at these as being sort of more commodity-oriented work. And opportunities for -- where Palo Alto may not have the skill set internally, to outsource to a, you know, either vendors in the tech support area, overnight customer service, engineering and design, construction, and construction management and inspections. We also look at opportunities where you may transition from one business model to the other. For example, if you're building the network, you'll need a Program Manager. You'll need Construction Inspectors. Right? For the right-of-way. For underground and for aerial, on CPAU's poles. You'll need Engineering Services. All of those are needed with a construction project. Once a construction project is complete, a lot of that staff will go away. So, in this case, is it better to hire a strategic vendor to manage the construction of the network, and then, once they're complete, you know, that's their scope of work. You know, they're finished, and it's turned over to the City to operate. So, there's some of those opportunities to phase and transition from one preliminary business to another over time. There's also the opportunity to learn. And to grow those capabilities in-house, but outsource them initially. Things like Tech Support, Network Operations, more of the technical functions, where Palo Alto may not have those capabilities today, but as you grow, and as you learn from the vendors who may be managing that from Day One, those functions could be insourced over time. If the business, you know, required it. So, what's really important in this matrix, in just thinking about the business model, is that it's very fluid. Right? The goal is to, again, control costs, control quality for the end customer, to make Palo Alto Fiber successful.

1:48:25:

Slide 13: Staffing Estimates for Business Models

Just some data on how we've looked at the business models. So, you know, as we've looked at the three -- Insource, Hybrid, and Outsource -- this will give you an idea of what staffing requirements would be needed in each business model. So, if we look at a purely Outsourced option, where you just have management, controlling contracts with strategic vendors, you know, you're looking at, potentially, about 5 FTEs in Palo Alto Fiber. Five full-time City employees. Versus a Hybrid model, where you're controlling some of those functions internally, but you're outsourcing other functions. And, in this case, we looked at about a 70-30 model, where Palo Alto is outsourcing about 30 percent of the functions, and insourcing about 70 percent. That can absolutely change. Right? Depending on how you want to deploy Palo Alto Fiber. But that gives us a larger requirement for staff. Right? Closer to the 17 FTEs. And then, finally, the Insource model is about 25 FTEs. So, 25 new employees for Palo Alto, for Fiber. And then, you know, we talk also about the approach of outsourcing the functions during the first few years. Like construction, construction management. But then insourcing those over time, as Palo Alto picks up the capabilities to manage those specific functions.

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Slide 14: Summary of Staffing Models

So, in financial terms, you'll see some preliminary numbers in the packets around the different models, and the differences in staffing costs for those models. You know, as we look at Insourced versus Outsourced, there's a pretty significant difference between those two models. Hybrid's not -- You know, the 70-30 Hybrid model didn't give us a very significant change. There's, again, many different iterations to look at, as we go through this process. But what's important is really -- You know, the core numbers on these bottom rows. Right? So, over, let's say, a ten-year period, we're estimating your Insourced staffing costs are about \$55 million, versus your fully Outsourced costs, around \$38 million, all in. And that's a combination of FTE costs and vendor costs that are being used. So, we look at these staffing costs, in the top three rows, as really being -- you know, the actual cost of employees and overheads for Palo Alto Fiber. Again, as we look at Insourced, growing to about \$6 million, versus about \$1.5 million in the outsourced model. Now, of course, since we're outsourcing quite a bit of that, in that fully Outsourced model, our vendor costs are growing significantly. Right? Because we're pushing most of those functions to the vendors, which is giving us about a \$3.5 million cost with strategic vendors on an annual basis. You know. Versus the Insourced model, where you're, you know, using your employees to do that. We're looking at about about half a million a year. So, when we bring that all together -- the Palo Alto staffing costs plus the vendor costs -- you know, our totals Insourced, about \$54-\$55 million, versus \$38 million for the Outsourced. So, it's a pretty big difference between those two. But what's also important is not only the cost. Because as we're moving some of those functions outside to strategic vendors, we are losing some control. Now, you can control quality in contracts to some degree. But we will be at -- For the savings that Palo Alto Fiber will receive by outsourcing some of these functions, you're also going to be dealing with vendors who have, you know, other business. Right? And they're going to be -- you're going to be utilizing, say, shared staff for tech support, call centers, etc. Versus having dedicated in-house staff to be managing that. Right? That's just one of the outcomes of outsourcing some of these functions. The quality that's delivered. Can we get the best vendors to participate, to give us good pricing, and to deliver the quality that Palo Alto would expect if it were providing services itself.

1:53:03:

Slide 15: Key Takeaways

So, you know, some of the key takeaways, as we look at this, is the balance of quality versus risk and control. If you want to think about the retention of key staff and vendors. One thing that's very important, as we look at

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this Insource versus Outsource option. There's no silver bullet for the Outsourced option. Meaning that there's no single vendor who really can perform all of these functions simultaneously, as a single outfit. So, you know, you're going to be working with multiple vendors, multiple supply contracts to achieve this. Which does complicate things. Right? There's some finger-pointing between vendors if there's issues on the network, that you'll have to deal with. Right? So, there's, like I said, no silver bullet. It can be done. And it's completely feasible to do. But it's not a light switch,

where we just outsource all of the operations to a vendor and expect that, you know, everything will go smoothly. So, picking the right vendors is really important.

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It's also very, very important to be able to adapt. Because you have those vendors in place, and they have -- a few have, effectively, fixed costs with those vendors, we have to think about making sure that the business can adapt to changing market conditions. So, for example, if your take rate is considerably higher than you anticipate, and you have in the call center -- let's say you have 30 percent more volume in the call center than you expect -- can your vendors scale, to be able to handle that? So, due diligence on these key vendors, for tech support, network operations, construction management, etc. is really critical, as we all move forward, and looking at the best solution.

1:54:56:

Slide 16: Financial Plan

Vice Chair Johnston: So, John, might we pause again, before we go on to the financial plan?

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1:55:00:

John Honker: Absolutely, Commissioner. Vice Chair.

1:55:03:

Vice Chair Johnston: OK. I think Commissioner Smith and Commissioner Forssell both have questions. So, Commissioner Smith.

1:55:11:

Commissioner Smith: Thank you, Vice Chair. I appreciate it. John, thank you so much. I appreciate that. On your numbers of the Summary of Staffing Models.

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And you alluded to this in your comment just now. I assume these staffing models are assuming a 32 percent take rate.

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John Honker: They are. Correct. Yeah.

1:55:29:

Commissioner Smith: I think that's important to note. I think what might be worthwhile in the 10 percent that we have yet to do is to identify that -- what the count is, in terms of what that means. And, a 32 percent take rate, what that means in terms of the number of lines that we're delivering. And what that means in terms of how many FTEs are necessary to support X number of lines. Right? Just to give a basis of orientation. Because what we see here is GREAT. But it shows a very flat-lined growth over the extended years. Which is -- would be the ideal case. But if your take rate is -- If we're going in at what we consider to be conservative, at 32 percent, but we suddenly get a take rate of 65 percent on day one, these numbers are wrong.

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John Honker: Right.

1:56:19:

Commissioner Smith: And we need to be aware of that.

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John Honker: So, that's actually a great point, Commissioner Smith. So, I think what we should do is sort of a range. Let's look at, you know, as we get survey data back, and we look at those take rates, let's do a high, medium, and low. So, we create sort of a wedge. Right? In a graph, to say, you know, our costs are going to end up somewhere in this range. Right? Inside of this wedge on the graph. Rather than trying to peg it to a specific number. Because if you grow too fast, and don't have enough customer service agents or installers or tech support, you know, the quality is going to suffer.

1:57:01:

Commissioner Smith: I 100 percent agree. And I think one caveat to that -- in addition to that -- what I would want to show Council and our fellow citizens in Palo Alto is that, despite we're at a take rate that might be higher, our capital investment is planned in this model. So, our capital investment assumes full roll-out to the entirety of the City of Palo Alto. So, it's -- That doesn't get bigger simply because our take rate goes from 32 to 65 percent. There's incremental adds for individual households, but not the X million --

1:57:38:

John Honker: Not the magnitude that -- Yeah. Exactly. And that's important. Because there will be some variable capital costs with higher take rate. Just for example, if you added a new substation and 2,000 new electric customers, you need variable capital for meters. Right? So, in the broadband world, if you have 1,000 more customers than you expect, you need 1,000 more service drops and 1,000 more routers, to service those customers. So, as we develop that, let's make sure we do a high, medium, and low, so we can look at both the increases in staff, which will drive increased operational costs, balanced with the increasing capital, and revenues that are going to be coming in. Right? Because the revenues will support the

higher operational costs. But, on the front end, may need some more capital, to cover that additional take rate.

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Commissioner Smith: Brilliant. Thank you so much.

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John Honker: You're welcome.

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Commissioner Forssell: If I may, Vice Chair Johnston?

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Vice Chair Johnston: Yeah.

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Commissioner Forssell: Thank you.

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Vice Chair Johnston: Please.

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Commissioner Forssell: So, yeah, Mr. Honker, I appreciate the analysis so far, and fully appreciate that there are a lot of qualitative factors besides estimates of -- cost estimates, in different staffing models. But, even looking at the cost estimates in the staffing models, I'm struck that the fully-outsourced does seem to be significantly less expensive than fully-insourced or hybrid. And it's especially driven by the difference in costs -- just over the first few years, '23, '24, '25, and '26. Can you help me understand why the estimates -- in a year like 2025, for fully-outsourced -- like, why there's so -- why the vendors are so cheap?

1:59:43:

John Honker: Yeah. That ---

1:59:45:

Commissioner Forssell: To complete tasks that require 23 full-time employees, if it's insource, it only requires \$0.87 million vendor cost in the fully-outsourced model. That doesn't seem to make sense to me.

1:59:58:

John Honker: Sure. That's a great question. So, as you're looking at those numbers, and we look at the first few years, the -- You know, in a fully-insource model, Palo Alto has to ramp up its staff completely, to be able to service that customer load. Meaning you have to hire well ahead of your customers. Which means, you know, by -- let's say look at year 2 -- you're effectively at 19 FTEs, but you're only connecting, you know, the first year's customers. Right? And the next year -- So, staffing requirements are front-loaded ahead of your customers. In an outsourced model, you're paying more by the drink. You're paying as you go, for those customers that are connected. So, you're not managing all that front-end cost. The down side of that, of course, is, you're more -- you're in a shared pool of resources, where you may have a vendor who's managing, let's say, four or five different broadband networks, and you're getting a slice of their staff, versus dedicated full-time staff. So that's why you see, in the first couple of years, those numbers are considerably lower. You know, by a couple of million dollars. And then they catch up in the later years, as the demand of those customers ramps up.

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Commissioner Forssell: Got it. So, the reason vendor costs are quite low in the early years, in the fully-outsourced model, is just they don't have much to do, so you don't have to pay for it.

2:01:36:

John Honker: Right. You're paying -- You're effectively -- Most of the vendors will bill you by the customer. So, if you only have a few customers in the first year, there still may be a minimum commitment. But it's going to be considerably less than staffing 19 FTEs, that unfortunately, in that first year, may not be doing a whole lot. Right? Because you have fewer customers than you -- you have more staff than you need for those customers. But it's very difficult to hire right on time. Meaning, if you need another FTE to service the next 1,000 customers, it's very difficult to hire that right in the nick of time. You almost always will have to staff that before. Especially in the job market that we've seen, it's difficult to do that. The vendor environment gives you some flexibility, because that pool of staff is already ready to serve those customers.

2:02:35:

Commissioner Forssell: Got it. Thank you.

2:02:36:

John Honker: You're welcome.

2:02:37:

Vice Chair Johnston: So, if there are no other questions, I do have -- I have a couple. John, you note, at the bottom of slide 13,

2:02:52:

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that one approach is to outsource functions during the first several years, and then bring them in-house. And I just have a sense that -- Well, I share the point that -- I share your key takeaway, where you say that the speed to market and scalability is vital to success. And I'm not sure I can explain exactly why, but, to me, those two things go together. And to -- in terms of speed and -- speed to market and being able to really do a good job for the initial customers, my instinct is that we want to do kind of more outsourcing on the front end, get that expertise. And we could build that expertise in-house over time. But you want to have the expertise available on day one, so you don't have disappointed customers. 'Cause you really want to build the brand reputation from the very start. So, it's a long way of asking the question, whether there would be a way to model the idea of kind of ramping - - starting with more outsourcing, and then ramping down the outsourcing over time?

2:04:12:

John Honker: Yeah. Absolutely, Vice Chari. We can do that. And we suggest it, because we -- You know, our recommendation is to actually move in that direction right now. That's the way we see most municipal utilities doing it. So, we think that should be one of the options that we model out for you as we get a little closer here. You know. And, to add some color to that, you know, when you're building a broadband utility, you're really building two companies at the same time. One is focused purely on the construction project. Right? You're building a -- potentially a \$100 million network. And all efforts have to be focused on making sure that that network is built on time, on budget, that the community is protected, and services ready when you say it's going to be ready.

2:05:06:

The second business is the operations business. Right? Making sure that all the processes are in place, and all the people are in place, to turn on ** [Zoom gap] without a blip, and without having any quality issues. Or, minimal quality issues. Or, being able to deal with those quality issues effectively when they come up. So, what does really become challenging in the field is when a utility is trying to manage both of those simultaneously. Right? And that definitely is where see the opportunity to outsource, on the front-end, the construction management, inspections, engineering, while Palo Alto Fiber is building its -- getting its legs under it. And on the operations business, that takes a huge headache away from the utility.

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Vice Chair Johnston: So, if you could model that, and we could look at that, kind of with these other financial models, I think that would be very helpful. Because my instinct is that that is the way we're going to want to go.

2:06:09:

John Honker: OK. Yes, sir. We'll do that for you.

2:06:12:

Vice Chair Johnston: All right. Thank you. So, any further questions at this point? Or should we get into the numbers? OK. Thank you.

2:06:25:

Slide 16: Financial Plan

John Honker: Great. So, looking at the most recent estimates, we'll start first with the capital costs for the network. Compared to what we had seen sort of in 2021. If you remember, last year, as we were going through the first leg of the design process, we did come up with estimates, utilizing, again, local contractors, for pricing on the construction of the network. And as we did that, we saw that we had a cost for each piece of the network. The fiber backbone, which we had talked about as the network that's going to serve the City needs: the utility, other departments, everything that the City will need operationally for itself, internally, to continue to grow and have its OWN connectivity. About \$22 million. The fiber-to-the-home network estimates are about \$86 million. We saw that about -- as we looked at the engineering design, if those two networks are built together, there's about a \$4.5 million savings. We also identified the fact that you'll need about \$12.5 million of start-up funding. Right? Start-up capital. That gives us about \$116 million of total costs. The late -- The most recent cost estimates went up a bit, from \$116 million to about \$128 million. And that's, frankly, the result of materials shortages in the market, and some labor dislocations. We've seen more inflation in materials than we have in labor. Anything that has plastic in it -- such as conduit, fiber jackets, boxes, vaults, splice cases -- any of the technical material that, you know, is used to build a fiber network, we have seen inflation in that. And some supply chain issues. So, as late as last -- the end of last year, we were looking at about \$128 million total for the project -- up from \$116 [million]. So, it's -- You know, the inflation -- We had some pretty significant contingencies in our original '21 estimates. We increased those a bit, based on that new pricing, and added some additional contingency, given the environment that we're in. Right? There are still a lot of unknowns out there, as far as fiber materials and supply. What we've seen recently, over probably the last 60 days, is a little bit of loosening in the supply chain market, and a bit more loosening in material availability. Which is good. We're going to continue to track that, because we think that, as that market opens up, some of these prices will come down a bit.

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So, overall total project, which includes the fiber backbone and fiber-to-the-home, assuming they're built together, to -- you know, with the potential \$8.5 million of savings, is about \$128 million in total cost. As we look at the funding, if you all remember, the -- as we worked with City staff, the concept was to leverage the existing Fiber Fund, which had a balance of about \$32.5 million in it, along with about a \$10 million contribution from electric toward the fiber backbone. Because the electric -- CPAU will be one of the beneficiaries of the backbone. The fiber backbone. So that contribution from electric will be used to support a portion of that financing. That gives us a balance of \$42.5 million in total financing -- or, total funding that's available today. So, if we take that \$42 [million] off of the \$128 [million], we need about eighty -- a little less than \$86 million in new funding required. For the backbone and the fiber-to-the-home together. Now, over the next couple weeks, as we get additional pricing estimates back from contractors, we'll see if this number changes. We have two local contractors that we're still waiting for pricing back from. So, if we see them come back, it may change these averages. But we feel that these are safe numbers right now. We don't expect them to be -- ah -- to increase from where we're at today.

2:11:22:

As we get into the financials, I realize that it's -- there probably will be more questions. So, yeah, please interrupt me at any time. I think Commissioner Smith has a question.

2:11:30:

Commissioner Smith: Thanks, John. I appreciate that. And I do indeed. And my questions might be for staff. If I look at the existing Fiber Fund of \$32.5 [million], it's my understanding that that was the Fiber Fund balance as of January. What do we anticipate, or forecast, for the Fiber Fund to be in December of this year? Can I assume it's going to be \$36.5 [million]? An additional \$4 million? Or is that too high?

2:12:02:

Dave Yuan: That's a little bit high. I think for FY'22, I think the net income is about \$1.2 million. Whereas, previously, it was more like \$2.5 million. So, there has been a drop in revenues. So, I will be conservative, and say maybe \$1.5 million a year.

Is \$1.5 million per year the "new normal" for the dark fiber network? It used to be more like \$4 million per year. What changed?

2:12:18:

Commissioner Smith: OK. So, roughly \$34 million. In December.

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Dave Yuan: Correct.

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Commissioner Smith: OK. And the contribution from the electric to fiber backbone, Dave, is that a -- How do I say this -- is that a loan from the electric fund? Or is that a contribution to the fund, because we're using the fiber backbone to support electric?

2:12:40:

Dave Yuan: It's a contribution. That part of the backbone will be owned by the electric, and we wouldn't lease the fiber to them. So, they would own that fiber to the substations.

2:12:49:

Commissioner Smith: OK. That -- Those are my questions. Thank you.

2:12:57:

Vice Chair Johnston: OK, John. Why don't you keep going here.

2:13:00:

Slide 17: Sample Pricing Bands

John Honker: OK. So, as we look at this, again -- This is a -- This slide gives us kind of an understanding of the pricing bands. And it may look a little funny, coming after our capital slide, but this kind of sets up our revenue modeling for the network. So, some of the survey data gave us some good preliminary information on where pricing bands should land, for different speed services. And I think, Vice Chair, this is what you were asking for before. You know, as we looked at that survey data, we're thinking that, right now, you know, these would be the typical packages for Palo Alto Fiber service. So, we're starting -- We've got residential and commercial, broken out here separately. And we'd be looking at 4, maybe 5, pricing bands. Now, at the top level, you'll see this 10-gigabit [per second] and 2-gigabit [per second] service. These are really the top-tier services that are available today. Very few utilities -- Well, I should say, some utilities are offering them, but they are sort of the next cutting edge. So, we think it's important for you to have these, because they'll be available in the network that's being built. Meaning, they'll be -- Base on the network that's being built, you'll be able to offer faster than 1-gigabit [per second] speeds. You can offer 2 [gigabit per second] or even 10 [gigabit per second], which is 2 times faster than today's gold standard speed, all the way up to a 10 gigabit [per second]. And, at this point, usability of that, by customers -- Right? There's not a lot of applications that may warrant a 2-gig or a 10-gig speed. But, you know, the competition is offering 2 [Gbps] today, and potentially could offer 10 [Gbps] in the future. So, it's important to get ahead of that, and say that the network is ready for the next generation broadband. And we can support these services natively, if customers want them. We may only have a handful of customers that are going to want them. But it's important to be at that leading edge, so that Palo Alto Fiber is ready to serve those customers when -- And is also marketing itself as, you know, a provider of the future. In the City.

Chattanooga, TN, has been offering 10 Gbps symmetrical service since 2015.

<https://muninetworks.org/content/chattanooga-crushes-it-marketing-technology-and-nearby-communities-community-broadband-bits>

So has Salisbury, NC. As of last September, more than 30 municipal FTTP networks had 10 Gbps symmetrical service.

<https://muninetworks.org/communitymap>

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So, we would be looking at the top tier, you know, 2-gigs, somewhere in the \$95-\$150 [per month] range. Again, that's a relatively arbitrary pricing right now, because there's so few of these services out. The core services are really your internet -- we'll call it Gold. But we'll brand it. You know, come up with good branding for it, specific to Palo Alto. So, a Gold service, which would be 1-gig -- between \$80 and \$95 a month.

Don't forget to talk about upload speeds.

A 600-megabit package, between \$60 and \$80 [a month]. And then a basic package between \$40 and \$60 [a month], at 200-meg. And that's an important speed tier. Because, as you look at the FCC's -- the national definition of broadband, we are moving to 100 megagits [per second], as our standard, from what used to be 25 [Mbps].

Don't forget to talk about upload speeds. FCC's current definition of broadband is 25 Mbps down but only 3 Mbps up. FCC Chair Rosenworcel proposes that FCC raise that to 100 Mbps down and 20 Mbps up.

<https://arstechnica.com/tech-policy/2022/07/fcc-chair-proposes-new-us-broadband-standard-of-100mbps-down-20mbps-up/>

But she might not get enough FCC commissioners to vote to do that. She also wants to define a national goal of 1000 Mbps down and 500 Mbps up.

There's no reason Palo Alto Fiber ought to be limited by FCC's definition of broadband, whatever it is.

So, the question is, does Palo Alto want to offer just the bare minimum? Right? The FCC definition of broadband? Or do we want to offer 200 [Mbps] as the first tier? Showing that you're giving, you know, a lot more to the community than what the bare-bones definition of broadband is. It's also important to realize, as you go up in speed, the marginal cost of providing a 200 megabit [per second] versus a 100 megabit [per second] is close to zero. So, it doesn't cost you any more to offer a 200 megabit [per second] than it does a 100 megabit [per second].

We will also -- We do want to be careful not to cannibalize services. Meaning we don't offer too much speed for too little price. Right? The pricing -- The price line in the market has to be set correctly, so that you're delivering the value proposition, and you're also getting a fair value for that.

2:17:05:

So, these will be refined over the coming weeks, as that survey data is finalized. And then, on the commercial side, you've got similar packages. A Premier dedicated, between \$500 and \$1,000 [per month]. A 500 megabit [per second] package, between \$300 and \$500 [per month]. A 250 meg between \$200 and \$250 [per month]. And then a 100 [Mbps] between \$100 and \$150 [per month]. You'll see that on these, the speeds are different than on the residential. Because business broadband works a little bit differently. Business broadband pricing and speed tiers -- typically you're getting, you know, higher prices. It's always been the way the business market has worked. The business market understands that it's a higher-priced service, typically. Business broadband is more essential to a business' survival than residential, as well. The value proposition is different. So, these are typical speed tiers. We see this in most markets. And, again, these will be refined as we work with you on that final survey data.

2:18:14:

Slide 18: Financial Plan -- Insource

So, this preliminary data will feed into the pro-formas, to help us understand what our revenues will look like. Top-line revenues. And take rates. So, for example, very, very -- um -- very, very high-level pro-forma. For the insource model, again, we're looking at this at a 32 percent take rate over the first 5 years. So, you're achieving -- Well, it's actually 33 percent, but it's a rounding error. But over the first 5-6 years, you're looking at achieving that 32-33 percent take rate. Which yields you about 10,000 residential subscribers. About \$14 million in gross revenues. Minus your cost of providing services of \$5 million. Give you a gross profit margin of about 67 percent. And we're just looking at this 2028 column, 'cause it's a good annualized run rate. That 67 percent margin -- gross margin -- is right in the sort of the sweet spot where most ISPs operate right now. Typically, gross margins for ISPs are in the 65-75 percent range. So, if you're in that range, you know, the gross margin as a barometer for successful operations is usually pretty strong.

2:19:42:

Before I move on, I think Commissioner Bowie has a question.

2:19:48:

Commissioner Bowie: Yes. So, in these service packages, it just -- It's my understanding that many broadband residential and business providers have data caps, that are often far too high to hit. But is that something that has been considered here? You know, is there a data cap that has been packaged into some of these future projections of the 12-gigabit [per second]

Did he mean 2 Gbps?

and 10-gigabit [per second] settings? You know, we might be looking at applications that can hit those. And is that something that would be a differentiator? Will Palo Alto Fiber NOT have a data cap?

2:20:26:

John Honker: Great question, Commissioner Bowie. And, absolutely. "No data caps" is a marketing tool. But it's also a value to the customer. Because those applications will come. We've already seen applications push over 1-gig now. And there will be more of those. So, you know, Palo Alto Fiber should always market itself as "no data caps." Most municipal utilities do, and have done that for years. Because the marginal cost of providing more service, and the marginal cost of you having to buy more bandwidth -- So, if customers are using more -- Just like with electric. If they're using more service, you have to buy more supply. In the broadband world, it's exactly the same. If they're using the internet more, that means you have to buy wholesale from your suppliers -- You have to buy more wholesale from your suppliers. But for every megabit that you buy -- just like every kilowatt -- well, in some cases -- your price goes down. In the broadband world. In the supply -- In the electric world, it may go up. You may have to buy at peak.

I think the comparison with electric is not helpful.

In the broadband, it's the complete opposite. Your price, for every additional meg, goes down. So, when we talk about the opportunity to not use data caps, it's not just a marketing message. It's not just, you know -- It's not something that's going to cost you. It's actually a benefit of the broadband business model that, as you're growing, as you're adding more wholesale supply, your costs are going down. So, we definitely think you should be marketing "no data caps" as part of the service.

2:22:04:

Commissioner Bowie: And so, with that, as these applications are coming online, and ** [Zoom glitch] to those, that may impact the rate calculations. Because, presumably, it would be becoming more competitive ...

2:22:20:

John Honker: Correct. That's right.

2:22:20:

Commissioner Bowie: ... as time goes on. And data caps become real --

2:22:23:

John Honker: That's right. And it's hard to quantify that right now. So, we don't -- We wouldn't say, well, you know, marketing your data service with no data caps will increase your take rate by 10 percent. That may be a little challenging, but we know it helps. Right? And it's just building that, for the combined value proposition to say, if we do these things, we know that customers like them. We know that customers don't like data caps. Right? So, if we can just market, "Hey, no data caps," this is a net-neutral network. And we are -- It's open to everyone at the same speeds, that goes a long way with citizens.

2:23:03:

Commissioner Bowie: OK. I think that's it for now. Thank you.

2:23:07:

John Honker. Yeah. You're welcome.

2:23:10:

Slide 19: Financial Plan -- Outsource

Um, so, as we look at the outsourced model, you know, the numbers are relatively similar in the outsource model. We see, you know, relatively similar margins across outsourcing versus insourcing. What's going to be really important, as we look at the final numbers in all of these preliminary pro-formas is, you know, what's the best mix of -- What's the best business model mix that's going to drive the highest take rate? Because, at the end of the day, more customers, and higher take rates, will offset higher operational costs. So, I think as you think about this, and you start to look at the data, over the coming weeks, as we get final pro-formas put together, it's really important to assess, you know, which business model is going to drive the highest take rate. Because take rates will offset a lot of the cost challenges. Right? Meaning, higher take rates will give us a better opportunity for much higher revenues. And then we can have more flexibility in how we manage our operating costs over time. So, we'll start to work with you on that, here in the coming weeks, as we finalize these. And then, also, what's really important is look at our sensitivity analysis ...

2:24:33:

Slide 20: Financial Plan -- Comparison

2:24:36:

Slide 21: Sensitivity Analysis -- Take Rates

... in the key variables. So, as we start to look at business decisions around Palo Alto Fiber, what are the decisions, and what are the outcomes of different scenarios? Meaning, what if competition drops prices 20 percent? How do we respond to that? And what sensitivities does that have on the business models. For example, this is just a very simple graph. We have a whole run of these that use a Monte Carlo analysis, to identify the most sensitive variables, that we have to track. But this sensitivity analysis just looks at the balance of funds at different take rates, over the first 10 years of the network. So, for example, what's really important here is to look at how the cash balances change. And in each year, the numbers here represent the cash balance at the end of the year for Palo Alto Fiber. And the slope of this curve is really typical for most broadband networks. Meaning that we have beginning cash that's coming in. \$17.5 million from the Fiber Fund. \$15 million contribution from the Fiber Fund. And the Electric Fund.

I don't see the contribution from the Electric Fund. (Commissioner Smith also mentions this at 2:43:21.) I also don't see any debt financing.

Which will give us a strong balance of cash in a build-up. But in the first couple of years, as you're operating, you're going to be using those reserves. Right? You're going to be using that cash to operate. And, you know, you'll be in a declining balance. Because your expenses are going typically higher than your revenues.

2:26:17:

Dave Yuan: John? I'm sorry. There's a couple questions. I think it was Commissioner Forssell, and then Vice Chair Johnston, and then Commissioner Metz.

2:26:24:

Vice Chair Johnston: Yeah, I wanted to make sure that Commissioner Forsell and Commissioner Metz got a chance. I'm sorry to interrupt you, John.

2:26:30:

John Honker: Yeah. No, no, I apologize. I'm not able to see the hands on my Zoom. So, just interrupt me at any time.

2:26:36:

Vice Chair Johnston: Neither am I. So, --

2:26:38:

John Honker: [laughs]

2:26:42:

Vice Chair Johnston: Commissioner Forssell.

2:26:44:

Commissioner Forssell: Commissioner Metz will go first.

2:26:46:

Vice Chair Johnston: OK.

2:26:47:

Commissioner Metz: The tricky bit is that here we have to use actual hands. We're not electronic.

2:26:53:

John Honker: Yeah. Right. I can see those.

2:26:56:

Commissioner Metz: They don't show up so well. Um. Well, first of all, thank you very much for the presentation. Also for the discussion on July 20th. The subcommittee discussion.

2:27:09:

I guess the main question I have is, you know, depending on -- a little bit on the scenario, at the end of the day, this has a negative net income for about 10 years. So -- And also, the cash balance pretty much declines under most scenarios. So, the question is, you know, how do we pay -- I mean, this is a real loss. How do we pay for this loss? Or, ideally, eliminate it?

2:27:36:

I had one other question that I think is important to the finances. This is something that Director Batchelor raised in the subcommittee meeting. Namely, that borrowing this amount of money for this business impacts the Utility's borrowing in other businesses. The electric business, for example. So, you know, obviously, the interest rate. So, -- But I think my main question -- I'd appreciate it if you could address that either now or in future presentations. But especially, you know, what are your thoughts on how we pay for -- or eliminate -- losses that are shown here?

2:28:16:

John Honker: So, that portion of the question, Commissioner Metz, is really what the business plan should define. Right? So, as we look at -- In ANY broadband business, we're going to have -- we're going to have working capital needs in the front end of the operation. Meaning, we've got to -- Palo Alto Fiber's is going to have to hire, is going to have to have operational expenses in the first couple of years. And those operational expenses are going to be higher than revenues. Right? As you start to bring on your first customers. At a point that -- revenues have to exceed expenses. Right? Otherwise, you don't have a sustainable utility. So, the question becomes, how do we accelerate that? How do we get revenues above expenses as quickly as possible? And, again, it comes -- why I like to show this slide -- It's all about take rate. What can we do to drive higher take rates in the early years of the project? Because it creates much higher sustainability for the long term, versus, you know, having these declining cash flows over a much longer term. So, we've been talking about, you know, 32 percent as sort of the conservative business case. We look at most utilities. The average take rate is around 40-45 percent.

Is this for municipal utilities, or all utilities?

So, you know, if we're aiming low, in terms of our estimates, and being very conservative, we are also, then -- we expect higher take rates, but let's put in the strategies to build Palo Alto Fiber as quickly as you can, and connect customers as quickly as you can. And that gets into -- that gets back to overall management strategy, potentially, of outsourcing the front end of this to a firm that allows Palo Alto Fiber to focus more on the operational side, but then even bring in those strategic vendors for the first couple of years, to really accelerate growth. Because it's all about -- Like I said before, take rate will dominate, and will really help control the finances. Right? More customers will always give us an opportunity to drive more revenue. And if we can do that in the early years, it's going to carry through the rest of the system in the later years. So, we really would want to focus on '23, '24, '25, and '26. Those are the crucial years, where we need to get as high as we can in take rates. Of course, being cognizant -- it's a business that has to be managed from an expense perspective. But everything has to be focused on achieving those targeted take rates in the first few years of the business. Which means making sure that your sales and marketing team is doing what they need to do, to drive enough customer connections per day to meet their quotas. Once they do that, it's great to be able to, you know, sign those customers up, but then those customers actually have to be connected. Right? So, sales order is generated, processed, provided to operational staff, that then has to go build a service drop. Right? Connect a customer. Turn that service up, and make sure it's functioning to the customer. In the shortest amount of time possible. So, this is the part where it gets very -- It's very important to have a very well-oiled machine, that Palo Alto is building, to be able to not only sign up customers but be able to turn them on in a very high velocity over a short amount of time. So, I can get into more of the details of how that has to happen. But, effectively, that machine -- sales and marketing, construction, operations, you know, customer service -- that has to all be synergized in a way that is moving as quickly as possible, efficient, and has no impact to the end customer.

2:32:19:

Commissioner Metz: OK. Yeah, I would definitely like to see the plan. And, you know, even looking at the chart that you're showing now, you know, to -- even over a period of 10 years, to get the capital balance back to where it started takes -- requires a take rate of about 35 percent. And -- Or, higher. And I think the remark that you just made -- I think it's important, you know, in terms of going from order to customer paying -- you know, paying a monthly fee for the service, again raises the technical question, whether we should be considering wireless, you know, drops, instead of fiber drops, to accelerate that process -- accelerate, you know, our receiving revenue.

I don't think that makes any sense. Wireless drops are less reliable than fiber drops, increasing operating expenses. I'm also not convinced that wireless drops are less expensive.

So, anyway, I'd appreciate that be address in future presentations.

2:33:17:

John Honker: Absolutely.

2:33:20:

Vice Chair Johnston: Commissioner Forssell, do you have a question as well?

2:33:25:

Commissioner Forssell: A quick one, hopefully. It wasn't deep or insightful. It was -- If I'm looking at like the financial plan -- the spread sheet -- on packet page 71,

Back to Slide 18: Financial Plan -- Insource (eventually)

can you help me understand why, when the take rate is zero, there are revenues of \$1.7 million? Just in 2023?

2:33:45:

John Honker: I'm sorry. Which slide number was that, Chair Forssell?

2:33:50:

Commissioner Forssell: Go back. Hit the "back" button twice. Yup. 2023. Revenues of \$1.7 million. With a take rate of zero.

2:34:00:

John Honker: Sure. So --

2:34:00:

Commissioner Forssell: What are the other revenues, besides revenues from customers?

2:34:02:

John Honker: Yup. So, those are revenues -- include the existing revenues coming in from the fiber business.

That is, the DARK fiber business.

2:34:08:

Commissioner Forssell: Oh. I see. Got it. So, that's all rolled in here as well.

2:34:12:

John Honker: Exactly. So, think of this as an expansion of the existing fiber business. Albeit different. But those -- that revenue stream that was coming in from -- the net revenue stream that was --

2:34:24:

Commissioner Forssell: That makes complete sense.

2:34:25:

John Honker: OK. Great. Is included.

2:34:27:

Commissioner Forssell: Yeah. And then -- I just forgot about that. And then, also, it's a super-small difference. But why are the revenues different on the insource versus the outsource financial plan?

2:34:38:

Ping-ponging between Slide 18: Financial Plan -- Insource and Slide 19: Financial Plan -- Outsource

John Honker: The revenues are different -- yeah, by about --

2:34:41:

Commissioner Forssell: Year 2024, 2025, and so on.

2:34:45:

John Honker: Yeah. By about \$0.02 [million].

Outsource is greater than insource, by \$0.02 million in 2024, \$0.08 million in 2025, \$0.22 million in 2026, \$0.34 million in 2027, \$0.40 million in 2028, \$0.42 million in 2029, \$0.44 million in 2030, \$0.45 million in 2031, and \$0.46 in 2032.

It may just have been a rounding issue in the model. But they should effectively be the same.

2:34:55:

Commissioner Forssell: Got it. That was it for me. Thank you.

2:35:00:

Back to Slide 21

Dave Yuan: Council Member Cormack has a question.

2:35:04:

Vice Chair Johnston: OK.

2:35:05:

Council Member Cormack: OK. Thanks, Chair Johnston. Um. I want to up-level this for just a moment, 'cause I think that the point of this was to prepare for the study session with the Council. Is that what I heard?

2:35:20:

Dave Yuan: Yes. That, and also to give them -- the UAC -- a preview of what we're presenting.

Ideally, UAC could advise Council on the FTTP issue.

2:35:24:

Council Member Cormack: OK. Um. So, in our other utilities, which are more regulated than, you know, Mr. Honker describing this would be, we have cost-of-service issues. And we cannot cross-subsidize between the different classes. And we can't charge certain things. So, when this comes forward, we need to highlight that, and explain it. Because it's not going to be intuitive -- to, I would say, at least five of the Council members. One is familiar with it, and I'm getting up to speed, 'cause I'm sitting here. So, I just want -- When we're sort of blithely going through -- like, oh, we charge this different thing, and blah blah blah, we just need to be really clear on that. Because this will be -- feel very different to the Council and to the community.

I'm not sure about what Council Member Cormack is thinking here, but is it about pricing the various speed tiers? Is she saying that Council should consider not cross-subsidizing among the speed tiers, even if not required to do so by regulation.? Would this mean that the per-connection revenues minus expenses for the various tiers should all be equal?

Note that take rate, per se, is not a precise measure of revenues minus expenses whenever some tiers are more "profitable" than others.

2:36:17:

And I'm appreciating the emphasis on take rate. And this -- I feel like we're spending an awful lot of time on the insourcing and outsourcing, and not very -- But I guess one thing I'm thinking is that if price is at the top, just slightly above speed, at least in your survey, I would contest your belief that this is a random sample. I think the people who answered this survey are more likely to be interested.

That's a possibility, although more than half of respondents said they were "somewhat satisfied" or "very satisfied" with their current ISP.

So, I'm not convinced at all that the people who answered are representative of the entire group. So, I'm just going to say that.

2:36:59:

If, in this survey, speed is -- sorry, price is at the top, is one way we could "adjust" these results in the financial models is vary the pricing based on the expenses? Or, is it that you believe the pricing should be flat, and we just get whatever financial result we get? Which of those two, do you think, is most appropriate in this environment? Because this is not my area. I don't run these kind of businesses.

2:37:31:

John Honker: So, we always look at it sort of from the bottom up. Right? We have to build the financial model -- And you want to think about the financial model for broadband as both. Right? It has to be a bottom-up model, where you're building up from your expenses to determine your minimum pricing. But you also, then, have to set your market pricing, based on what the customer is willing to pay, and what the competition charges. Right? And adjust that as appropriate. So, we think about the cost -- the bottom-up cost model -- meaning that we have to build that first. Because you can't sell below your cost. Right? You have to be able to 1) -- as a utility, you have to be able to sell for more than your cost. And you have to be able to eventually earn a profit. Or, earn a break-even in the business, to make it sustainable. I mean, we don't want Palo Alto Fiber to have to continuously have capital infusions, because --

2:38:30:

Council Member Cormack: From who knows where.

2:38:32:

John Honker: Right.

2:38:32:

Council Member Cormack: No, I get that. And -- Yeah, maybe I wasn't clear with my question. If we have two different expense models, as you've shown -- well, three, but let's say two, the insource and the outsource, for the time being -- should we be making our decision more based on the expenses driving the price, or -- I guess I'm not following the interactions.

2:39:03:

John Honker: No, no. I think that makes sense. So, if we look at the two models, your question is, should we be price -- should we be rate-setting based on --

2:39:17:

Council Member Cormack: Our expenses. Yes. Yes. Yes.

2:39:19:

John Honker: And we could look -- We can look at it that way. The question will be -- I think that will remain -- is, what does that mean from a market perspective? Right? Meaning, in those two models, let's say we utilize "cost plus," -- "cost plus" percentage --

2:39:38:

Council Member Cormack: Yeah.

2:39:38:

John Honker: How do we test that from a market perspective then? Does that make sense? So, we can do that, I think. That's an easy exercise to do. I think you're still going to want to set your pricing based on market, to be -- to ensure you're competitive. Right? To ensure you're as competitive as you can be. However, it's a good exercise to say, well, here's our expenses. Almost like you do your utility rate studies. Here's our expense load. And then, here's our margin on top of that. For each one of the business models.

2:40:17:

Council Member Cormack: OK. The other thing that will be important to cover, whenever it is that we have more information on it is the funding for the \$85 million. Which I asked about last time. And now, of course, it's more. [laughs] So, you know, in real detail. Because we do this all the time in Council. Um. You know. Who exactly is issuing it? You know. What's the rate? How long? What -- Is it being bonded against something? Like what's the -- It will be extremely important to me.

Great point. In 2004, the City's FTTP plans fell apart over this issue.

2:40:46:

And while I have the floor, I'm just going to take a moment to say that we've gotten a lot of emails about this survey. And not all of them have been very complimentary. I've gotten some emails from people who were very supportive of this project over the past couple years and are less so now. So, personally, I'm going to be taking a much harder look, you know, at these numbers. And -- um -- you know, when we're making this decision. So, I wanted to share that -- that we're going to need to up-level this a little bit for the discussion with the Council. And I appreciate the -- all the time that the commissioners, you know, have spent on these details. But we will not have anywhere this amount of time. And much of this is going to need to be in the staff report, you know, at -- ahead of time. And then, the slides are going to not be the meat.

I think UAC deserves "real" staff reports too.

I know the staff understands this, but I'm saying this for the benefit of our consultants, and for commissioners, who don't spend as much quality time on Monday nights as some of the rest of us do. So, you know, I mean these to be helpful, constructive comments. And I'm sure I'll have more as we go on.

2:42:14:

Dave Yuan: We appreciate the feedback, Council Member Cormack. I think, for the \$85 million, it is built into the model, John. Correct me if I'm wrong. There is the assumption that we will bond-finance the \$85 million. And then, depreciation, it's either 10 or 20 years, depending on --

The next staff report should say more about depreciation. The fiber infrastructure, if designed correctly, won't need to be replaced for decades. How long will 10-Gbps (symmetrical) electronics be good enough for most people? It should be possible to upgrade electronics only for the people who want a speed increase.

2:42:28:

Council Member Cormack: We, the City? We, the utilities? We, the fiber company, that doesn't have a governance structure yet?

2:42:34:

Dave Yuan: Yeah, we haven't gone that far yet. But the assumption of 5 percent return. Interest rate.

2:42:37:

Council Member Cormack: Yeah. But that's going to matter. Right?

2:42:39:

Dave Yuan: Right.

2:42:40:

Council Member Cormack: It's going to matter what ratings we get. Depending on how we structure it. It's not apparent -- I mean -- You know, I don't know enough about this to know. But I can imagine a scenario under which, if it's not actually the City -- if it's some new governance structure, we won't necessarily have the City's bond rating. And then, you know, what are you going to have?

2:43:03:

Dave Yuan: And we're also exploring, still, federal loans and whatnot, to see if that's available or if we're qualified.

2:43:06:

Council Member Cormack: Yeah.

2:43:06:

Dave Yuan: So, hopefully, we'll have that information by September.

2:43:11:

Council Member Cormack: OK.

2:43:15:

Vice Chair Johnston: Commissioner Smith, do you have a question?

2:43:21:

Commissioner Smith: I do. I have both questions and a couple of comments. The question is, on this particular chart, in particular, I see the \$32.5 million contribution from the Fiber Fund. But I don't see the \$10 million contribution from the Electric Fund. Is that missing?

2:43:40:

John Honker: Yeah. No, this will be -- The \$10 million was in -- was set aside in capital for the fiber backbone. So, it's already in the capital number. So, it's not showing up here on the cash. In this -- So, that's the --

2:43:53:

Commissioner Smith: \$10 million on day one?

2:43:55:

John Honker: Correct.

2:43:55:

Commissioner Smith: OK. OK. So, these are end-of-year -- or end-of-fiscal-year -- capital available. Correct? From 2023 to 2033. Correct?

2:44:11:

John Honker: That's right, Commissioner Smith. So, basically, end-of-year fund balance.

2:44:16:

Commissioner Smith: Have we established a base by which -- that is that working capital base that we need to be at? As -- Just a reminder to everyone: this is a public entity. We're not driven by a profit margin.

Yes.

We are driven by our ability to deliver this service -- the best quality service -- at a marginable rate, that we can maintain the service, and maintain the business. Just like we do with our electric.

Well, our electric utility transfers money to the General Fund. Is that what we want Palo Alto Fiber to do? I had been assuming not.

At least that's my opinion. Now, if I'm alone in that, I welcome comment. We don't need to make a significant amount of profit in order to make it a viable business. So, to that, I would argue that some of these working capital values that are here at the end of the year -- or the end of the fiscal year -- may be too high. And our assumptions should be closer to break-even, not necessarily into bankrolling \$46 million by the end of year 10. What would we do with \$46 million that we couldn't spend on anything else other than fiber? That would be my question and comment.

2:45:16:

The other comment I have is: I appreciate Council Member Cormack's comment about emails from the public. Personally, I'm thrilled. One of my greatest concerns -- and, in fact, one of the greatest concerns of the UAC from three years ago -- was that we would not get public participation in the discussion about doing fiber-to-the-home. And I am thrilled -- both pro and against -- that we are getting public commentary. And if they are indeed emailing City Council members, I would hope that the City Council would make that available for discussion in the final report. So, thank you.

2:45:59:

Council Member Cormack: Let me just interrupt. Commissioner Smith, those public records. If they go to the City Council, anyone can see them. They're up on the website.

Yes, emails sent to city.council@cityofpaloalto.org go a place linked to from Council agendas.

Emails sent to individual Council members aren't public records, but we're not talking about them. Right?

2:46:08:

Commissioner Smith: Brilliant. Thank you so much. Again, just reemphasizing the point, public discourse on this subject, given the great value that we're talking about bringing to the City, I think is incredibly important and necessary. Thank you.

2:46:27:

Vice Chair Johnston: So, I had a comment to kind of follow up on Commissioner Smith's comment about the, you know, building up \$45 million in the fund. Am I right that if we are building up, you know, amounts like that, we can use it to pay down the debt faster.

Great point.

2:46:53:

John Honker: And from our perspective, absolutely. I mean, retiring -- You know, if there are no principal repayment penalties on the debt, and there's a fund balance available, after reserves, then retiring the debt early is always an option.

2:47:10:

Vice Chair Johnston: And I would think that would help us with, you know, other -- financing for other projects. So -- I mean, just as a comment, what I have gotten out of the discussion, both tonight and the discussion we had at the fiber subcommittee -- First of all, John, thank you for all that you've put together for us. I think it's very helpful to see this. I appreciate Council Member Cormack's point that this is going to -- It's a lot of information to dump on people who haven't been following this as closely. And we do look to you to make this simple. But I -- To me, what I get out of it is that there are lots of opportunities for us here if we can design the system and set the pricing so that we can really get a significant take rate. This chart shows what a difference it makes, even between a 32 percent take rate and a 50 percent take rate. We've got half the people in the community who have already said they've cut the cord. It seems to me that if we can provide, you know, faster speeds at lower prices -- or -- which we should be able to do, since we're not -- we don't have to make a profit, you know, we really have an opportunity to capture a significant share of the market. And I don't want to minimize the challenges that we're going to face, running a business which, unlike the rest of the businesses -- This has got competition. You know. We're in a commercial business. We have the advantage that we're not under some of the same constraints -- the cost of service constraints -- that we are under the -- in the regulated utilities. But we also have competitors, which we haven't had to deal with before.

The electric utility had competitors during the days of electric deregulation in California, and it survived. In fact, the electric utility created a special fund to cope with competitors. After the competitive threat disappeared, Council repurposed this fund as the Electric Special Projects Reserve. That's where the \$10 million will come from.

So, I think there are a lot of challenges here. But if we can manage this, I think there's really some upside for us. And that's my comment.

2:49:48:

Council Member Cormack: Chair Johnston. I'm so sorry. Council Member Cormack. Can I ask one more thing, that I -- perhaps I missed it. But when could this service be available? If somebody wants to buy it, when -- how soon will it be before they can buy it?

2:50:09:

John Honker: Commissioner, was that question for me? Or was that for --

2:50:12:

Council Member Cormack: Staff, or you, Mr. Honker.

2:50:16:

John Honker: Yeah. I can answer that. So, under our assumptions, you know, engineering is complete by the end of the year, this year. You would go into construction next year. And you would be looking at, potentially, being able to connect the first customers, really, by the end of CALENDAR year 2023. So, you know, that would be an aggressive goal, but doable goal. If, you know, the City can move forward in a relatively rapid progression from today.

2:50:50:

Council Member Cormack: And how long would it take until everyone in the City had the opportunity to purchase this service?

2:50:58:

John Honker: We would anticipate a 3-4 year construction project. You know, a citywide construction project, about --

2:51:07:

Council Member Cormack: Yeah. It makes me sick to my stomach to think about that. But keep going. [laughs]

2:51:10:

John Honker: Yeah. We stress about it as well. 'Cause we do a lot of construction projects this size, and we know how hard it is. But, typically, a city Palo Alto's size, we would say 3-4 years. We want to be conservative. You know, closer to 4. The benefit on the aerial -- The benefit of having some aerial construction is that that could go quicker, if the make-ready and pole prep work is done relatively efficiently. So, you know, you have that going for you, as far as that aerial construction. The underground construction is hard work. It's going to be difficult. We can't sugar-coat that. But, you know, cities do it all the time. It's just a process of making sure City departments are aligned, and you have a very high-quality construction contractor, and you have a high-quality construction manager who is overseeing that construction contractor and the schedule and production.

Fort Collins, CO, started building its citywide municipal FTTP network in February 2019.

<https://fcconnexion.com/construction-map/>

It expects to be done by the end of 2022.

[Fort Collins Connexion releases 'find your address' feature, construction map](#)

The fiber infrastructure is all underground. They can't build year-round because of winter weather. COVID was an issue.

2:52:17:

Council Member Cormack: One of the things we're talking about in our electrification process is whether or not we would target certain areas to begin with. Is that something that you would contemplate if we did this? That there would be a focused area, wherever, you know, speeds are worse, or competitors aren't offering something?

2:52:37:

John Honker: Commissioner, there's really a couple different dynamics there. So, from a pure physics perspective, construction of the aerial plant will be relatively easier than underground. Meaning that you could build more for less money, and connect more customers. So, think about that as one of the dynamics, as we work toward the phasing. Right? Which areas should be built first. But you'll also have really granular data on where customers have the most interest. So, that may not line up with

2:53:13:

Council Member Cormack: Right. Yeah.

2:53:15:

John Honker: So, we'll look at different dynamics. Our gut suspicion would be that you want to build in aerial areas first, where you have the most customer sign-ups today.

Is Honker talking about the \$50 deposits?

2:53:30:

Council Member Cormack: OK. Um. You know, the sorts of questions I'm asking -- the more high-level things that are about the -- you know, whether or not to move forward -- not the specifics of the various financial plans -- let's just be sure we've got those, you know, asked and answered before we get to the study session. I've just seen too many of these be unhelpful, you know, for commissions. And I don't want that to happen with this. So, open to thoughts about how I can be helpful, you know, in preparing the staff report. I realize that's not usually done. Maybe, you know -- However it is that we want to do it. But, you know, the UAC has -- it's such a wonderful commission. I love being the Council Liaison here. But we're not going to be able to operate in the same way, when we get to the study session. Just thinking out loud. You know, lots of times we do questions that need to be answered. Sometimes we do this in Finance. You know, the staff will come forward and say, you know, here are the five questions we need answers to. And that might be, you know, one way to think about this. Just to structure it in advance. Um. OK. Um. Thank you.

2:55:04:

Vice Chair Johnston: So, any more questions or comments for John or for staff? John, we didn't let you get all the way through your presentation. But is there anything else you think you need to --

2:55:18:

Slide 22: Financial Takeaways

John Honker: No. I think we've summarized the last slide pretty well. So, we really just -- You know, I think comments from the Commission have been great tonight. Around the financials. And also, I think, one of our takeaways to work with staff on is, as Commissioner Cormack said, leveling up the presentation. Because it is -- I mean, we sit in front of a lot of city councils, and we know how hard it is to get them to digest so much information in such a short amount of time. So, feedback from the UAC and staff is welcome. Absolutely.

2:55:52:

Council Member Cormack: Mr. Honker, it may not be quite clear to you, 'cause you're not here, but I actually am a Council member. [laughs]

2:55:57:

John Honker. Oh, I'm sorry. [laughs]

2:55:58:

Council Member Cormack: No worries. No worries. I just wanted to explain that.

2:56:02:

John Honker: Great. Appreciate the clarification.

2:56:07:

Vice Chair Johnston: OK. Are we -- Sounds like we are done on this item. Great. Thank you, John. I really appreciate. I know it's -- You're not on the West Coast, so it's even later for you. So, we appreciate it.

2:56:23:

John Honker: Absolutely. Thank you, everyone. And, any questions, please let us know.

2:56:29:

Dave Yuan: Thanks, John.

2:56:30:

Director Batchelor: Thanks, John.

=====

From: philmetz@gmail.com
To: UAC
Subject: FW: Hello from Denmark!
Date: Friday, August 19, 2022 3:02:46 PM

You don't often get email from philmetz@gmail.com. [Learn why this is important](#)

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Palo Alto UAC commissioners and members of the public,

I would like to share the following article on how Denmark is working to address sustainability and climate change.

What Denmark has done is highly relevant to our situation in Palo Alto. Though Denmark has one of the lowest natural resources bases anywhere, it has become a world leader in addressing climate change. There's much that we can emulate.

Best,

Phil

Phil Metz
Commissioner, Palo Alto Utilities Advisory Commission

phil.metz@paloalto-uac.org
+1 (408) 821-8059

From: Energy Weekly | Sarah Golden <info@greenbiz.com>
Sent: Thursday, August 18, 2022 12:01 PM
To: philmetz@gmail.com
Subject: Hello from Denmark!

To view this email as a web page, [click here](#)

[Energy Weekly Newsletter](#)



Sarah Golden
August 18, 2022

Hej, from Denmark!

[The Danish Art of Decarbonizing Energy](#)

I've long romanticized Danish culture. Denmark has cracked the code to many social problems that seem intractable in the United States, from free health care to free college. It's figured out how to ritualize the [art of being cozy](#). It's home to the

[happiest city](#) on earth. The politics are so ideal, Denmark was a talking point during Bernie Sanders' 2016 campaign as a role model for the U.S. — an idea that resonated with a generation of young liberals and led to a [Bernie-fueled tourist bump](#) in Denmark.

When it comes to climate, Denmark is just as admirable. Denmark is one of the few countries with a [legally binding goal](#) to reduce emissions, which it set as [70 percent](#) by 2030 and reach carbon neutrality by 2050. (The [United States](#), by contrast, is aiming for a 50 percent reduction by 2030.)

Denmark is nimble. In 1965, Denmark got practically no energy from renewable sources. Today, [30 percent of its energy is renewable](#), ranking 9th in the world. This quickly transitioned away from coal in the last two decades, and today gets 30 percent of its energy from renewables. This progress got itself this year's top performing spot in the [Climate Change Performance Index](#).

As communities and companies across the world are crystalizing decarbonization strategies, what could be emulated from the Danish example?

Sonderborg is Denmark's Denmark

A picture of colorful homes on the water ☐ at sunset



If the world looks to Denmark for clues on effective policies, Denmark could look to Sonderborg, a municipality in the south of the country, for its own inspiration.

Sonderborg has an aggressive plan of action to decarbonize its entire energy system by 2029, and is 55 percent of the way to meeting that goal.

While net-zero is a common guiding principle today, Sonderborg was one of the first — if not *the* first — to set its sights on carbon neutrality. It announced the goal in 2007 — eight years before the Paris Accord, and two years before [Copenhagen](#) made a similar commitment. (If you know of a city that did this earlier, I want to know about it.)

Leading this effort is ProjectZero, a public-private partnership between the city, local companies, and members of the community. (Project Zero, together with Danfoss, a engineering and technology company, footed the bill for this reporting trip.)

Impressively, the ProjectZero area aims to achieve this goal using all-local resources, fitting together specific strategies and engaging local stakeholders to completely decarbonize energy — without importing energy resources or using offsets.

Let's pause to reflect on how ambitious that challenge is. This is a country with long, dark winters — meaning demands for light and warmth are high. There are months on end with very little sun for solar. And Sonderborg is small, with about 100,000 people in the region, so creating a plan to meet all energy needs requires a careful integration of resources.

Core to its strategy is cross-sectoral projects, integration of resources, and buy-in from the community at a city-scale. That collaborative spirit is the secret sauce to a transformational shift, according to ProjectZero.

“The challenge today is to decarbonize cities,” said Brian Seeberg, CEO of ProjectZero. “Things are moving away from components to overall solutions. So we

are both demonstrating how to lead and manage and engage people around climate goals in an urban context.”

Their recipe has three steps: Use only energy needed through deep efficiency, reuse energy already produced, source the rest from renewable energy sources.

Step 1: Reduce energy use

Energy efficiency is ProjectZero’s true north. The organization sees efficiency as an impact multiplier, making all other initiatives more effective, powerful and affordable. According to its research, efficiency can reduce the costs of reaching net zero by almost 50 percent.

Sonderborg has demonstrated this potential well in the residential sector. One housing development, [Linde Haven](#), utilizes advanced efficiency technologies to drive down the energy demands. The 140-unit complex includes smart technologies, such as predictive control systems that can reduce heating consumption by 11 percent, electronic thermostatic radiators to retain specific room temperature, and a system that balances hot and cold water in the heating system, which can save 10 percent of final energy with a payback of one year. It’s so efficient, it is able to run on low-temperature district heat, which can reduce distribution heat loss by almost a third, according to estimates.

A photo of an apartment building



If done well, efficiency could avert the need for costly new renewable power plants, offering deeper savings to communities making decarbonization more possible and feasible.

“It really makes sense to think energy efficiency first,” explained Seeland. “Energy efficiency is, to some extent, boring to talk about. But you’re wasting a lot of energy today, and green transition is expensive.”

Yet despite these technologies existing with attractive payback periods, the world has struggled to keep pace with energy efficiency targets. According to the [International Energy Agency \(IEA\)](#), to reach net zero emissions by 2050 we’d need 4 percent annual improvements in energy intensity — yet we’ve averaged just 1.3 percent globally over the last five years.

Sonderborg’s strategy to increase efficiency globally: Inspire by example, and invite journalists (hi!) and leaders to see demonstration projects. This plan is why ProjectZero invited the [IEA to hold its annual energy efficiency conference](#) in Sonderborg this June, and why IEA’s executive director, Fatih Birol, [dubbed the city](#) the “Global Capital of Energy Efficiency” after seeing its efforts.

Step 2: Reuse energy through connecting projects

Key to decarbonizing energy systems is integrating projects and strategies across the region. ProjectZero did this by breaking down challenges and opportunities into 15 focus areas in buildings, transportation, industry and energy, and finding local stakeholders to drive project management.

While ProjectZero’s master plan is specific to Sonderborg’s resources, the process is replicable for other locales. The insight is the power of considering the unique mix of small solutions in a community that, in aggregate, amplify positive outcomes. This requires ongoing and meaningful cooperation across sectors.

“If you start working across silos, you really start getting to the point,” said Lars Tveen, chairman of ProjectZero. “And you can only do that if you’re able to really convert ‘what is in it for me’ down to citizens, down to the different parts of a society.”

An excellent example is [Sonderborg District Heating](#). The network connects homes and businesses across the municipality into a single system, allowing them to share heat resources for air and water heating. The system reaches more than 80 percent of the homes in the region, reducing their energy demands for space and water heating by 73 percent.

Businesses and industries that generate excess heat can capture that and sell it to the district system, both reducing the amount of energy needed for space and water heating for neighbors and creating a new source of revenue.

One business leveraging this scheme is the supermarket SuperBrugsen. The store installed a recovery unit to capture heat waste from its refrigeration system. That is then reused to heat the store and create hot water — reducing SuperBrugsen’s demands for energy to heat by 78 percent. This is a logical evolution of the standard HVAC model, where heat exhaust from refrigeration is released outside, then a different, energy-demanding system works to get the indoor temperature just right.

The cherry on top: When the supermarket creates more heat than it needs, it sells it into the district heat system to benefit neighboring buildings — while making a little money.

Step 3: Replace energy resources with clean energy

Once energy is reduced and repurposed, the last step is to transition what’s left to clean energy. If the first steps are done correctly, this will be a much smaller lift.

The region already has wind, solar, a biogas facility that uses waste from local farms, a trash incinerator used for heat (which is not considered renewable in Denmark), and a carbon-negative, energy-generating water treatment plant.

Two of these resources — biogas and the trash incinerator — I found particularly intriguing. Both are controversial in the climate community in the United States, and I found Sonderborg’s approach to both refreshing.

Sonderborg see biogas as a valuable tool to transition from natural gas — which it values both for its climate benefit and its desire to break dependency on Russia, which provides most of Denmark's gas. So far it's working: during a particularly warm day recently, biogas made upwards of 98 percent of the gas in the infrastructure — an incredible feat.

In the US, biogas (dubbed renewable natural gas by the natural gas industry) is [locked in a battle](#) where gas companies aim to use it to slow efforts to electrify, and climate advocates are wholly suspicious of it in response. This dynamic means biogas isn't being used where it could be valuable, and the general public is confused. Denmark's clarity here is refreshing.

Four large grey silos



The garbage incinerator was a sight to behold. In the US, this is controversial, as dirty facilities are linked to [environmental racism and pollution](#). The facility in Sonderborg is designed to capture the heat for the district heating system, and a series of flumes capture pollution and toxins to sequester emissions and functionally eliminate impacts to air quality, according to leadership at the facility.

Sonderborg's next step: continue to build out its solar and wind capacity (including an [offshore wind farm](#) that is scheduled to go online in 2027) and create a green hydrogen facility to use excess generation from wind resources. That hydrogen could be used as energy storage or with methane from the biogas plant to create a

variety of fuels for sectors where electrification isn't possible, such as shipping, aviation and plastics.

A picture of an incinerator alight in flame



Women laughing in glasses and a hard hat



A note from the author

I would be remiss to not mention Danfoss, an engineering company that makes components for a variety of technologies like HVAC systems and hydraulics. Danfoss is headquartered in Sonderborg and its family foundation is one of the

fundere of ProjectZero, as well as a sponsor of my trip to Denmark.

Danfoss has a dog in this fight. Part of its motivation to promote energy efficiency is because it manufactures many of the components in leading energy efficiency technologies. The company openly recognizes that energy efficiency will help its bottom line, as well as its desire for other localities to follow the example it has set in Sonderborg to grow its business.

After spending four days with people from ProjectZero and Danfoss, this double incentive does not give me pause. I agree with Danfoss that there is a wealth of opportunity in climate solutions, and I don't think Danfoss' desire to grow its efficiency business is at odds with climate efforts.

Read and share this story on the [GreenBiz site](#).

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From: [Jeff Hoel](#)
To: [Council_City](#)
Cc: [Hoel, Jeff \(external\): UAC](#)
Subject: TRANSCRIPT & COMMENTS -- 08-22-22 Council meeting -- public comment about FTTP
Date: Wednesday, August 24, 2022 5:20:46 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Council members,

At the 08-22-22 Council meeting, during public comment, Steve Mullen opposed citywide municipal fiber to the premises (FTTP). Here, below the "#####" line, is a TRANSCRIPT of his remarks, plus my COMMENTS (paragraphs in red beginning with "###").

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

Video, 08-22-22 City Council meeting:
<https://midpenmedia.org/city-council-152-8222022/>

0:50:53:

Steve Mullen: Thanks. My name is Steve Mullen. I've been here in Palo Alto -- my wife and I, and my ki- -- well, my kids are grown, they're gone -- about 22 years. I'm here tonight to speak with you. Or share my opinions, or my thoughts, on fiber to the home. I was sharing with my neighbor, Ed Feitzinger, whom you know, and asking him how his fiber to the home is working. We both have AT&T fiber. Have had AT&T fiber for over a year. My monthly cost is \$30 on my bill.

How fast is the service?

Here, AT&T says its FTTP-based Internet 300 product (300 Mbps symmetrical) costs \$55/month plus taxes. (It doesn't talk about slower products.)

https://www.att.com/isg/internet/?igp=42922&tel=1-833-804-1759&source=EPDxATFIB20ISGiSP&qclid=EA1alQobChMlxJ_VtYze-QlVMwutBh1H6wRPEAYASAAEgL3kPD_BwE

Its Internet 500 product (500 Mbps symmetrical) costs \$65/month plus taxes. Its Internet 1000 (1 Gbps symmetrical) costs \$80/month plus taxes. Its Internet 2000 (2 Gbps symmetrical) costs \$110/month plus taxes. Its Internet 5000 (5 Gbps symmetrical) costs \$180/month plus taxes.

Here, AT&T says its FTTP-based Internet 100 product (100 Mbps symmetrical) costs \$35/month plus taxes plus a \$10/month equipment fee. (So, that's \$45/month plus taxes.)

https://about.att.com/story/2020/att_fiber_new_options.html

If Mullen is getting a special price, fine, but it's misleading not to say so.

If Mullen is saying that because he has access to the FTTP he wants, he doesn't care whether it's available citywide, I think that's not very community-minded.

And when I read the Daily Post talking about how the City network fiber price might be \$100 million or more, that's a huge, huge number. My view -- I think -- and my neighbors share my view -- is that the role of public -- or local government should be public safety, roads, transportation, library, trash, keeping the lights on.

Palo Alto is the only city in California to have its own municipal utilities for electricity, gas, water, and wastewater. So Palo Altans should know that utilities require infrastructure, and infrastructure is expensive, but worth it.

Which didn't work this morning in north Palo Alto. Nor did it work about two weeks ago in my neighborhood, for about 4 or 5 hours. I think the City does three things really, really, really well. They collect money well. They spend money well. And they give money away really, really well. And I think they've got -- the City -- And I hate to sound like a total Eeyore, or curmudgeon, or whatever. But we only read about the project fails, usually, in a paper. And a couple of projects that come to mind -- in my mind -- are Mitchell Park Library and Fire Station #3. Both beyond the timetable, and both over budget.

So, I guess I'd like to summarize by saying that the City lacks the three T's to effectively manage a project. And that's the time, the tools, and the talent. We're way past time, as my neighbor Ed says. Fiber to the home should have been here 20+ years ago.

Who should have brought citywide FTTP to Palo Alto 20+ years ago? According to this source, only 23 municipalities had started to deploy FTTP by 2002.

https://www.bbcmag.com/pub/doc/BBC_Aug15_CensusCommunityFiber.pdf

At least the City of Palo Alto was seriously studying the opportunity in the 2002-2004 timeframe.

The cost is just going to be ginormous. If we think that that 100 million bucks is going to be the real number, um, we've been in the local cannabis clubs a little too often. The tools -- we outsource virtually everything, including our trash, our street-sweeping. And we'll likely outsource this, because we don't have the tools, the infrastructure, and the people to imple -- to dig this -- to do this project. And the talent to run it. I mean, once you set up another department -- City department -- you just can't get 'em -- you can't get rid of it. It's the gift that keeps on giving. When you set up a department, they live forever.

And I really question the economic sense it makes, for the City to try to compete with AT&T, or even Comcast,

Many municipalities compete with the incumbents and are successful.
<https://muninetworks.org/communitymap>

who currently has Barragan Construction coring the streets in my neighborhood right now.

What is Comcast intending to do with the cored streets? Nationally, Comcast seems to be emphasizing hybrid fiber-coax technology (HFC), not FTTP.

Even though I've had fiber for over a year. I mean, AT&T is a \$130 billion market cap company. Our budget is -- what -- 250 million bucks. I mean, we're not even on -- close to a level playing field with AT&T. So, just remember, my cable bill is \$30 a month.

Just to be clear, Mullen is talking about his cost for internet service only, right? (No TV. No phone.)

We've got 706 people that are apparently interested in the project.

708 people (so far) have been willing to make a \$50 deposit just to show interest, without yet knowing exactly what speeds and prices the City plans to offer.
<https://fiber-palo-alto.hub.arcgis.com/>

And we have a population of 68,000 people. Which represents 0.1 percent.

Palo Alto has about 26,150 households (residential premises).
<https://www.census.gov/quickfacts/paloaltocitycalifornia>
So, the 708 deposits represent about 2.7 percent of residential premises.

Palo Alto recently did a residential survey about FTTP.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/08-03-2022/08-03-2022-id-14582-fiber.pdf>
It found that 57.6 percent of respondents were "somewhat satisfied" or "very satisfied" with their ISP, so that means 42.4 percent weren't.

MuniNetworks says, "Nationwide, the take rates for retail municipal systems after one to four years of operation averages 54 percent."
<https://muninetworks.org/content/community-ftth-networks-get-high-take-rate>
But the City's consultant, Magellan, has chosen a "conservative" 32 percent as the basis for its financial analysis for Palo Alto.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/08-03-2022/08-03-2022-id-14582-fiber.pdf>

So, it's a -- We're punching above our weight -- We're trying to punch above our weight. And I think that's a big mistake. Thanks very much for indulging me.

0:54:09:

Mayor Burt: Thank you. And I'd be glad to discuss with you, to clarify a couple of misconceptions on both the Mitchell Park Library expense and the -- and what the sampling indicated on the -- we can do that offline.

54:24:

Steve Mullen: Oh, sure. I'll leave my phone number with Lesley if you like.

0:54:27:

Mayor Burt: Thank you.

0:54:27:

Steve Mullen: And I guess I'll say, the Creek -- the hotel --

0:54:30:

Mayor Burt: Now, that's --

0:54:30:

Steve Mullen: Where's the water coming from?

From: [Don Jackson](#)
To: [Yuan, Dave](#)
Cc: [UAC](#)
Subject: Questions
Date: Wednesday, September 7, 2022 1:37:44 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Mr Yuan,

I'm looking for some data/statistics (approximate is fine!) relating to the Fiber proposal, specifically:

- How many residences are there in Palo Alto?
- How many PA residences are currently served by ATT Fiber (with either ATT or Sonic as their ISP)?
- How many PA residences COULD get ATT Fiber Internet service?
(meaning, if resident calls/orders, the order will "happen", for example, if I try to order, my house is not capable of being served by ATT Fiber)
- How many PA residences are currently served by Comcast (Internet and/or cable-tv)
- How many PA residences COULD get Comcast Interet/Cable, if they ordered it?

Best regards,

Don Jackson
845 Waverley Street
Palo Alto, CA. 94301

Mobile: +1.408.348.4842

From: [Jeff Hoel](#)
To: [Council, City: UAC](#)
Cc: [Hoel, Jeff \(external\)](#)
Subject: Minutes -- 04-05-99 Council meeting -- FTTH Trial and the Universal Telecommunications System RFP
Date: Friday, September 9, 2022 2:50:58 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Council members and Commissioners,

The URL for the minutes of Council's 04-05-99 meeting no longer works. Worse, even the Wayback Machine can't find these minutes.

<https://web.archive.org/web/20220121071323/http://www.cityofpaloalto.org/cityagenda/publish/citycouncil-archive/1999/990405.html>

So I'd like to provide a copy. Item 17 is about "Fiber to the Home." This is the meeting where Council authorized 1) building a FTTH Trial network and 2) issuing an RFP for a Universal Telecommunications System citywide network.

(Actually, the City document was in a format that was hard to read, so I inserted carriage returns to make it more readable.)

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

PS: A recent report
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/09-14-2022/09-14-2022-id-14742-item-6.pdf>

said the City had been working on FTTH for "going on 15 years." Here's evidence that it's been longer than that.

----- Forwarded Message -----

From: Jeff Hoel <jeff_hoel@yahoo.com>
To: Jeff Hoel <jeff_hoel@yahoo.com>
Sent: Monday, October 17, 2016 at 01:31:25 PM PDT
Subject: Minutes -- 04-05-99 Council meeting

Backup of minutes of 04-05-99 Council meeting -- just in case.

Where Council approved the FTTH Trial and the Universal Telecommunications System RFP

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<http://www.cityofpaloalto.org/cityagenda/publish/citycouncil-archive/1999/990405.html>

City Council Minutes

Regular Meeting
April 5, 1999

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2. Appointments to Human Relations Commission 88-127

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5. Consulting Contract Between the City of Palo Alto and Deloitte & Touche, LLP to Provide Risk Management Consulting Services 88-129

7. Contract Between the City of Palo Alto and Rabbit Office Automation for Citywide Convenience Copier Rental 88-129

8. Amendment No. 2 to Consultant Contract No. C9106646 Between the City of Palo Alto and Group 4/Architecture, Research and Planning, Inc. for Professional Consulting Services Related to the Interior Improvements and Space Planning Project 88-129

9. Resolution 7842 entitled "Resolution of the Council of the City of Palo Alto Authorizing the Filing of an Application for Federal Surface Transportation Program and Congestion Mitigation and Air Quality Improvement Program Funding for the Embarcadero Bridge and Bike Path Project and for the Palo Alto Medical Foundation/South of Forest Area Caltrain Pedestrian/Bicycle Undercrossing Projects" 88-129

10. Resolution 7843 entitled "Resolution of the Council of the City of Palo Alto Authorizing the Submittal of an Application to the Santa Clara County Valley Transportation Authority (VTA) for Funds from the Transportation Fund for Clean Air 40% Program Manager Fund for the Arastradero Road Bike Lanes Project and the Palo Alto Medical Foundation/South of Forest Area Caltrain Pedestrian/Bicycle Undercrossing Project" 88-129

11. Ordinance 4552 entitled "Ordinance of the Council of the City of Palo Alto Amending the Budget for the Fiscal Year 1998-99 to Provide an Additional Appropriation of \$50,000 for Legal Contract Assistance in the City Attorney's Office" 88-130

12. The Policy and Services Committee recommends to the City Council to adopt the proposed 1999 Legislative Objectives as the basis for the City's legislative advocacy in 1999. 88-130

13. Contract Between the City of Palo Alto and N. V. Heathorn, Inc. for the Replacement of a Wastewater Channel Screening System at the Regional Water Quality Control Plant 88-130

14. Contract Between the City of Palo Alto and Power Engineering Contractors for the Aeration Diffusers and Baffle System at the Regional Water Quality Control Plant 88-130

15. Recommendation for Approval of Process for Implementation of a Heating, Venting and Air-Conditioning Unit for the Lucie Stern Community Center Theatre Through Award of Design-Build Contract and Waiver of Committee Review of Scope of Services 88-130

16. Request for Approval of Increased Change Order Authority for Contract No. C8104259 Between the City of Palo Alto and Anderson Pacific Engineering Construction Inc. for Construction of Temporary Seismic Bracing at the Municipal Service Center 88-130

17. The Policy and Services Committee re "Fiber to the Home" 88-130

18. The Utilities Advisory Commission re Requested Guidance on the Utilities Advisory Commission's Role in Telecommunications 88-154

19. Approval of Cost-Sharing with the City of Menlo Park for the Second Phase of the San Francisquito Creek Bank Stabilization and Revegetation Study 88-154

20. Council Members Dick Rosenbaum and Vic Ojakian and Mayor Gary Fazzino re Joint City-School District Project to Add Gymnasium Facilities at the Middle Schools 88-155

21. Council Comments, Questions, and Announcements 88-155

ADJOURNMENT: The meeting adjourned at 11:30 p.m. 88-155

The City Council of the City of Palo Alto met on this date in the Council Chambers at 7:05 p.m.

PRESENT: Fazzino, Huber, Kniss (arrived at 7:10 p.m.), Mossar, Ojakian, Rosenbaum, Schneider, Wheeler

ABSENT: Eakins

SPECIAL ORDERS OF THE DAY

1. Council Selection of Candidates to be Interviewed for the Public Art Commission

City Clerk Donna Rogers announced that Brian Bolitho, Gerald Brett, Michael Chacon, Carol Doyle, Tony Eppstein, Patrice Langevin, David Levin, Patrick Ford, Jane Moorman, Barbara Mortkowitz, and Judith Wasserman each received four or more votes and would be interviewed on Monday, April 19, 1999.

MOTION: Mayor Fazzino moved, seconded by Kniss, that the City Council would not interview the three incumbents, leaving 8 candidates to be interviewed on April 19, 1999.

MOTION PASSED 8-0, Eakins absent.

2. Appointments to Human Relations Commission

Council Member Ojakian thanked the current members of the Human Relations Commission (HRC) who were dedicated to the community. Roy Blitzer had done an outstanding job during the six years of serving on the HRC, and Pat Singer had done impressive work.

Mayor Fazzino instructed Council Members to cast their votes.

FIRST ROUND OF VOTING

VOTING FOR ROSEMARIE BEDNAR: Schneider

VOTING FOR WILLIAM BENNETT:

VOTING FOR ROY BLITZER: Rosenbaum, Huber, Schneider, Ojakian, Mossar, Kniss, Wheeler, Fazzino

VOTING FOR ROBERTA COLIN:

VOTING FOR RONALD LEE JONES:

VOTING FOR VICTOR FROST:

VOTING FOR RANDY MONT-REYNAUD:

VOTING FOR KENNETH RUSSELL: Fazzino

VOTING FOR PAT SINGER: Rosenbaum, Huber, Ojakian, Mossar, Kniss, Wheeler

VOTING FOR PETER J. ULLMAN:

City Clerk Donna Rogers announced that Roy Blitzer and Pat Singer each received more than five votes and were appointed to the Human Relations Commission on the first ballot.

ORAL COMMUNICATIONS

Cleveland Kennard, homeless, spoke about police harassment.

Alex Christenson, 1705 Fulton Street, spoke regarding a public in-line skatepark.

Ed Powers, 2254 Dartmouth Street, spoke about civic responsibility.

APPROVAL OF MINUTES

MOTION: Council Member Schneider moved, seconded by Kniss, to approve the minutes of January 25, 1999, as submitted.

MOTION PASSED 8-0, Eakins absent.

Council Member Mossar said page 8 of the minutes of February 8, 1999, contained an error. Martin Bernstein requested the name of the company be changed from "Mumford" to "Rumford."

MOTION: Council Member Schneider moved, seconded by Kniss, to approve the minutes of February 8, 1999, as corrected.

MOTION PASSED 8-0, Eakins absent.

CONSENT CALENDAR

Mayor Fazzino said staff requested removal of Consent Calendar Item No. 6 from the Consent Calendar until the determination was made regarding who could or could not participate in historic preservation, which created a problem with obtaining a quorum of Council Members eligible to vote.

Council Member Ojakian would abstain from voting on Consent Calendar Item Nos. 9 and 10 due to a potential conflict of interest, since his wife worked for the Palo Alto Medical Foundation (PAMF).

Council Member Mossar said she and Senior Assistant City Attorney Sue Case discussed the issue prior to the meeting. Consent Calendar Item Nos. 9 and 10 were not a conflict since grant applications for funding were being discussed, and PAMF was not a beneficiary or directly involved.

Senior Assistant City Attorney Sue Case said the issue was for funding of and receiving a grant for a bicycle path that PAMF had given to the City which, therefore, would not cause a conflict of interest.

MOTION: Council Member Mossar moved, seconded by Ojakian, to approve Consent Calendar Item Nos. 3 - 5, and 7 - 16, with Consent Calendar Item No. 6 removed due to lack of quorum to vote on the issue.

3. Community Development Block Grant Funding - Refer to Finance Committee

4. Resolution 7841 entitled "Resolution of the Council of the City of Palo Alto Adopting the Utility Standards for Water, Gas and Wastewater, Second Edition of the City of Palo Alto"

5. Consulting Contract Between the City of Palo Alto and Deloitte & Touche, LLP to Provide Risk Management Consulting Services

6. Amendment No. 2 to Contract No. C9109545 Between the City of Palo Alto and Dames & Moore for Phase 2 of the Historic Inventory Project

7. Contract Between the City of Palo Alto and Rabbit Office Automation for Citywide Convenience Copier Rental

8. Amendment No. 2 to Consultant Contract No. C9106646 Between the City of Palo Alto and Group 4/Architecture, Research and Planning, Inc. for Professional Consulting Services Related to the Interior Improvements and Space Planning Project

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MOTION PASSED 8-0, for Item Nos. 3-5, 7, 8, and 11-16, Eakins absent.

MOTION PASSED 7-0, for Item Nos. 9 and 10, Ojakian "abstain," Eakins absent.

REPORTS OF COMMITTEES AND COMMISSIONS

17. The Policy and Services Committee re "Fiber to the Home"

Council Member Kniss said Council Member Eakins, Chairperson of the Policy and Services (P&S) Committee, was absent, so she would explain the P&S Committee motion regarding the Fiber to the Home (FTTH) issue. In May 1995, the Council moved to expedite upgrading of telecommunications facilities and applied for funding. The motion would only afford a small segment of the community an opportunity to be connected from their home to the fiber. The Council was faced with three alternatives: 1) Proceed with the Universal Telecommunications Service Request for Proposal (UTS-RFP) without the trial while pursuing other

strategies; 2) Proceed with the trial and submit the UTS-RFP after the trial, incorporating information gained during the trial; and 3) Proceed with the trial and UTS-RFP on a parallel track, the third of which represented the recommendations of both the Utilities Advisory Commission (UAC) and the P&S Committee. The Council appreciated the support of the public.

Utilities Advisory Commissioner Paul Johnston said the UAC first became involved with dark fiber in 1996. Although installed the fiber was under-utilized. The FTTH concept was in existence for a number of years. The question was whether and when the City would move forward and actually use the facilities it had begun to build or watch what the rest of the world did before moving forward. The UAC had considered the issue and thought it was time the City moved forward. The issues raised during the UAC meeting with regard to FTTH were largely financial concerns with regard to the payback period. They were issues which could be easily resolved to the satisfaction of the UAC with adjustments to reduce some of the costs and, if necessary, increase monthly payments to produce a payback period more acceptable to the City. The UAC thought the City should move forward on both programs.

Assistant City Manager Emily Harrison said the two projects under evaluation were: 1) a short-term project whereby the City became responsible for construction of a trial FTTH; and 2) the long-term issue of how high-speed telecommunications services could be provided to the entire City. FTTH was an option which included such things as wireless communications, cable modem service, and high-speed telephone connections. The staff report (CMR:162:99) focused on the short-term FTTH trial. The options of how to pursue the long-term project would be thoroughly explored in the Request for Proposal (RFP) for telecommunications services, which staff called "UTS-RFP." Staff focused on the short-term project of the FTTH trial because both the UAC and the P&S Committee were recommending to the Council that the trial proceed in conjunction with the UTS-RFP. Two of the risks associated with the short-term trial were that there would be less participation than predicted for marketability risk, and the cost would not be recovered over an economically reasonable period of time. Staff prepared a proposal for the Council, Attachment B of the staff report (CMR:162:99), to ensure recovery of the City's capital investment for the FTTH trial in the five-year period. For 10 megabyte per second (Mb/s) service, the resident would pay \$1,200 up front and \$75 per month. In addition, a resident would have to pay an Internet Service Provider (ISP) a base fee of \$25 to \$50 per month plus a possible usage charge. ncept of a public/private partnership for high-speed telecommunication services to the home. The City, by owning its own Electric Utility, brought valuable assets to the table in such a partnership. The City owned rights-of-way, conduit and electric line poles to string fiber or cable, the dark fiber ring which could be a critical element for high-speed telecommunications

services, using both wireless and coax technology, and valuable real property which could be sites for wireless technology. Staff agreed with the UAC that it was likely that many customers would be satisfied with connection speeds less than 10 Mb/s, and would want to take advantage of alternative technologies immediately. Some residents might be unwilling to pay for FTTH, but would be willing to pay for a lesser technology which was still superior to a 56K modem. A working relationship with Cable Co-op might provide an opportunity for a hybrid fiber coaxial solution that would be less expensive than FTTH. All of the possibilities would be explored through the UTS-RFP. Some members of the community expressed reservations about the UTS-RFP, saying it precluded FTTH as a solution, which was incorrect. The staff report (CMR:162:99) summarized the pros and cons of the alternatives. In putting together the pros and cons, staff worked with representatives of Palo Alto FiberNetwork group (PA-FiberNet).

Mayor Fazzino opened the public hearing.

Michael Eager, President of PA-FiberNet, 1960 Park Boulevard, spoke in support of the FTTH trial. PA-FiberNet worked with the staff, both of whom learned a great deal in the process.

Ken Poulton, 884 Los Robles Avenue, said the fiber system was 10 to 100 times faster than other types of technologies at a similar cost. Long term, fiber could offer 10 to 100 times more bandwidth per user than competing technologies and could be upgraded easily in the future, compared with other technologies which would face limits to expansions. To build another FTTH system, in competition with the City's system, was uneconomical. The FTTH system was unlikely to have other competitors with similar capabilities. The building blocks of the network included the physical structure, such as, poles, wires, equipment, and the day-to-day operation of the network which included the running of the network, security, billing, and 24-hour customer support. Internet access carried the bits from the local network into the Internet. In the long run, PA-FiberNet was interested in competing with Internet Access Providers (IAP), which was a key part of the network and could be competitive in a city-wide arrangement. Because of the scale of the FTTH system, it made more sense to have a single integrated IAP and network operator. In terms of day-to-day operations, the City would install and maintain the fiber infrastructure. The City would choose an IAP as the network operating partner for network operations. City ownership was not a necessity for the long-term system but would provide a unique benefit. The privately-owned system operator normally chose one IAP, typically the same as the ISP. The policies of the system interpreted what was possible with the computers, for instance, not able to run a web server or any kind of services out of a home. With a publicly-owned system, a chance could be taken for multiple IAPs, allowing and enabling competition. Key questions included the size of the FTTH trial, a key

concern of which was efficiency. The larger the trial area, the further the overhead of construction, and operations were spread. It was important to learn enough from the trial to determine whether it made sense to move forward with a city-wide system. A larger trial provided larger numbers thereby reducing the uncertainties of statistics, more areas of a greater diversity of population, poles and underground construction, and a wider variety of home constructions. A benchmarking of other trials showed a range from 180 to 2,000, making the City's trial of 160 homes small in comparison and 69 homes inadequate. Cost recovery was another important decision for the Council to make. Short cost-recovery goals increased prices, and increased the revenue stream if the base remained the same but could reduce participation to the point revenues dropped and cost-recovery time actually increased. High pricing placed the City into a smaller market that served only the most extreme users willing to pay the higher prices. However, the goal was to provide a service useful to everyone in the City; therefore, the prices should be as low as possible. The longest cost-recovery period that made sense with the technology and the market was the best alternative. The staff report (CMR:162:99) mentioned 10-15 years, but PA-FiberNet thought 10 years was appropriate. Less than eight years was inadvisable.

Mr. Eager thanked staff for their work and explained the differences PA-FiberNet had with the staff report (CMR:162:99). Staff recommended an RFP process to solve all the problems to provide communications quickly and without risk. PA-FiberNet, however, was not convinced that was the case. Bidders on the RFP would provide nothing more than what was already available, unless the RFP actually specified FTTH. PA-FiberNet was not opposed to the RFP, but the City would not get something for nothing. Staff had done a reasonable job of providing the pros and cons of the FTTH proposal. Staff's original estimates were conservative, with a 20 percent contingency fee. The staff report (CMR:162:99) contained an additional 15 percent. PA-FiberNet questioned the need for an additional staff person to administer contracts for a FTTH trial. The best market assessment possible was to sign up people for the trial. Staff should request adequate funding for the trial but the number should be representative of the actual cost. Staff previously estimated the trial at six months from approval to operation, which was somewhat inflated.

Margaret Cooley, 830 University Avenue, said the City was asked to build the infrastructure since it already held rights of way, in the same way the City helped build streets. A full-scale trial could set the standard for what could be expected in Palo Alto for whomever provided city-wide deployment in the future. The City should maintain local control for the infrastructure because it would minimize the amount of disruption in rights of way in neighborhoods. When it came time for companies to offer services, open access and competition would be ensured. The costs to the users could be kept to a minimum. By using the City's fiber ring in the build-out, a local area network could be created in the City, connecting

homes to the schools, libraries, and medical facilities, without entering the Internet. The Council had the opportunity to provide national leadership and vision for other cities throughout the country and would leave residents a lasting legacy. The Council was urged to vote in favor of a full-scale trial.

Mr. Eager urged the Council to take a bold step into the next century to create a lasting benefit to Palo Alto and its residents. Palo Alto was respected throughout the world and what was done would be viewed as a precedent others would follow. The Council was trusted to balance concerns with the benefits of the project.

Brian Reid, 2960 Waverley Street, spoke in opposition to PA-FiberNet's advice. The City should not consider involvement in the telecommunications service business, but should be getting the City to build the infrastructure necessary for someone else to run the service business. The project should be termed a data communications project rather than telecommunications project. Fiber optics was invented in 1935 and was less expensive. Copper wire was not obsolete and fiber would not become obsolete. Investments in fiber equipment were slow. Fiber was able to carry light forever and could last over 100 years.

Bill Kruse, 3230 Ross Road, spoke in support of FTTH.

Louis Rocha, 3099 Yancy Drive, San Jose, lineman for Pacific Bell (PacBell) spoke in support of offering telecommunications services to all levels of people in Palo Alto.

Steve Kroes, 915 "L" Street, Ste. 800, Sacramento, spoke on behalf of the California Taxpayers Association (CTA) in opposition to the proposal because of the significant financial risk which required a commitment of approximately \$.5 million of taxpayer or ratepayer funds. Care should be exercised in the expenditure of such funds, particularly for the benefit of only a small group. Of concern also was the policy aspect, for instance, government's purpose should not compete against the private sector. Any business could undercut competitors if free from property tax on equipment and income tax on earnings, and with lighter regulatory burdens. CTA was concerned about local governments entering into what remained a private sector business. Proponents of FTTH already acknowledged no competition would exist if the City wired the neighborhoods first, which was not an appropriate role for the government. Governments were often unable to continually upgrade equipment, standing in the way of progress in the community where governments established businesses. The equipment might be state-of-the-art in 1999, but he questioned the future and how long the trial would lose money before making money. Using \$.5 million of ratepayer or taxpayer funds for eight to ten years was not wise stewardship of the funds. CTA sought to minimize unnecessary taxation by focusing on

government spending and promoting efficient, quality services. The Council was urged to exhibit caution.

Michael W. Condry, 985 Paradise Way, Director of Internet Standards for Sun Microsystems, Inc. (Sun) said Sun was committed to assisting in connecting all Sun employees to the fiber and ensure each home had strong equipment. A collection of monitoring and experimental tasks would be run and reported back to the City on a regular basis. In addition, Sun would provide high-performance experimental web terminals to the City for use in the school system, particularly elementary schools. Sun would in turn gain information about the performance of its terminals and its product while helping to provide funding and objectives in the FTTH trial.

Randy Okamura, 345 Hamilton Avenue, No. 308, PacBell representative, said fiber was a superior medium used for some of PacBell's customers in the area. An OC48 speed was used, which was a very high optical channel speed. In 1995, the City offered high-speed telecommunications. Since that time, a number of products were introduced into the marketplace. Integrated Services Digital Network (ISDN) would not have been used as a term back in 1995. Digital Subscriber Line (DSL) would not have been used as a product. But when the subject was raised in 1998, PacBell conducted a trial for Asymmetric Digital Subscriber Line (ADSL). Since then ADSL had been ruled out. PacBell responded to the market by reducing prices by 45 percent. Although not as fast as 10 Mb/s, for \$149 per month PacBell offered downloads of 6.0 Mb/s. Most consumers used the 1.5 download and 384 upload at an average of \$39 per month with a one-year commitment. For an additional \$10, PacBell Internet could be utilized. The staff report (CMR:162:99) was incorrect regarding two/one lines which were available for \$350 per month. The discounted services were offered to community-based organizations and schools at a cost of \$175 per month. The PAUSD was a recipient of PacBell's grants at 50 percent off. The list of companies was growing, with AT&T, MCI, @Home, and Regional Communication Network (RCN) all coming into the area. The number of companies using PacBell's central office to provide fiber was growing. Most of the goals set out by the City in 1995 had been met, including no financial risk to the City. Using a lower risk cost-recovery method of leasing the dark fiber should be compared with a full-fledged IAP situation which increased the financial risk.

Mayor Fazzino noted the City Manager provided him with a copy of an e-mail from Michael Condry.

Kate Sherwood, 558 Forest Avenue, spoke in favor of FTTH. As a current Cable Co-op cable modem user, she was willing to pay more than staff's figures indicated. Her use of the Internet was extensive and of great value to her. FTTH was an investment in the value to her home.

Good fiber would give her a competitive edge over the rest of the world. One million people per month in the United States came on line.

Terry Andre, 598 Vista, spoke in favor of the City installing an infrastructure so universal access to all citizens was possible. If a private organization installed the lowest level of infrastructure, the community would be tied into that particular infrastructure. The Council was encouraged to approve the FTTH trial. Having public ownership of the infrastructure would allow more competition. The Council was encouraged to base the trial on 160 homes since it would take a long time to complete the trial and many citizens outside of the trial period wanted to be involved. The larger the number, the faster fiber could be accessed by the entire City.

Geoff Thompson, 416 Oxford Avenue, Chairperson of the Institute of Electrical and Electronic Engineers (IEEE) Standards Committee that standardized the Ethernet, said the fiber backbone was an inspired investment on the part of the City. The real leverage and vision was to bring the potential of the fiber backbone into residences and get it to the residential taxpayers who had paid for it. In an era of deregulation, it was important to have a path into service providers not currently available. The Council was urged to commit to high-speed access to homes by providing the infrastructure. Long-term contracts should be avoided when technology was moving rapidly in an adventuresome and experimental era.

Paul Botterff, 3776 La Donna Avenue, said new technology was currently bottle-necked at access networks. The new services in the next millennium would require the capacity of the fiber networks, for professionals, schools, and everyday learning and interaction. It would be a mistake for Palo Alto not to lead the way to such access to residents.

Michael Silverton, 114 Greenmeadow Way, said market demand in the community was exciting to see for his company, Fiberhood Network. As an Ethernet-to-the-home company, Fiberhood was currently studying several installations in Palo Alto using existing guidelines. A few basic NII guidelines included competition in the local loop, removal of barriers to entry, and promotion of private investment and information infrastructure. Although excited about FTTH, he was unsure government was the means by which to accomplish the job since it was unlikely another provider would build another fiber infrastructure, which was a barrier to entry and could be an inhibitor to private investment. He took exception to the position that no private company could provide an open architecture infrastructure. He worked at Sun where open architecture worked well. In general, private companies could provide open solutions that worked well in the marketplace. The idea of an RFP where public and private worked together in partnership was ideal. He questioned the long cost-recovery phase and how long the trial would take. The FTTH

trial was demonstrative of the visionary insight that led to the first fiber backbone. He looked forward to FTTH in Palo Alto.

Colin Mick, 2130 Hanover Street, spoke about the benefits of the FTTH trial and infrastructure. Trials enabled an examination of new service approaches, new alliances, and new technologies. Nothing in the model prohibited PacBell or any other company from being a service provider on the infrastructure. The issues of marketing data, cost of connections, price elasticity, adoption rates, packaging, marketing in the future, and service use would be better understood after the trial. Applications testing was important. Benefits from the infrastructure might include the revenue to recover some of the fiber backbone. Citizen participation was important. Business communication for the City and traffic reduction were important elements. Better Internet connectivity was a good option.

Bob Moss, 4010 Orme Street, Board of Directors, Cable Co-op, said although Cable Co-op should be afraid of competition, no objections were raised to the City's participation in the FTTH trial because if the City failed to install FTTH, no one else would either. With over \$23 million in surplus for the Electric Utility and \$70 million in the Calaveras Reserve, \$.5 million was not a big amount for the City to expend. The Council was urged to move forward with the FTTH. Disagreement was voiced with the staff report (CMR:162:99) which recommended a manager at over \$100,000 per year as an extravagance. The \$40,000 fee for a consultant to evaluate the RFP was a waste of time and money. The time it would take to write, evaluate, and prepare a contract proposal was not as great as staff estimated. Cable Co-op recently conducted an engineering study to determine how much it would cost to convert the entire system to fiber, estimated at \$16 million. Cable Co-op considered fiber in 1986, but the cost was prohibitive. The fiber Cable Co-op considered installing in 1986 would have been the same fiber Palo Alto was currently considering.

Carroll Harrington, 830 Melville Avenue, spoke in agreement with other speakers in favor of FTTH. As a resident in one of the proposed trial areas, she was willing to pay the proposed \$1,200 installation fee along with the monthly fees. The Council was urged to act expeditiously to initiate the trial.

Bill Zamuch, 912 Clara Drive, said the FTTH would restore bandwidth and provide benefits to more than only just end users, but local businesses who would be given an edge over larger companies enabling the community to keep valuable businesses. Regarding the CTA, the network should not make the same mistakes the transportation infrastructure made.

Richard Gerges, 714 East Charleston Road, spoke in opposition to City financing of the fiber. Members of the public in support of the FTTH project were wealthy enough to afford it but others who would not benefit

would still be required to pay. The project should be established as an assessment district so everyone within the district paid for the project. The City should make money on the project. Undergrounding of the Electric Utility was only handled in certain neighborhoods because of the cost, while the City refused to do so in other neighborhoods. Fiber should be connected to libraries and other public buildings so every citizen would have access. The City claimed to have insufficient funding to enforce traffic laws, but seemed willing to expend excess funds on something that would not benefit the entire community.

David Harris, 455 Margarita Avenue, said increased Internet communication reduced travel on the roads through telecommuting, thus reducing traffic problems in the City. Having a high-speed test bed where citizens were technically oriented would allow new businesses to emerge, and create new tax revenues. The proposal for the trial involved initial payment for nearly one-third of the cost with the remainder paid gradually. In terms of equity, fiber to the individuals receiving the first benefit would pay the most and would become less expensive over time as it spread. The eventual cost would be more reasonable.

Herb Borock, P. O. Box 632, spoke in support of the FTTH trial as the first step in implementing a City-owned universal FTTH system. A letter submitted to the Council (on file in the City Clerk's Office) raised some process issues: 1) placing the Electric Utility Fund at risk; 2) updates to PAMC Chapter 2.11 to ensure fair and open decisions regarding fiber optics; and 3) City negotiations with Residential Communications Networks (RCN) while negotiating an extension of the franchise agreement with Cable Co-op. Documentation was also provided to the Council.

Rick Ferguson, 1037 Harker Avenue, Community Center Neighborhood Association (CCNA) member, spoke in favor of the FTTH trial. Financial risk, which was one of the most important concerns of the Council and staff, could be handled in a straightforward fashion via the terms and conditions of a contract between each resident and the City for installation of the fiber. He envisioned a contract between the individual resident and the City for purposes of installing the infrastructure and suggested the City Attorney could decide how to draft the contract. There would be an additional contract for trial purposes between each resident and the ISP. That contract would have a price and would soon have competitive contracts with other ISPs. Contracts were documents that people frequently used to manage financial risk. He encouraged the Council to build that contract feature into the motion and into the policy recommendation. The outcome of the FTTH trial was an enormous Citywide interest which brought together the community and put residents in touch with each other. The cross-town view of the trial would preserve the new dimension of community rather than artificially sever it on the grounds of financial risk.

Mayor Fazzino closed the public hearing.

RECESS: 9:20 - 9:30 P.M.

Council Member Ojakian asked about the cost to the City of the infrastructure and the components thereof.

Assistant Director of Utilities Larry Starr said staff focused on the medium-sized trial area, the costs for which were listed in Attachment B of the staff report (CMR:162:99). Staff estimated the cost of construction at \$342,900. As with all bid prices, however, a 10 percent contingency fund would be requested. Staff would request the Council approve \$380,000 from the Electric Reserve. Attachment B of the staff report (CMR:162:99) indicated four scenarios to determine how the monthly payment affected the pay-back period, ranging from a \$35 per month base, \$1,200 initial payment at a pay back of 14 years, to \$75 per month base, \$1,200 initial payment at a pay back of 5 years.

Council Member Ojakian said components were involved such as data switches in the infrastructure. He asked for a breakdown of some of the components for the study area of 70 households versus the larger group.

Mr. Starr said the electronics for the project represented a small portion of the total infrastructure. Labor costs were 45 percent of the entire project, with electronics in the 15 to 20 percent range, including the switch and other electronics. Other components were engineering design and cable. The larger trial was two separate areas, for instance, two individual trials with no ties whatsoever to each other with separate electronics, and different fibers. If staff was directed to move forward with the FTTH in the Community Center area, with the assistance of PA-FiberNet and residents in the area, staff could pickup a few more customers in the area.

Council Member Schneider asked about how many flyers the City initially sent out, and what was the response.

Mr. Starr said a flyer was distributed to 26,000 electric customers. Approximately 1,000 responses were received in the first month, spread throughout the City. The Community Center area and Barron Park areas received the most responses.

Council Member Schneider asked how many of the responses received favored FTTH.

Mr. Starr said all the responses indicated a willingness to pay \$1,200 initially and \$35 per month, or more for the more expensive 100 Mb/s service. No negative responses were received.

Council Member Huber asked what mechanism the City would use to assure repayment of the cost allocated to a particular piece of property.

Mr. Starr said the City had nothing in place at the current time.

Senior Assistant City Attorney Grant Kolling said to guarantee payment, an assessment district could be formed requiring participation by all, which had Proposition 218 implications. There was no assurance that someone who signed up would stay on forever.

Council Member Huber clarified the City had no mechanism by deed or other form to assure monies would be recovered from whoever signed up for the service.

Mr. Kolling said the City could ask the resident to provide a deed of trust to secure payment, but there was no guarantee.

Council Member Huber feared long-term costs would not be recovered if individuals could sign up and left the country six months later.

Mr. Kolling said Council Member Huber's concern was real.

Council Member Mossar asked whether the difference between the City's situation with FTTH and what she recalled from the loans for solar systems was the City's ability to require a lien on the property.

Mr. Kolling said Council Member Mossar was correct. Solar heating panels were a benefit to the customer. The FTTH was on the City's side of the meter.

Council Member Mossar asked whether staff had actually selected the two areas.

Mr. Starr replied no. Staff conducted cost estimates for both areas. The most accurate cost estimate was on the Community Center area and the larger estimates were simply a scale-up of some of the numbers.

Council Member Mossar asked whether a trial could be conducted that was not in the two separate areas.

Mr. Starr said staff thought more residents within the trial area would become interested in the trial once they realized how easy it was. Mention was made of conducting the trial in Barron Park because of the undergrounding possibilities. However, part of the Barron Park area was new and some homes were not built. The developer indicated a willingness to pay the \$1,200, but there were no assurances of monthly fees. If the Community Center area was chosen, the City planned to

underground across Middlefield and Embarcadero Roads; therefore, conduit could be placed in the surrounding areas and included easily in the trial. Concern was expressed with undergrounding in the Barron Park area. Previously installed conduits might not lend themselves to fiber optic cable with electric cable already inside.

Director of Utilities Ed Mrizek said when the flyers were mailed out the prior summer, staff considered the level of participation necessary to make the project cost-effective. Participation was established at 30 percent, but the Community Center, the largest positive response, was at 18 percent. If expanded beyond the Community Center area, the participation level might only be 1 or 2 percent.

Council Member Rosenbaum asked whether the \$380,000 cost for a medium project included the \$125,000 per year for personnel.

Mr. Starr said staff wanted to show the Council what was required to conduct the FTTH trial. Currently, a Telecommunications Manager and electricians worked on the dark fiber project. Telecommunications Manager was a full-time position to market and contract for new customers with the dark fiber ring. With the addition of the FTTH project, staff needed some in-house design expertise. The design engineer could be utilized to help manage the FTTH project as well as begin design work as more customers were added to the dark fiber ring. Currently, a senior engineer was utilized for the job, but underground districts were suffering. The Telecommunications Engineer was not paid \$125,000, but that was the cost to the City for the position.

Council Member Rosenbaum asked about Rick Ferguson's suggestion to contract to secure payment.

Mr. Kolling said when two parties agreed to a type of arrangement in which one performed services and the other paid money, it was a contract whether or not in writing. The question was how extensive the contract should be. The City Attorney's Office could attempt to provide a fail-safe contract, but anyone who wanted to break a contract could do so and legal remedies took money to resolve.

Council Member Rosenbaum said an alternative was to ask for the entire amount initially. In terms of net present value, there was no difference between someone paying the entire cost initially and paying it off over a number of years.

Mr. Kolling agreed.

Vice Mayor Wheeler asked about a statement made on page 2 of the staff report (CMR:162:99) that, "staff reached the conclusion that the major benefit from doing the trial would be as a precursor to a citywide

build out of FTTH by the City." Many of the comments heard from members of the public would bolster that statement. The City was asked by a segment of the community to actually build out the system. She was unsure the Council, in any of its prior discussions of the issue, had started down that path. When the fiber backbone was discussed, the Council had backed away from making such an investment of City funds. She asked whether there was any other reason for conducting the trial or whether conducting the trial was setting the City down the path of investing, as a City, in going citywide.

Assistant City Manager Emily Harrison replied no. Staff would not have supported the trial if that were the case because staff continued to have concerns about the City's role in a build-out. In meeting with members of the community advocating FTTH, staff was convinced the information from the trial could be valuable in evaluating the public/private possibilities of an actual build-out in terms of the actual marketability of the actual cost of the technology itself. Staff would be unable to confirm or contradict its concerns until after the trial was conducted. The trial could provide pieces of information to the Council to enable it to make a final decision as to how The Council wanted to provide telecommunications services.

Vice Mayor Wheeler said the proposed time line for proceeding with the FTTH trial showed staff returning to the Council after it conducted a market survey, presumably using more real numbers than the original survey. She questioned whether that was the point at which staff would expect a final decision by the Council.

Ms. Harrison said Vice Mayor Wheeler was correct. Staff hoped to have more information about the City's possibilities for partnering at that time. Staff would bring the results of both the trial and the UTS-RFP prior to having the Council make a decision.

Vice Mayor Wheeler asked whether staff would have the results of the July 1999 RFP when the market assessment report returned to the Council in September 1999.

Vice Mayor Wheeler wanted to know when the Council's decision point was on moving forward with the FTTH trial, for instance, the current meeting or in September when the real interest was known.

Ms. Harrison thought the trial would begin to be designed the following day if the Council directed staff to do so.

Mr. Mrizek said staff would begin work on the trial if directed by the Council. However, since the costs were higher per month than first indicated, staff needed to return to the Community Center participants to ask whether they were willing to pay more. The information would be

brought back to the Council in September as to whether or not the City had sufficient participants to cover the cost based on what the Council indicated, such as, 5-year payback, or 8-year payback.

Vice Mayor Wheeler clarified the Council would give staff direction but the actual implementation decision would be made in September.

Mr. Mrizek said Vice Mayor Wheeler was correct.

Ms. Harrison said the market assessment would be conducted in house. Concern had expressed about the additional consultant cost of the market assessment, but that was a misconception.

Vice Mayor Wheeler asked Council Member Kniss about the actual P&S Committee motion, the intent of which suggested that the trial area would be one neighborhood.

Council Member Kniss said it depended upon the size of the trial the Council directed.

Vice Mayor Wheeler said the recommendation was for the medium-size trial.

Council Member Kniss preferred the "modest" recommendation.

Vice Mayor Wheeler asked what the P&S Committee's motion indicated with relation to the financial risk to the City.

Council Member Kniss said the P&S Committee struggled with the same issues expressed during the current meeting, for instance, people who signed up and then left town. The P&S Committee discussed the legal ramifications and a reasonably fast payback, such as, five or eight years.

Vice Mayor Wheeler wanted to make sure Council Member Kniss' understanding was the motion covered the concept of a contracted payback period and an unspecified vehicle to assure full payback from subscribers.

Council Member Kniss said the vehicle was not something the Council as policy makers would design, but would come from staff. The Council's job was to set policy on the actual trial itself.

Council Member Schneider asked how many members in the audience would be willing to take the financial risk over a 5 to 8-year period and be in the position of collecting the revenues the City might be able to enjoy, for instance, making the initial participants shareholders.

Vice Mayor Wheeler thought the Council wanted Utilities staff to respond

to discussions about cost-recovery and what costs the City was expecting to recover, for instance, whether it would include the ongoing operating costs of the system.

Mr. Starr said staff planned to recover all of the costs: the initial construction costs, ongoing monthly charges to manage the system, yearly license fees of the fiber ring, and operations and maintenance costs incurred during the year to keep things going.

Ms. Harrison said staff was not including in the cost estimates payback of staffing and additional consulting, or Research & Development (R&D) costs, with a venture of that kind in the private sector.

Council Member Huber supported the concept of a trial based on the ability to then sell to someone other than the City, since he was not interested in running it as a City utility. He wanted to know exactly what the trial would show and how long the trial had to go before the City gathered what was needed in order to "sell it" to someone else. The City approved and paid for the fiber ring, and he recalled many people had expressed a willingness to use the ring, but for whatever reason, had not done so. At some point, the City said it would install the ring, but the people who said they would use it had not done so.

Mr. Starr said Council Member Huber was correct. The City had not seen as many customers sign up for dark fiber as originally projected. To date, the \$2 million had not been entirely repaid to the Electric Reserves. The annual ongoing maintenance costs were high and included funding the Telecommunications Manager and staff in Operations conducting construction and maintenance. Revenues increased to the point of paying the R&M costs. Staff would need to continue adding customers to recoup the \$2 million. The period was extended from a 3-year to 5-year payback to a realistic 10-year payback, given what was seen with dark fiber licensing. Staff was also concerned that the City might be slightly high priced, so prices should be reviewed in order to possibly pick up more customers.

Council Member Huber asked what the City would get for the trial and how long the trial would have to be run to attract someone to operate the system.

Mr. Starr said the trial would provide the actual costs for installing fiber to a home, since staff's estimates were just a guess. The cost to run from one switch location to a number of homes in a residential area would also be known. The other information gained from the trial was managing the system, for instance, whether the City would be overwhelmed with calls from customers with problems or whether it ran with very little maintenance.

Council Member Huber was interested in how much time would be necessary to gain sufficient information.

Mr. Starr said staff planned to return to the Council in February 2001 with results of the trial at which time the Council could make the decision to either continue to collect revenue or sell the business. Staff would have completed the trial, gleaned from it all the information it needed and would have the option to sell.

Council Member Huber asked what would happen if no one wanted to purchase the system and the City decided it did not want to go citywide.

Mr. Starr said the decision would be one for the Council to make: 1) if the Council no longer wanted to be in the fiber business, it could write off the remaining monies owed and stop operations; 2) the Council could determine to remain in the business until it had recouped the monies owed, at which time it could stop operating the business; or 3) the Council could make the decision to continue operating the fiber business.

Council Member Mossar had found it intriguing that the fiber ring was underutilized yet the City was considering the potential of adding more customers to the ring. She questioned how the City would continue repaying the dark fiber ring investment, how it would generate more customers, and how FTTH fit into the issue.

Mr. Starr said the FTTH trial was a small customer. Only two fibers were necessary from the Community Center to Downtown, which represented a few thousand dollars per year. Larger customers paid tens of thousands of dollars per year in fiber leases of up to 12 fibers, which was the business the City wanted to promote. The Telecommunications Manager's job was to promote business. Staff thought the City's licensing costs were not right, since many companies still installed their own fiber. Staff thought companies would want to lease from the City rather than putting in their own fiber because of the cost differential. The entire City was built out, the FTTH might only utilize 30 switch sites. The City had 288 fibers to license.

Council Member Mossar asked whether the business of fiber optics was an appropriate role for the City and could be compared to running lines to homes, at which point the City's responsibility was over.

Mr. Starr said running fiber optics like a gas utility would be difficult. The City leased dark fiber to customers who then purchased the electronics to do whatever was required to go into business. The City's only responsibility was to make sure the fiber was not broken. FTTH was different because the electronics were in the middle, requiring the City to light up the fiber and contract for the service. The City would have to be more involved than with the gas.

Council Member Mossar said the staff report (CMR:162:99) failed to comment on the benefits to the community through telecommuting, to which several members of the public had alluded. She asked whether staff had an opportunity to discuss the possible benefits to the community from high-speed telecommunications services.

Ms. Harrison said the issue could be assessed during the FTTH trial. Discussions were held on an anecdotal basis, but staff had not gained any solid information regarding a benefit with regard to telecommuting. Staff might be able to gain such information from participants in the trial.

Council Member Mossar attended a meeting of the Bay Area Air Quality Management District (BAAQMD) where funding innovative programs for reducing vehicle miles traveled in the Bay Area were discussed. The Bay Area was coming under greater Federal scrutiny with regard to air quality management, and an innovative communications program might be eligible for funding. If the City proceeded further with FTTH, such funding should be investigated. Many comments both in the UAC minutes, which had been very helpful in the analysis of the project, and in the current public comments, addressed the need for City participation to jump-start the project. She asked what was the UAC's opinion of the legitimate role of the City and what would happen if the City chose not to participate.

Mr. Johnston said a number of opinions were expressed with regard to what would result from the trial. Council Member Huber's desire to start the process and then sell off the business to a private enterprise was not widespread among supporters of FTTH or the UAC, since many felt competitive businesses had a place in the City. PA-FiberNet had shown a chart stacking the five different responsibilities from customers, to services, to Internet access, to network operations, and then the fiber infrastructure, which showed the one naturally anti-competitive area was in the construction of the last mile. If anyone was going to own the "last mile", it should be the City. The fundamental idea was not to get the technology to the point of selling it off to a bidder. A number of potential sources of funding were not pursued but should be considered once the City moved beyond the initial trial and considered ways of expanding fiber to the rest of the City. The UAC asked staff to explore the use of the \$2 million per year available in public benefit dollars. Conservative reading indicated the City was unable to use the funds; however, with more lobbying, the funds might be available. Confusion still existed about the need for the trail. Some Council Members had indicated that unless the exact outcome and use was known, support would not be given; however, the very reason for a trial was to reveal the unknowns. A balance between the risks and the proposal of staff to share the risk between the City and homeowners had to be found.

Council Member Kniss asked how many of the members of the audience

were able to telecommute from their homes, and more than half responded. With a more expedient network she assumed the public would be better able to telecommute. The ability to telecommute and leave home at different times of the day, relieved many transportation problems.

Council Member Huber asked about the cost to fiber the entire City.

Mr. Starr said staff had rough estimates for a citywide build-out. The community indicated \$25 million, but staff thought the cost was closer to \$30 million, which was a big undertaking resulting in the City having a new utility. Some costs would require additional staffing. The new business would require the ability to be in the business, in addition to installing all of the plant and facilities.

Council Member Mossar asked what would happen if the Council decided not to spend \$25 to \$30 million for a separate utility, the FTTH trial was conducted, and the City never built out the network.

Mr. Starr said the City could take one of the options outlined to Council Member Huber earlier.

Council Member Mossar asked what staff thought would really happen.

Mr. Starr said only Council could make the decision about whether or not to spend the money. If not, customers in the trial area would continue to be served because there would be strong support to keep it going.

Council Member Mossar asked about the larger, unserved customers.

Mr. Mrizek said staff discussed the issue somewhat with the UAC. If the trial was conducted, one part of the community would be served. Another neighborhood might request a similar construction but with only 10 percent participation rather than the 19 percent. The Council would have to make a decision as to whether or not to move forward with the next neighborhood. The trial would provide marketing and operational information, but the Council might be faced with such a scenario in the future.

Council Member Mossar clarified Mr. Mrizek thought an incremental build-out was possible.

Mr. Mrizek replied yes, an incremental build-out was possible as an option if the Council decided not to fully network the City in the future.

Council Member Mossar said at that point, staff would have obtained more hard data from which the Council could make a decision.

Mr. Mrizek said Council Member Mossar was correct.

Council Member Mossar asked whether the UAC had any other visions.

Mr. Johnston said the whole purpose of the trial was to determine whether or not the concept was provable. If provable, the City would have a success model. He found it difficult to believe the City would stop at that point. If the trial was successful, it would expand. The only question was how rapid the expansion should proceed. Some parts of Palo Alto might have low participation rates, making expansion not cost effective. That was a decision the Council had to make. The idea of ending after a successful trial defied logic.

Council Member Ojakian asked about the UTS-RFP process since the UAC minutes indicated the draft proposal was 90 percent complete.

Ms. Harrison said staff wanted to take the Scope of Services for the UTS-RFP through a rigorous review with the community which meant the UTS-RFP was not 90 percent complete.

Council Member Ojakian was interested in seeing the time line condensed.

Ms. Harrison thought working with the community would not require an enormous amount of time; however, the UTS-RFP had not incorporated discussions recently held with PA-FiberNet or the Council's current discussion, which were important. The UTS-RFP should incorporate the Council's vision for how fiber was incorporated into the final solution. The draft RFP was vague and had asked for any solution to high-speed telecommunications, which should be more specific.

Council Member Ojakian asked whether staff observed success in other cities, in connecting to residences. In many communities, the delineation might not be as clear since cable was also being hooked up.

Mr. Mrizek said Anaheim had contracted with one corporation to handle the fiber which was primarily installed in a commercial/industrial area. The corporation promised to extend to the residential class in the future, but the timing was unknown and was based on when it became profitable. Other agencies were in similar situations. He thought no residential areas in the entire United States had a fiber system similar to what the Council was considering.

Council Member Ojakian said the reason was probably the financial risk.

Mr. Mrizek said Council Member Ojakian was correct.

Mayor Fazzino asked Mr. Johnston about the issue of technological

obsolescence, and risks to the City.

Mr. Johnston said the issue was one of fiber versus wireless or copper. Neither fiber nor copper would become obsolete. The length of time for payback could not be justified for some of the electronics as for the fiber itself. In terms of wireless technology, from what the UAC understood, nothing suggested the City would be able to get the same kind of bandwidth in a community through any kind of satellite or wireless technology as was possible through fiber. The UAC would probably agree with the comments that were made about the status of obsolescence.

Mayor Fazzino said some concerns had been raised that the City might be buying too much bandwidth for the needs of much of the community.

Mr. Johnston said the needs of the majority of the community at the current time versus the needs of the community in the future was the issue.

Mayor Fazzino asked for the UAC's perspective on the issue of the public versus private role. Many members of the public expressed concern about the City's participation and what it portended in the City's role as opposed to private competition. The issue was raised that the City might be in the position of regulator, competitor, and provider of services. Based on the recommendation of the P&S Committee, there was an opportunity for private sector participation in the system, once the trial was over with a clearer idea about the needs of the community.

Mr. Johnston agreed. For purposes of controlling the cost with a rather modest trial of 70 to 160 homes, a single ISP might need to be signed up to make the economics work with such a small group. The concept should not be confused with the idea that in the long-run with proven success and expansion, there would be the desire to limit to a single ISP or IAP. The intent would be to create competition. There was no conflict in terms of the City building the fundamental infrastructure and handling it as other utilities. He could understand why some businesses might prefer to own a monopoly and, although not currently economical, wanted to preserve the right to do so in the future. There was not a conflict. If fibers went to every home and people decided to get cable or telephone over the same fibers, he would be back to the Council stating her opposition to the City providing such service and would argue in favor of private enterprise. It was true that in the short-term, the City had competing technologies for providing essentially similar or competitive services, although not at the same speed.

MOTION: Council Member Kniss moved, seconded by Schneider, to proceed with the Universal Telecommunications Service Request for Proposal and the Fiber to the Home trial on a parallel track. The

alternative represented the recommendations of the Utilities Advisory Commission and the Policy and Services Committee.

Council Member Kniss said the staff report (CMR:162:99) indicated various alternatives, but the P&S Committee was interested in moving with Alternative 3, to proceed with the UTS-RFP and the FTTH trial on a parallel track. Issues raised during the current meeting ranged from why to conduct a trial, what difference it would make, what it would show, and the timeframe. In early 1994, Palo Alto was the first city to have a website. At the time, the City was not sure what the Internet was or what a website would mean. For a City that owned its own utilities for 90 years and had its own website for four or five years, it was not an enormous leap to take the City to a trial of fiber. Mr. Johnston was articulate about what the fiber would or would not do for the City. There was an inherent expense to the trial. In prior minutes, the observation was made that there were times when it was important to just "do it" rather than employ a consultant and continue to discuss it. If the trial failed, it was not an enormous amount of money to invest in a technology that drove the Silicon Valley and the entire country. Some of the advantages included receiving consultant feedback and traffic impacts. Many people were able to work out of homes or change working hours and days, which made a difference in traffic and parking. The Council needed to provide direction regarding how to proceed. The best support seemed to come from a medium-sized area and the Community Center. The Barron Park area had a real interest and there might be ways to pursue that. Staff needed to return with a Budget Amendment Ordinance (BAO) along with the RFP. The trial was an opportunity, for Palo Alto to be one of the first cities to take fiber to residences.

INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER to add: test "medium trial area"; Community Center area; return to Council with a Budget Amendment Ordinance and an RFP; staff to return at the end of the trial with an evaluation of market assessment, legal issues, technical feasibility, cost of construction and operation staffing, contracting, and payback time (range of 5-8 years).

Council Member Schneider said Council Member Kniss covered all of the issues except one. The proposal had seen an overwhelming amount of public support in the neighborhood in which it would serve. She thought the City would be overwhelmed by the number of people wanting to participate.

Council Member Rosenbaum offered a somewhat different perspective. He attended the California Municipal Utility Association (CMUA) meeting a few weeks prior, before which time he had not objected to a one-neighborhood test with the City getting its money back. However, at the CMUA meeting, he attended a telecommunications session where he questioned four people involved in telecommunications, all of whom had

a very strong public policy rationale for cities being involved in telecommunications similar to viewpoints expressed. He asked whether fiber to residences was planned or whether they knew of anyone who was doing so. The four had not planned to do so nor had they heard of anyone who planned to do so, the reason being economical. The city of Alameda was considering what to do and had put a measure on the ballot to determine whether the community was interested in proceeding with a city system, and the measure passed. The impetus was mainly for cable. No plans were made to put fiber to homes except in special cases. For most communities, a hybrid system with the provision that people who wanted to pay the extra could have their own fiber was probably the way it was likely to work. The City would get to that system if it proceeded with Alternative 1 and the UTS-RFP. The FTTH trial would be a diversion which, if structured properly, would not mean a great loss of money but was not the way the City should proceed. If Alternative 1 was adopted, FTTH could be tried. Internet terminals could be hooked up to the fiber in the libraries where hundreds of people could try out the high-speed system. Opposition was expressed with Alternative 3 and, if insufficient votes were received, he planned to offer Alternative 1.

Council Member Huber supported the motion for the trial but had concerns about the City becoming a municipal utility for telecommunications. Mr. Johnston's statement about the necessity of the City to take that direction was an honest and correct one to make. It was easy to compare utilities, but the existing water and electricity utilities were monopolies or would be until deregulation. The telecommunications or data transfer was not something people had to have. Many people would be concerned about the potential, not the trial, of a downstream, multi-million dollar infrastructure to serve a relatively small number of people. The 18 or 19 percent response would need to increase. However, if levels were insignificant, the community would not support a utility to provide the service. The people who were truly interested should be diligent to get intense penetration, which was probably the only way to sell the item to the community as a whole and for Council Members when considering whether to proceed. The democratic process was slow and the City was not interested in making a profit. He had much faith in private industry and suspected in ten years it would become easier to communicate, probably without wires. The results would have to be very good if the City were to proceed any further than just the localized area.

Council Member Schneider was concerned about adding more time to the process.

Council Member Mossar said Transportation staff could examine various potential funding, all of which were prescribed by law as to use. Staff could indicate the funds available for the particular use and what the application process involved.

Ms. Fleming said if the intent was to limit FTTH to one area, Council Member Mossar was correct and Transportation staff could look into the one area.

Council Member Mossar supported the motion enthusiastically. The trial would be very good, from which something very exciting could result.

Vice Mayor Wheeler was concerned about moving ahead with the trial. Although in support of FTTH, since there was information to be gleaned, the Council should not give the impression it was committing itself to a \$30 million investment to wire the City.

Council Member Kniss said implicit in the trial was the fact that it was just a trial.

Ms. Fleming suggested including the wording in the motion based on a experiences when staff was left to interpret.

INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER that Alternative 3 be more specific to a five-year payback period with reasonable assurance through contractual compliance of payback. Further, staff be directed to return with information on grant funding possibilities (vehicle miles traveled reduction). Further, that the City was not committing itself to a \$30 million investment to wire the town, but was only a trial.

Vice Mayor Wheeler had not wanted anyone in the public to leave with the impression that the City was ready to take the next step, even though there were enthusiastic individuals wanting the entire community wired by the City. The steps the Council took should be clear.

Council Member Ojakian said focus was placed on the FTTH trial, which was where interest was expressed from the community and where the discussion had been. He would not want to see any further delays in the UTS-RFP process. A decision was made in February to proceed with the UTS-RFP but, because of the trial which would allow staff to develop the RFP, some people said the City should install fiber citywide. That was not where he or several of his colleagues intended to go. Focus should remain on getting the UTS-RFP out, part of which should emphasize a strong interest in connecting to residential homes. In the meantime, the City was conducting a trial that could provide information for whoever responded to the RFP. An attempt was being made to provide a service and get people connected to the Internet or data communications. The Council voted against joint powers involvement with Cable Co-op, so there was a track record of not wanting to get involved. The Council had to decide whether to act in a practical or visionary way. The Council was willing to take the visionary risk but would not want anyone to extrapolate it out beyond the trial.

Mayor Fazzino supported the motion. Council Member Kniss made a good case for the proposal. The City's position was facilitating the creation of a communications infrastructure throughout the community, which was a proper role that would not interfere with the ability of PacBell or others from playing a significant, long-term role as a business partner with the City or providing competitive services to residents of the community. The most important aspect of the proposal with respect to public policy was that the City was in effect addressing the very important principle of universal service, which was one of the four or five principles of the initial telecommunications or data communications policy several years prior. The fiber optic ring was a decision on the Council's part, and he was disappointed with others that the City was not able to identify many business partners. At the same time, the concerns of the fiber ring at the outset had to do with universal service and the fact that most of the use of the ring related to businesses and other large customers. FTTH was a way for the City to begin to make sure service was provided throughout the community. The trial would provide the City with significant information about the degree of customer interest, behavior, usage. The City would not be overwhelmed by wireless over the next years, so there was no need to worry about technical obsolescence, which was one of his concerns at the outset of the process. He would have preferred a more flexible payback proposal of five to eight years, since he would not want the concept to fail on the basis of an inflexible payback system. On one hand, the City wanted to make sure individuals were committed and willing to put resources up front. At the same time, he encouraged a reasonable payback process. Five to eight years seemed more reasonable than five years. The City was not looking at a significant financial risk. There would always be someone who wanted to step forward and provide the service. After the trial, more information would be known about interest and the City's role. PA-FiberNet, the Community Center neighborhood, and the Barron Park neighborhood were applauded for the grassroots effort. What was particularly unique about the FTTH effort was that, in addition to wide community support, the quality of information was outstanding and put the Council in a better position to make the decision. He appreciated the fact that the interest group had focused on the intellectual aspect of the discussion, providing the Council with excellent data. The UAC was also thanked. The UAC played an important role in getting the City where it was.

MOTION PASSED 7-1, Rosenbaum "no," Eakins absent.

Mayor Fazzino announced that Item No. 18 would be continued to a date uncertain, and Item No. 20 would be continued to the April 12, 1999, City Council Meeting.

18. The Utilities Advisory Commission re Requested Guidance on the Utilities Advisory Commission's Role in Telecommunications

Item continued to date uncertain.

ORDINANCES

19. Approval of Cost-Sharing with the City of Menlo Park for the Second Phase of the San Francisquito Creek Bank Stabilization and Revegetation Study

City Manager Fleming said staff was able to get Santa Clara Valley Water District (SCVWD) participation, and the Council should not be concerned about where the issue would rest when the Joint Powers Agreement (JPA) was formed. A representative from Coordinated Resource Management and Planning (CRMP) was present earlier in the meeting and wanted her support given to the recommendation.

Council Member Ojakian asked whether both Menlo Park and SCVWD approved similar amounts already.

Ms. Fleming said Menlo Park had put up the entire amount initially because the work had to begin on a good faith that Palo Alto would share in the costs. However, the SCVWD agreed to participate, so the City was paying the same as the SCVWD.

MOTION: Council Member Mossar moved, seconded by Wheeler, to approve the staff recommendation as follows:

1. Grant approval for a subsequent cost-sharing agreement with the City of Menlo Park, which will provide a 25 percent contribution of the funding for Phase 2 of the San Francisquito Creek Bank Stabilization and Revegetation Study (Study).
2. Approve a Budget Amendment Ordinance in the amount of \$61,836 from the Storm Drainage Fund Rate Stabilization Reserve to provide the necessary funding for Phase 2 of the Study.

Ordinance 4553 entitled "Ordinance of the Council of the City of Palo Alto Amending the Budget for the Fiscal Year 1998-99 to Provide an Additional Appropriation of \$61,836 for the Second Phase of the San Francisquito Creek Bank Stabilization and Revegetation Study"

3. Authorize the City Manager to negotiate and execute a cost-sharing agreement with the City of Menlo Park for Phase 2 of the Study.

MOTION PASSED 8-0, Eakins absent.

COUNCIL MATTERS

20. Council Members Dick Rosenbaum and Vic Ojakian and Mayor Gary Fazzino re Joint City-School District Project to Add Gymnasium Facilities at the Middle Schools

Item continued to April 12, 1999, Council Meeting.

21. Council Comments, Questions, and Announcements

ADJOURNMENT: The meeting adjourned at 11:30 p.m. in memory of Helen Tao and Council Member Eakins' mother.

ATTEST: /s/ Donna Rogers - City Clerk

APPROVED: /s/ Gary Fazzino - Mayor

NOTE: Sense minutes (synopsis) are prepared in accordance with Palo Alto Municipal Code Sections 2.04.180(a) and (b). The City Council and Standing Committee meeting tapes are made solely for the purpose of facilitating the preparation of the minutes of the meetings. City Council and Standing Committee meeting tapes are recycled 90 days from the date of the meeting. The tapes are available for members of the public to listen to during regular office hours.

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From: [Jeff Hoel](#)
To: [UAC](#)
Cc: [Hoel, Jeff \(external\); Council, City](#)
Subject: UAC subcommittee on FTTP -- 09-14-22 Colleagues Memo
Date: Saturday, September 10, 2022 4:05:58 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Commissioners,

At your 09-14-22 meeting, you will consider an item VII.6, a Colleagues' Memo about FTTP.

Agenda:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/09-14-2022/09-14-2022-uac-agenda-and-packet.pdf>

Colleagues Memo:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/09-14-2022/09-14-2022-id-14742-item-6.pdf>

I would like to comment (below the "#####" line) on this document. My comments are paragraphs in red beginning with "###".

SUMMARY: I agree with the colleagues: let's build a citywide municipal FTTP network and offer internet services to all residents and businesses.

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

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City of Palo Alto (ID # 14742)
Utilities Advisory Commission Staff Report
Meeting Date: 9/14/2022 Report Type: VII. NEW BUSINESS

Title: Colleagues Memo From A.C. Johnston, Phil Metz, and Loren Smith: Implementation of a City-Owned FTTP network and City-Owned Internet Service Provider

Aren't Colleagues Memos typically written by the colleagues? This Colleagues Memo appears to be written by staff.

From: Director of Utilities
Lead Department: Utilities

Discussion

The purpose of this memorandum is to provide the results of the UAC sub-committee for FTTP Initiative investigation and work with city staff and 3rd party Magellan Advisors on the proposed implementation of a City-Owned FTTP network and a City-Owned Internet Service Provider (ISP).

Attachments:

- Attachment A: Colleagues Memo

City of Palo Alto Page 1

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MEMORANDUM

Date: 14 September 2022
To: Utilities Advisory Commission, City of Palo Alto
From: Utilities Advisory Commission, Sub-Committee on FTTP Initiative
Vice Chair A.C Johnston, Commissioners Phil Metz and Loren M. Smith
Subject: Implementation of a City-Owned FTTP network and City-Owned Internet Service Provider

The purpose of this memorandum is to provide the results of the UAC sub-committee for FTTP Initiative investigation and work with City Staff and 3rd party Magellan Advisors on the proposed implementation of a City-Owned FTTP network and a City-Owned Internet Service Provider (ISP).

Based upon our research, a complete review of the business and financial models, as well as the results of the City of Palo Alto survey, we recommend that the UAC recommend to the Palo Alto City Council that the Council authorize CPAU to proceed forward with plans to offer fiber-based broadband

There are 17 occurrences of "broadband" in this document (not counting my comments and a URL). The speeds we want to be able to offer are much higher than FCC's current definition of broadband (25 Mbps down and 3 Mbps up). Also, the term "broadband" applies to a number of services (like traditional TV and traditional phone) that we're currently proposing not to offer. In each case, how about substituting the term "sufficiently fast internet"?

I take it that, in this context, "fiber-based" means FTTP. (Comcast sometimes claims its hybrid fiber coax network is "fiber-based.") <https://www.broadbandtechreport.com/fiber/article/14235437/comcast-reports-fiberbased-network-now-passes-11k-in-rural-pa>

through a City-Owned FTTP network and a City-Owned Internet Service Provider to all Palo Alto residents.

Good.

The last staff report considered the possibility of outsourcing the operation of the network to an entity which the City didn't own but had a contractual relationship with. Are the colleagues recommending we not do this?

We also provide some specific recommendations to address the risks inherent in establishing a city owned ISP.

A Brief History of FTTP in the City of Palo Alto

Any history of FTTP in Palo Alto that fails to mention the 67-home FTTH Trial (2001-2005), the Uptown Services analysis (2002-2004), the failed 180 Connect Consortium partnership (2006-2009), the pursuit of Google Fiber (2010, 2014-2016), the Tellus Venture Associates analysis of user-financed FTTP models (2012), the CTC analysis (2015), and the FTTN misadventure (2017-2019) is too brief. On the other hand, the description of the City's dark fiber network was perhaps not brief enough.

For more than 20 years, the City of Palo Alto has investigated, engineered, built and operated a dark fiber network. Originally conceived in the mid-1990s, the City's initial telecommunications strategy was to build a dark fiber ring around Palo Alto that would be capable of supporting multiple network developers and/or service providers with significant growth potential. The first phase of the fiber network construction occurred in 1996 - 1997 and consisted of 33 route miles

It was 15 route miles in 1996, 24 route miles in 1997, 29 route miles in 1999. <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2016/11-02-16-meeting/letters-to-the-uac.pdf>

with 144 or more strands of single-mode fiber along most routes. After the "dot com bubble" burst in 2001, the City's efforts were more subdued, but since the late 1990s, the fiber backbone has been expanded to approximately 49 route miles of mostly 144 or 288 count single-mode fiber.

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In 2000, the City began to license "dark fiber" for commercial purposes.

This 12-19-97 article https://www.paloaltoonline.com/weekly/morgue/news/1997_Dec_19_LOOP.html says there were two dark fiber customers, WebTV Networks and Brooks Fiber Communications. And "[a]greements are close to being finalized with six others."

Dark fiber is unused fiber through which no light is transmitted, i.e., installed fiber optic cable that is not carrying a signal.

It would make more sense to say that the City's dark fiber network contains some fiber strands that are lit by customers and some fiber strands that are unused.

Today, the City currently licenses dark fiber connections to 99 commercial and City customers,

Utilities Quarterly Updates used to report on the number of dark fiber customers and active connections. For example, the 2Q20 report said there were 92 accounts (91 customers, plus the City) and 208 connections. <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/uac-informational-reports/2020-informational-reports/04-15-2020/item-info-mini-packet-041520.pdf>
The City should resume this practice.

including the following City accounts: IT Infrastructure Services, Utilities Substations, Utilities Engineering, Public Works, Water Quality Control Plant and Community Services (Art Center)

Has the City recently decided to call each of these an account for reporting purposes? The 2Q20 Utilities Quarterly Update (see above) said there was just one City account.

yielding a total number of dark fiber service connections of 162 (serving commercial customers and the City). Over that same period, the Fiber reserve balance at the end of FY 2022 is approximately \$34 million (Actuals anticipated end of September 2022).

In this same period, going on 15 years, the City has studied, planned and worked to develop a business case to build a citywide Fiber-to-the-Premises ("FTTP") network to serve homes and business

businesses.

Staff presented a "FTTH Business Case," written by staff and consultant Uptown Services, to UAC on 12-03-02. That was nearly 20 years ago. (Too bad it's no longer available on the City's website.) On 04-05-99, Council voted (7-1) to implement a FTTH Trial network, and to issue an RFP for a Universal Telecommunications System (UTS) to connect the whole City. 21 members of the public spoke. That was more than 23 years ago. (The RFP got no bids. But the FTTH Trial network was built and operated successfully.)

(Reference: "History of the City of Palo Alto Dark Fiber Optic Backbone Network", Ver 6.0, 7 August 2019).

On 10-19-16, as a member of the Citizens Advisory Committee on Fiber and Wireless, I commented on a then-unpublished staff document "History of the City of Palo Alto Dark Fiber Optic Backbone Network," Version 1.0, 10-11-16.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2016/11-02-16-meeting/letters-to-the-uac.pdf>

I found this 08-21-19 document which contains an attachment (pages 30-34) titled "History of the City of Palo Alto Dark Fiber Optic Backbone Network," Version 2.0, 02-04-17, with many of the same mistakes as the previous document.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2017/id-7616.pdf>
(If a Version 6.0 had existed in this timeframe, why wouldn't it have appeared here?)

On June 24, 2019, the Utilities Advisory Commission (UAC) was directed by City Council to assume the primary advisory role and serve as the public input forum for fiber and wireless expansion initiatives by the City of Palo Alto.

On 06-24-19, Council "sunsetting" the Citizen Advisory Committee (CAC) on Fiber & Wireless.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2019/id-9620-mini-packet-61319.pdf>

Since then, the UAC has devoted significant attention to how this underutilized asset can be used for the betterment of the City of Palo Alto population. On June 24, 2019, the UAC recommended and Council agreed to leverage the existing dark fiber network into benefiting its infrastructure, e.g., emergency services, city owned buildings and our pending AMI network. On June 1, 2020, the UAC recommended and Council agreed to engage Magellan Advisors (Ref.: <https://www.magellanbroadband.com/>) and on May 24, 2021, the UAC recommended and Council agreed to accelerate the consultant's work,

UAC recommended (04-21-21) and Council approved (05-24-21).

including to:

- 1) Design and engineer the expansion of the City of Palo Alto's dark fiber network;
- 2) Engineer the incorporation of an AMI network into the network;
- 3) Engineer the incorporation of a FTTP solution into the network; and
- 4) Provide a business case and associated financial model for the development of a FTTP ISP service offering by the City of Palo Alto.

The once-in-a-generation event that was the COVID-19 pandemic (declared a pandemic on March 11, 2020, by the World Health Organization) highlighted the many dependencies our population may have taken for granted, namely:

- 1) Our food supply;
- 2) Other necessary supplies, including bathroom tissue;
- 3) The resiliency of small businesses; and
- 4) The need for Broadband communication.

Indeed, our experience during the initial months of the pandemic shed light on the fragile nature of our supply chain and our services. Not to be left out, as our offices were shuttered, and our population migrated to work-from-home (WFH) and our children attended school-from-home (SFH), the stresses on our broadband infrastructure eroded our ability to function routinely. In a matter of days, the necessity for broadband services moved from a convenience to an "essential

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service/public good," similar to electricity, water and sewer, and became a non-negotiable requirement of our community. As if by luck, our City had already engaged Magellan Advisors, and a suitable, appropriate and deliberate response was already in the making.

Why does the City of Palo Alto need to build a city-owned FTTP network?

Broadband service to the City of Palo Alto's population is currently dominated by two large companies: AT&T and Comcast/Xfinity. Recent survey results by Magellan Advisors reveals a population concerned with unreliable connectivity, reduced speeds and poor customer service. Digging deeper into the survey results reveals a clear opportunity for the City to create a successful City-owned broadband network (ref. Table 1 below). As shown in Table 1, survey results show that Palo Alto's population is very sophisticated when it comes to an understanding of and the potential for a City-Owned FTTP network. Indeed, offering a service that provides superior speed, reliability and service at a competitive cost was shown to be a sufficient and compelling reason for support of such a City-wide initiative.

Key Findings	City Provided Fiber
Based Internet Opportunity	
One third of households are dissatisfied with their current internet services speed, affordable prices and more reliability	Provide higher
Over half of the City has only one gigabit speed broadband provider	Create additional
ISP choice for households	
<p>### There are 4 occurrences of "gigabit" in this document (not counting my comments). In each case, the document should say "gigabit per second" -- or "Gbps."</p> <p>### What is a "one gigabit per second broadband provider"? If it's an ISP that provides 1 Gbps symmetrical internet service, then over half of the City has access to NO such providers.</p>	
Price, speed and reliability are the most important aspects of internet services	Provide a 100% fiber network with no data caps, symmetrical speeds and better reliability at a competitive price
Over 50% of households already subscribe to internet service only	Provide high-quality, reliable and expandable services to support streaming
<p>### Over 50% of households already receive only internet service from their ISP (but might receive other services from other providers).</p>	

Table 1: City of Palo Alto Population Key Findings

As highlighted in Magellan's research, there are risks in developing a City-Owned FTTP network. Unlike current City-Owned utility services, developing a City-Owned FTTP network or City-Owned Internet Service Provider (ISP) would enter the CPAU into a "competitive business" whereby the City would engage directly with 3rd party competitors whose actions the City has limited ability to influence. As a service provider and as one of the few municipalities with a fully-owned utilities service capability, however, the City of Palo Alto's Utilities Department (CPAU) is well-versed in managing a service organization that has provided quality services to the citizens and businesses of Palo Alto since 1896. Given CPAU's service reputation and brand, as well as the survey results, it's apparent the City's population is confident in the CPAU's ability. But more to the point, they are demanding better pricing, higher speeds, and more reliable broadband service. Given the opportunity to get all this AND keep dollars local to the City of Palo Alto, creating a provider owned and operated by the City is a risk worth taking.

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Another risk deserving of discussion is the reaction by existing ISP providers in Palo Alto to the introduction of a City-Owned ISP offering. It is entirely reasonable to expect a strong response to the City's initiative, likely through the offering of incentives for new customers or bonuses for service extension by existing customers. Given the extent of the existing fiber network, as well as its substantial service capabilities, the City is well positioned to offer faster broadband speeds and lower monthly service costs while ensuring service reliability backed by the CPAU brand and years of performance as a service business. As per Magellan Advisors suggested initial product mix, the City would offer "synchronous"

There are 6 occurrences of "synchronous" in this document (not counting my comments). In each case, the document should say "symmetrical."

broadband services [1] at both a higher speed and a lower price. That is, CPAU could offer a very competitive service for both residential and business particularly in terms of "speed-to-price" ratios

Why talk about speed-to-price ratios?

as is highlighted in Table 2: Residential Service Offering below.

Service Level	Est. Monthly Rate (USD / Month)
5 Gigabit*	USD 300
2 Gigabit*	150
1 Gigabit*	80
600 Megabit*	65
300 Megabit*	50

There are 2 occurrences of "Megabit" in this document (not counting my comments). In each case, the document should say "megabit per second" -- or "Mbps."

*Note: The City of Palo Alto's service is based upon providing Synchronous Broadband access to subscribers, i.e., the same upload and

download speeds.

Table 2: Residential Service Offering

An additional risk for a City owned and operated ISP is finding and hiring staff. Even before the Covid-19 pandemic, CPAU struggled to fill vacancies, and for this reason Magellan Advisors was asked to develop business plans and financial models based upon three assumptions with respect to staffing models: 1) insourced; 2) outsourced; and 3) hybrid. A review of these assumptions reveals that either a fully-outsourced model or a hybrid model could substantially reduce the need for CPAU staffing whereas a fully insourced model would likely add to CPAU's current staffing deficit. In reviewing Magellan's output, both outsourced and hybrid models create a viable business without overburdening the existing CPAU staff.

CPAU's ability to create a viable business without overburdening the existing CPAU staff is supported even when employing a very conservative Take Rate (how many Palo Alto households are expected to subscribe to the City owned service). Under both the outsourced and hybrid models, using conservative assumptions, it was demonstrated that a minimum Take Rate needed for a City-Owned ISP's revenues to exceed expenses is roughly 27% - 30% of

[1] Synchronous service offers the same upload and download speeds whereas "asynchronous"

There are 2 occurrences of "asynchronous" in this document (not counting my comments). In each case, the document should say "asymmetrical."

connections offer faster download speeds and slower upload speeds and is the common and typical service offered by AT&T and Xfinity in Palo Alto.

AT&T's FTTP service is symmetrical. AT&T's DSL service and Comcast's HFC service are asymmetrical.

Unlike asynchronous, synchronous connectivity comes with guaranteed bandwidth services that are easy to manage and consistent in their speeds. If you pay for a 500 Mbps connection, you get 500 Mbps upload and download speeds across your entire home or office network.

No, in any oversubscribed network, whether it's symmetrical or not, the speed you subscribe to is not guaranteed.

Depending on what your home or office network is, it could be the bottleneck.

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households. Interestingly, survey results indicate the City can comfortably assume a higher initial Take Rate, so current financial modeling assumes a 40% Take Rate. Indeed, some survey results indicate the Take Rate could be as high as 60%, but these have been discounted to a more conservative assumption for the purposes of financial modeling. As such, it's realistic to assume the City's Take Rate of 40% is highly likely and at least two of our business models are realistic, fully outsourced and hybrid.

Finally, inherent in any technology investment is the risk of technology obsolescence.

Sure, in theory. But FTTP looks pretty future-proof.
<https://potsandpansbyccg.com/2021/02/01/why-fiber/>

I think active Ethernet is more capable than PON. Uploads are lower latency. Also, with active Ethernet, downloaded packets are sent only to the intended recipient; with PON, downloaded packets are sent to all premises on the same PON net, so customers must rely on encryption to assure that only the intended recipient can understand them.

5G has recently been launched but remains a limited viable option, even within the City of Palo Alto.

According to this, the first 5G network was launched in 2013, but 5G was launched in the U.S. in 2019.
<https://en.wikipedia.org/wiki/5G>

But consultant Doug Dawson claims that we still haven't seen "real" 5G.
<https://potsandpansbyccg.com/2022/01/19/when-will-we-see-real-5g/>

In this talk show about telecom, Travis Carter, CEO of U.S Internet, a FTTP provider in Minneapolis, says (0:54:35) in jest, "My current stance on wireless is, what I'm really fearing is 14G. That's where, I think, it's really going to compete heavy with fiber. So, since we're only at 5G today, I'd say we have some time."
<https://muninetworks.org/content/join-us-thursday-january-20th-5pm-et-talk-about-fiber-2022-episode-30-connect-show>

Further and worthy of consideration, 5G and other mobile technology typically require a fiber "backhaul" of data and traffic from the wireless antennae back to the telecom carrier's central office telecom switch. For future consideration, as 5G continues to roll out and as the City of Palo Alto builds out its fiber network further, the need for wireless backhaul by service providers may become another source of revenue for the City-owned fiber network.

This 04-05-22 article says some wireless providers (AT&T, Verizon) say that owning their own fiber networks is essential, but other providers (T-Mobile, Dish Network) don't say that.
<https://www.lightreading.com/broadband-tech/do-5g-providers-need-to-own-fiber-network-too/d/d-id/776545>

Are any wireless providers currently using the City's dark fiber network for wireless backhaul?

Satellite-based service offerings are also available but may not be as compelling as a source of competition to a City-owned ISP model given equipment costs of \$599 for residential service and a high monthly subscription fee (\$110 per month).

Starlink

<https://arstechnica.com/information-technology/2022/03/starlink-hikes-prices-to-599-up-front-and-110-per-month-blames-inflation/> might provide speeds of less than 100 Mbps for downloads and less than 10 Mbps for uploads.

<https://www.tomsguide.com/news/how-fast-is-elon-musk-starlink-the-results-are-in>

FCC recently rejected a Starlink application for federal grants, because FCC thought Starlink couldn't deliver 100/20 Mbps as promised.

<https://www.axios.com/2022/08/10/fcc-spacex-nearly-900m-funding-internet-service>

Table 3 below summarizes key risks identified in our research and study.

RISK	Recommendation
Competition	CPAU would be entering a competitive business. Researching potential competitor reaction to a City-Owned ISP recommended
Take Rate Assumptions recommended	Continuous monitoring and reporting of residential subscriptions
Technology Obsolescence	Current mobile service providers are beginning to offer 5G services.
5G represents both a risk/threat as well as an opportunity.	Researching the potential impact of 5G services in Palo Alto
recommended	

In this talk show about telecom, host Christopher Mitchell, who runs MuniNetworks, comments on wireless hype over the years (47:57). "When I started, it was, you don't need fiber. We got Wi-Fi. And then it was LTE -- no, no, no, then it was WiMAX. And then it was 4G. And then it was, you know, 4G-LTE. And then it was 5G. Now I hear people being, like, Tarana's AMAZING. It solves ALL of the problems."

<https://muninetworks.org/content/join-us-thursday-january-20th-5pm-et-talk-about-fiber-2022-episode-30-connect-show>

His point: No, the next wireless sensation isn't going to obsolete FTTP.

Capital Investment	Current financial models represent a \$117 million capital investment.
\$32 million is available immediately.	Deficit of \$85 million be funded via a revenue bond. Monitoring of
City's Triple A credit rating recommended	

Table 3: Summary of Key Risks

Why the time is right to build a City-Owned ISP in Palo Alto

As highlighted in Table 4 below, a City-owned and operated ISP would likely provide significant value to Palo Alto residents. With more stable, synchronous broadband service at a reduced price, together with CPAU's high quality service, the City of Palo Alto population will find it easier to work from home, to school from home and to access other services requiring stable, high-speed synchronous broadband services. Looking out further, and considering the impact of increased competition, it's realistic to expect a projected 10% reduction in Internet spending

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community-wide amounting to \$580 per residential household [2].

Over 10 years.

Importantly, the fees for this service stay local with the City of Palo Alto, and dollars earned can be used to reinvest, augment services, or reduce rates or offer additional service offerings.

Value Proposition	Benefit
Improve reliability and speed	Faster, more reliable internet makes it easier to work from home,
increases access to virtual learning and healthcare	
Reduce community spend	Over 10 years, projected 10% reduction in internet rates could reduce
overall community-wide internet spending	by \$15 million or \$580 per residential household (25, 876 households)
Equal access for all	Next generation, high-speed internet available to all residents and
businesses in Palo Alto	
Keep dollars local	Fees for service stay local and dollars are reinvested to improve
broadband services or reduce rates	
More control	The community determines what services (immediate or future) are to be
provided by a City-Owned ISP	
More choice	Citizens have more broadband services options pushing providers to
offer better services and compete on price	

Table 4: Value Proposition

Any recommendation for providing a new service by the CPAU must recognize the strong history of accomplishment and capability of our CPAU staff. As all are aware, the City of Palo Alto Utilities Department currently manages all services associated with: electricity, water, sewer & stormwater, gas and dark fiber. With a service history going back to 1896, the CPAU has a strong “service first” mindset which has resulted in a strong brand and an appreciative population. Additionally the CPAU has been recognized by the professional community for its commitment to energy savings, sustainability, excellence, reliability and safety as is evidenced by the long list of awards received, Ref. Appendix: Table 5 - CPAU Awards attached.

Finally, the CPAU has a demonstrated history of fiscal mindedness resulting in a well-run organization with reserves appropriate for pushing into additional services, including FTTP. As highlighted above, the City’s fiber reserve balance at the end of FY 2022 is approximately \$34 million. These funds are immediately available to be used for operations and capital investment related to the City of Palo Alto’s fiber network. [3] Additionally, CPAU staff and Magellan Advisors

[2] According to the FY 2020 Utilities at a Glance, the City of Palo Alto has 25,876 residential and 3,973 commercial electric accounts. Source: <https://www.cityofpaloalto.org/Departments/Utilities/Customer-Service/Utilities-at-a-Glance>

[3] Meeting Sept. 28, 2015. City of Palo Alto staff interpretation of use restriction of fiber funds. Referencing Part D of the motion, i.e., “wireless plans will not use fiber funds”. Sept 28, 2015 Action Minutes. Ref.:

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confirmed that funding the capital investment shortfall of \$85 million for building a City-Owned ISP could come in the form of a “revenue bond” (also called municipal revenue bonds). Such a bond is supported by the revenue from a specific project, such as a toll bridge, highway, or local stadium. Revenue bonds that finance income-producing projects are thus secured by a specified revenue source, in this case, revenues from the City-Owned ISP business. These differ from general obligation bonds (GO bonds) that are repaid through a variety of tax sources. A key takeaway is that revenue bonds are a class of municipal bonds issued to fund public projects which then repay investors from the income created by that project. Unlike GO bonds, revenue bonds are project-specific and are not funded by taxpayers. A second key takeaway is that a decision to issue a revenue bond can come directly from the City Council and does not require a ballot measure. More importantly, however, we understand that City staff believes that the issuance of a fiber revenue bond will not impact the City of Palo Alto’s General Fund or other utilities triple A ratings.

UAC Sub-Committee Recommendation

It is therefore our recommendation that the UAC recommend to the City of Palo Alto City Council that the Council authorize CPAU to proceed forward with plans to offer fiber-based broadband services through a City-Owned FTTP network and City-Owned Internet Service Provider to all Palo Alto residents.

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Appendix: Table 5 - CPAU Awards

Dedicating a whole page to CPAU's and the City's awards seems excessive.

Date	Organization Giving Award or Recognition	Person/Program Receiving Award or Recognition	Title and Description of Award or Recognition
2021	American Public Power Association (APPA) Provider Award	City of Palo Alto Utilities	Smart Energy
2021	U. S. Environmental Protection Agency for Responsible Appliance Disposal Program	City of Palo Alto Utilities	Champion Award
2021	American Public Power Association (APPA) Power Provider (RP3) for industry-recognized leading practices in reliability & safety	City of Palo Alto Utilities	Reliable Public
2019	American Public Power Association (APPA) Provider Award	City of Palo Alto Utilities	Smart Energy
2019	American Public Power Association (APPA) Award for the Home Efficiency Genie	City of Palo Alto Utilities	Energy Innovator
2019	American Public Power Association (APPA) Power Provider - Utility designation for providing reliable and safe service	City of Palo Alto Utilities	Reliable Public
2019	Arbor Day Foundation Utility - In recognition of quality tree care, annual worker training,	City of Palo Alto	Tree Line USA tree planting, and public education

2018	National Research Center and People Award for Excellence in Natural Environment International City/County Management Association (ICMA)	City of Palo Alto	Voice of the
2018	American Public Power Association (APPA) Power Provider (RP3) "Diamond" level - the highest honor - for proficiency, practices, and a utility-wide commitment to safe and reliable delivery of system improvement, energy efficiency and workforce development.	City of Palo Alto Utilities	Reliable Public sound business electricity,
2018	Arbor Day Foundation Utility - In recognition of quality tree care, annual worker training, and public education.	City of Palo Alto Utilities	Tree Line USA tree planting
2017	Institute for Local Government Level Beacon Award Winner	City of Palo Alto	2017 Platinum
2017	Smart Electric Power Alliance (SEPA) Watts-per-Customer installed in 2016. Fourth time on Top Ten list	City of Palo Alto Utilities	First place for of utilities
	integrating the most solar onto the grid.		
2016	Moody's the City's Water Enterprise bond rating from Aa2 to Aa1, water operations.	City of Palo Alto Water Enterprise	Moody's upgraded a rare event for
2016	Solar Electric Power Association utilities that integrated the most solar into the grid. per-Customer list for 2015.	City of Palo Alto Utilities	Top Ten list of #3 on the Watts-
2016	Arbor Day Foundation Utility - In recognition of quality tree care, annual worker training, and public education	City of Palo Alto Utilities	Tree Line USA tree planting,
2015	Arbor Day Foundation Utility - In recognition of quality tree care, annual worker training, and public education	City of Palo Alto Utilities	Tree Line USA tree planting,
2015	Acterra Award	City of Palo Alto	Sustainability

(Ref.: <https://www.cityofpaloalto.org/Departments/Utilities>)

On this page, click on "Awards" to see the same table.

From: [Hamilton Hitchings](#)
To: [UAC](#); [Alison Cormack](#); [Batchelor, Dean](#)
Subject: Fiber to the Home: Input on Becoming the 3rd Service Provider
Date: Saturday, September 10, 2022 2:32:11 PM

CAUTION: This email originated from outside of the organization. Be cautious of opening attachments and clicking on links.

Dear Utilities Commission,

Currently both AT&T and Comcast/Infinity have a multi-year headstart rolling out fiber to the home for Palo Alto residents.

The City of Palo Alto Survey found that residents top three requirements were price, speed and reliability. The CPAU will be basically the same price and speed as AT&T's offering is today and much more expensive at the higher tiers. I have AT&T and it is very reliable. Below is a chart comparing speed and price offerings. Bottom line, CPAU is not offering a meaningful improvement over AT&T's offering:

Service Level	CPAU Monthly Price	AT&T Monthly Price	Comcast/Xfinity Monthly Price
5 Gigabit	\$300	\$180 (coming soon)	
2 Gigabit	\$150	\$110 (coming soon)	
1 Gigabit	\$80	\$80	\$80 (1.2 Gigbit) / \$100 after 2 years
600 Megabit	\$65	\$65 (500 Megabit)	\$60 / \$80 after 2 years
300 Megabit	\$50	\$55	\$50 / \$70 after 2 years

Take Rate:

I agree with council member Cormack that one challenge with the survey is that folks who responded were more likely to want city provided fiber. Of survey respondents, only 7.3% of survey respondents were very unsatisfied and 22.3% were somewhat dissatisfied. With 67.2% of respondents using Comcast/xfinity that means the majority of dissatisfied respondents can switch to AT&T. The assumptions built into the financial models that the majority or all of the at least somewhat dissatisfied will switch to CPAU is very unrealistic. This means that the assumptions on take rates are likely highly optimistic. Furthermore, with over half the current subscribers are using bundled phone or cable television, that reduces the likelihood of that population switching and reduce the total take rate further.

Part of the value proposition is that CPAU will be able to offer higher reliability than AT&T or Comcast. However, there has been a recent set of CPAU electric utility outages. Both

AT&T and Comcast have far more experience operating reliable fiber optic networks and its pure speculation as to whether CPAU will eventually be able to offer a more reliable network but it's unlikely to be significantly more reliable than AT&Ts.

CPAU has huge staffing issues for electrification and it is not close to being properly funded. Trying to rollout residential fiber will be a big distraction. I do agree with the colleague's memo that if fiber is pursued it should be outsourced since it's a large cost savings and easier to adjust if the number of subscribers comes in lower thus lowering risk. The lower cost of outsourcing also allows you to keep the plan rates lower for customers.

The big risk for fiber is the highly optimistic assumption of a high take rate. I think a take rate of 30% is overly optimistic and 15% to 20% take rate is much more realistic. This would mean the service does not break even financially. This service has marginal value add at best compared to the two existing service providers and especially AT&T. I think this service is purely duplicative and a financial risk and thus should not be pursued. If the only fiber service provider was Comcast I think pursuing this would make sense but considering there are two competitive service providers already, I do not think it is a good idea, especially given the financial risks.

Several more comments. AT&T fiber allows internet connectivity even when there is a total city wide power outage as long as there is power to the home's fiber modem. Whether it's by solar or a home backup battery or UPS, it's important Magellan's design also provides this capability but I worry with the data huts and neighborhood boxes this may not be the case.

I think subsidies for low income residents for internet access should be provided by the city and not tied to whether we pursue fiber to the home.

Given the huge need for capital to build the electrical grid in the coming years, I don't think the \$10 million should be transferred from Electric to fiber or at very least it should be reduced.

I know there is a lot of momentum towards pursuing fiber, but that does not mean the city should do it.

Hamilton Hitchings

From: [herb](#)
To: [UAC](#)
Cc: [Council_City](#); [Clerk_City](#)
Subject: September 14, 2022 UAC Meeting, Item # VII.6: Colleagues Memo re FTTP and ISP
Date: Wednesday, September 14, 2022 2:21:59 PM

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Herb Borock
P. O. Box 632
Palo Alto, CA 94302

September 14, 2022

Utilities Advisory Commission
City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94301

**SEPTEMBER 14, 2022 UTILITIES ADVISORY COMMISSION MEETING,
AGENDA ITEM VII.6
COLLEAGUES MEMO RE FIBER-TO-THE-PREMISES AND INTERNET SERVICE
PROVIDER**

Dear Utilities Advisory Commission:

I urge you to take no action on this agenda item, because it is premature and because the agenda description restricts you to voting only on the colleagues' proposal rather than considering other options.

On Monday, September 19, 2022 the Commission and the City Council will be holding a joint study session regarding fiber-to-the-premises efforts.

The staff report for the meeting (ID #13956) says, "Staff is not providing any recommendation at this time"; "This joint session provides an opportunity to review the current status of this effort, and seek Council and UAC feedback on any remaining outstanding information for Council direction"; and "Based on Council and UAC input, staff will return with specific actions associated with the FTTP effort."

Taking action on the colleagues' proposal now preempts the purpose of the joint session.

I am pleased that the staff is proposing that the project be funded with a combination of Fiber Fund reserves and a revenue bond that I have been advocating for a long time.

At your prior meeting and in the staff report for the joint session, staff has provided the Commission and the Council with a narrow range of options for organizational structure.

I continue to believe that the Fiber-to-the-Premises (FTTP) project should be a customer of the (Dark) Fiber Fund, rather than part of the same fund.

The Dark Fiber additions needed for the FTTP project would be owned by the Dark Fiber Fund.

The FTTP project would be entitled to pay a special rate for leasing the dark fiber from the Fiber Fund, because the FTTP project would pass all premises, and because the premises could become customers at any time rather only during a specific time window when the project is being constructed in their neighborhood.

The special rate I propose is based on the City's depreciation schedule for the dark fiber system.

I also believe the City should hire an experienced Network Operator and Internet Service Provider with a demonstrated commitment to network neutrality and protection of customer privacy.

The Network Operator would install the optronics and connect customers to the dark fiber.

That is not the same thing as a public-private partnership, because the City would own and control the FTTP system and choose an operator that would be a contractor and not a partner.

Thank you for your consideration of these comments.

Sincerely,

Herb Borock

cc: Palo Alto City Council