

DOCUMENTS IN THIS PACKET INCLUDE:

LETTERS FROM CITIZENS TO THE
UTILITIES ADVISORY COMMISSION

From: [Jeff Hoel](#)
To: [UAC](#)
Cc: [Hoel, Jeff \(external\)](#); [Council, City](#)
Subject: TRANSCRIPT & COMMENTS -- 02-02-22 UAC mtg -- electric distribution infrastructure modernization for S/CAP
Date: Tuesday, March 8, 2022 3:09:34 PM

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

Commissioners,

At UAC's 02-02-22 meeting, you heard an item, Item VII.3, "Discussion and Presentation on the Electric Distribution Infrastructure Modernization for S/CAP."

Agenda:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/02-02-2022/02-02-2022-uac-agenda.pdf>

Slides:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/02-02-2022/02-02-2022-id-13923-3.pdf>

Video (0:27:04-1:46:57):

<https://midpenmedia.org/utilities-advisory-commission-31-222022/>

Please see a TRANSCRIPT of this item (below the "#####" line). I have added my COMMENTS (paragraphs in red beginning with "###"). I have also noted where the slides were shown (paragraphs in orange beginning with "###").

High-level comments:

1. I haven't been tracking S/CAP. It's not that I think it's unimportant. But I have only limited bandwidth, and I'm focusing on citywide municipal FTTP.
2. There was NO staff report for this item, just eight presentation slides. So it was hard for commissioners and the public to do homework in preparation for the item.
3. The item was a discussion item, so commissioners couldn't vote. Voting is the most effective way UAC commissioners can provide their advice to Council.
4. The framing of options was too simplistic.
 - 4a. Even a "business as usual" option (Option 1) should say what the capacity of a new transformer should be, whenever a transformer has to be replaced because it has failed. (How many transformers have failed in the past 5 years? And how many were replaced with electrification-capacity transformers?) This 04-12-18 staff report talks about transformer upgrades for the sake of electrification.
https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2018/04-12-2018-special-meeting/item-4_distribution-system-assessment-update.pdf
But since it was only an "informational report," Council didn't do anything about it.
 - 4b. The "systematic" option (Option 2) should say what capacity every house should get, to support anticipated needs, and should say how long this capacity should be adequate. (This sort of assumes every house should get the same capacity. Is that a good assumption?) So, say 2 kW for historically conventional uses, 4 kW for a water heater, 14 kW for an EV charger (is one enough?), plus whatever a heat pump for heating the house takes. It adds up. If "modernization" requires less capacity than this, how do you make sure all the gadgets aren't demanding power at the same time?
 - 4c. Some electric utilities offer customer lower rates if they agree to let the utility turn off certain devices in the home whenever there's too much demand. Should that be part of Palo Alto's electrification plan?
5. I apologize for taking so long to create this commented TRANSCRIPT. I went down too many rabbit holes.

--

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

TRANSCRIPT:

0:27:04:

Chair Forssell: All right. Let's see. So, then, as discussed, we're going to skip the item that's noticed as New Business number 2, and go straight to New Business number 3: "Discussion and Presentation on the Electric Distribution Infrastructure Modernization For S/CAP."

New Business number 2 was about citywide municipal FTTP. Perhaps it's just as well that it was heard at a separate meeting, on 02-08-22. Please see a TRANSCRIPT here (pages 11-35): <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/03-02-2022/03-02-2022-public-letters.pdf>

And why don't we first see if there are any members of the public wanting to speak on this topic.

Which should go first, the staff presentation or hearing from members of the public? Both options have advantages. Either the public can rebut the presentation or the presentation can rebut the public.

0:27:29:

Dave Yuan: If anyone from the public would like to comment on this topic, please raise your hand. [pause] I do not see any hands raised. Oh, hold on. I do see one. Mr. Garwin, go ahead.

0:27:49:

Lawrence Garwin: Great. As fortuitous circumstances have brought it up, I was looking through the presentation. And it talks about distributed generation. And I was talking with someone earlier today, saying, look, you wanted distributed generation, and you want to balance the neighborhoods, and what not, either smart metering or sensors along the lines, talking -- giving the utility information about the current flow is really important for keeping every transformer and every transmission line -- or distribution line -- within its capacity, yet still picking up unpredictable inputs, such as bidirectional EV charging, or solar inputs.

The smart meter (AMI) system proposed for Palo Alto would report usage in 15-minute intervals. Is that adequate for monitoring instantaneous power usage on the grid, to make sure transformers are not being overloaded?

0:28:29:

At this point, the video shows the speaker's name: Lawrence Garwin. (In the old days, speakers were required to spell their names, as an audio aid to minutes takers.)

So, I'm glad to see that this is being addressed in the modernization.

0:28:40:

Dave Yuan: All right. We ...

0:28:42:

Chair Forssell: Thank you, Mr. Garwin. Oh, we've got somebody else?

0:28:44:

Dave Yuan: Yes. Mr. Coale. You should be able to unmute now. Sorry about that, Mr. Coale. You should be set **.

0:29:00:

David Coale: Yes. Also, in reading through the report, I agree with Mr. Garwin's comments, both earlier and on this topic. The other question I had was, have the Utilities considered the advantages that Rule 21, as it applies to all interconnected devices in California will help them to realize this integration of two-way transfer of power, to and from the local grid? Rule 21 allows for correction of reactive power, both inductive and -- um --

capacitive

on the other side, too, reactive power, such that -- This may go a long way in terms of solving your problems, without as much modification of the existing grid to realize what you're trying to achieve here. So, I appreciate any comments from the Director on this. Thank you.

0:30:17:

Chair Forssell: Thank you, Mr. Coale. All right. Why don't we go into a -- Is there a staff member that's going to present?

0:30:28:

Assistant Director Marshall: Yeah. So, this is Tomm Marshall, the Assistant Director of Utilities. And -- welcome - - Glad to be hear tonight, commissioners, to present this topic to you. This is an important issue, that's coming to you, that we need to address, concerning the grid. The grid we have today, amazing distribution system, was built in the '50s, '60s, and '70s. And it was designed for the loads and the way that the grid operated at that time. We're now in a different time today. We have issues. Electrification. We have solar penetration. And we could have distributed generation. And we have electric vehicles coming into the grid as well. And all these things coming into the grid cause a variety of issues that the current grid does not address. So, I'll go ahead and move into the slide presentation right now. [pause] OK.

0:31:38:

Slide 1 -- Electric Distribution Infrastructure Modernization for S/CAP

So, Electric Distribution Infrastructure Modernization for -- the call for S/CAP is for a variety of, you know, other issues, as we move into a more modern grid.

0:32:05:

Slide 2 -- Existing Infrastructure

A lot of times, they call it a smart grid. We're all sort of talking about the same thing. Smart grid is sort of the general term that's out there. But it means a number of things. So, talking about the existing infrastructure we have, it's reaching the end of its useful life. As I mentioned before, it was built in the '50s, '60s, and '70s, most of it. It's now getting to be 50-60 years old. And a lot of it needs to be rebuilt. And in the current grid that we have out there, we do not have sufficient capacity in our local secondary system to handle the EV charging that's going to be occurring out there, as people install EV chargers -- especially the level 2 EV chargers, which require a fairly high level of charging current.

0:33:00:

We mentioned before, the system was designed for one-way power flow. And, as we sit today, there's limits to how much rooftop solar, battery storage, and other local generation that can come onto the system.

0:33:16:

Slide 3 -- Future Grid Attributes

So, what we're looking at is, how do we modernize this grid, to enable all these new -- electrification, generation, and other things that come onto the grid. So, one of the things we need to figure out how to allow for is two-way power flow. And as the speakers have talked about, there's a variety of technologies out there coming on that may allow two-way power flow. This new system needs to meet whatever capacity is required. Plus, we have to be able to do -- regulate the voltage on the system, so people get proper voltage, don't see a lot of flicker occurring, and they don't have a lot of problems with voltage on their systems. And the third thing is, we have to be able to provide -- protect the system itself. In case we have a fault on it, we have to be able to open the system, and protect the system from damage, and also protect the public from being injured from a power line coming down, or, you know, other things that might happen. So, we have to figure out ways to do that, with this changing grid. And these things are more complicated as we get this two-way power flow on the grid. It becomes much more difficult to do. And some of the technologies to do that are just beginning to emerge now. They're not fully in place today. And able to deploy.

0:34:38:

Again, we talked about, it needs to incorporate local generation sources. It needs to provide higher levels of reliability and resiliency. So, what I mean by that is, we need to have electricity up more often. And, also, when we have problems on the electric system, we need to be able to restore more of it in a quicker fashion, so that we can keep people -- keep people's power on.

0:35:04:

So, -- And then, the third thing is, we have to look at how the grid is going to be funded. And, right now, we're on basically an energy consumption model. When we go to these other grid uses, we're going to need to find another way to charge customers for -- and return our costs -- for building the grid out.

0:35:23:

Slide 4 -- Option 1 for Transitioning to a Modern Grid

So, we're proposing -- You know, there's two ways, really, to move forward on this. And we're being pressed very hard on the issue around electrification, and putting new devices out there, such as heat pumps and other things. And then, I can tell you, currently, the grid, as it is today, cannot handle everybody putting in a heat pump out there. Or maybe not even half the people putting in a heat pump out there. And there's places, even today, where we can't take even one more heat pump without having to rebuild a portion of the system. Or, we can't even have one EV charger go on. We're already maxed out on capacity.

0:36:07:

Chair Forssell: Sorry, can I interrupt with a quick question?

0:36:09:

Assistant Director Marshall: Sure.

0:36:09:

Chair Forssell: How big of a power draw is a typical heat pump?

For heating water? For heating the house?

0:36:13:

Assistant Director Marshall: So, it depends. They sort of vary, depending on size. I think they could be, like, 4-6

kV[A] -- If that means anything. For its ...

Is this peak power, not average power?

0:36:25:

Chair Forssell: Kilowatts? 4-6 kilowatts?

0:36:27:

Assistant Director Marshall: Yeah.

0:36:28:

Chair Forssell: OK. Yeah, That's a lot.

This old (2013) but detailed flyer from the U.S. Department of Energy https://www.energy.gov/sites/prod/files/2014/01/f7/case_study_hpwh_northeast.pdf says, "A typical 4.5-kilowatt (kW) electric resistance element can reliably heat more than 20 gallons of water per hour. The heat pump has a lower heating rate...." Some heat pump water heaters also have an electric resistance element, if speed is your goal.

But some models have a mode that never uses the electric resistance element, so the peak power is less. <https://www.energyvanguard.com/blog/living-with-a-heat-pump-water-heater/>

0:36:32:

Assistant Director Marshall: So -- And then, the, you know, EV charger, if it's a level 2, it can be, you know, 14 kW. Or more.

Again, is this peak power?

So, we have a -- and I'll get into this a little more, and maybe give you an example -- but a system out there, you can see a little more with your own eyes sort of the problem we have out there. So, we're looking at this, and trying to figure out what are our options for moving ahead. So, like I say, we're -- there's a big push to do this electrification. And, you know, one way we can go at this is, just let it continue. And fix the problems as they come to us, as fast as we can, and try to deal with them. The problem with doing that is, it -- We don't really have staff to handle problems coming on an ad hoc basis. We're just keeping up with the infrastructure upgrades we need to do on an ongoing basis. And, as more and more electrification comes in, it's going to increase our need to rebuild portions of the system. And we just don't have staff today to handle that. So, you know -- And there's other things -- We have, you know, the -- So, what could happen, say, if we go ahead and do the electrification -- people come in with a lot -- or we go out and promote it, we're going to have lots of customers coming in, so we'll need lots of upgrades. And, at the end of the day, we're not going to be able to let the customers connect until we can make some of these upgrades. Otherwise, we're going to damage the system, or burn the system down. So, -- I mean -- So, we're sort of dealing with this thing -- do we just let all this stuff come in, and we'll try to deal with it? The problem with that is, we're going to have difficulty keeping up with a load like that. Because it's not planned. We don't know where it's going to come in. A lot of times, when there is a problem, it's going to be coming to us from customers complaining about the service levels they're receiving. Which, at that point, we're going to have to go out and investigate and figure out what it is. And then, we find out the transformer's overloaded. And we have to go through the process of replacing transformers. After the fact.

0:38:52:

Slide 5 -- Option 2 for Transitioning to a Modern Grid

The other way we're proposing is to do this in a more organized, planned way, where we're going to upgrade the system in advance. And plan ahead, figure out how we're going to fund this, take a look at all the uses we see, and what we might need to accommodate on the grid. Give us some time to train, and bring staff up to speed, so that we can have staff on board to deal with some of the issues. We would hope that if we can get these improvements done, we can just allow whatever uses that need to come on the system, come on the system, and they won't need to be -- each one reviewed. We will already have the grid in place to deal with whatever comes at

us. And, you know, in my opinion, this is going to be much more timely and cost-effective than going the other way, where we're just dealing with issues after the fact, as they show up. While this is going on, we still support, you know, the natural progression of electrification that will be coming in. You know, we have that today. We have people electrifying their homes. And we deal with those on a one-off basis. Like I say, the concern we have is that we go out and we begin heavily promoting electrification, and cause a lot of them to come in, we're going to be just chasing our tail, trying to keep up with them. The consequence is that it's going to take us a little more time to get this ready. And there are going to be delays in how fast we electrify, because of getting the system ready.

0:40:33:

Slide 6 -- Steps for Modernization

So, we thought of a process we would go through to look at how we would modernize the system. And so, one of them -- what we're doing right now -- in fact, we've already gone out, and doing a -- getting a proposal for a consultant to do a general study of the grid, and determine all the needs we might have out there. To figure out, you know, different things. How we're going to deal with voltage regulation. How we're going to deal with protecting the system with a lot of local generation on it. And so, they're going to come back and advise us sort of on what the general things need to be done to the grid. After that, we would analyze and prioritize what feeders and substations might require upgrades. And then we would try to establish -- following that design, and build contracts to go ahead and begin upgrading the circuits out there. And then, that would be followed by the marketing plans, and the targeted electrification. So, as this rolls out, it won't roll out the whole City at one time. It's going to take some time. So, we would roll out, you know, either by neighborhoods or by circuit. And we would -- as we roll them out, we'd begin the marketing plans for each of the areas that we roll out, and to allow people to begin their electrification.

0:41:59:

Chair Forssell: Mr. Marshall, could I interrupt just for one second, because a couple of commissioners already have their hands up. And I'm wondering, Commissioner Smith and Commissioner Scharff, did you want to get your questions in now, before he moves on?

0:42:10:

Commissioner Scharff: No, let him finish.

0:42:10:

Commissioner Smith: OK. Go ahead. Well, go ahead. Finish. That's fine.

0:42:10:

Slide 7 -- Staffing Needs for Grid Modernization

0:42:15:

Chair Forssell: OK.

0:42:18:

Assistant Director Marshall: So -- And -- sorry to bring this up -- is the whole issue around staffing needs. So, we are very understaffed, in both engineering and operations, on the electric side today. I think, you know, in engineering, I think we're close to only being half staffed today. Those are areas we're managing, and advertising for employees. But we need to figure out ways that we can attract and retain people to work on these programs. You know. And, just issues around compensation and whether we're competitive with other agencies in the area, on staffing, and whether we can attract people to Palo Alto. Which is obviously a very expensive place to set up a residence. So, we have to think about that, and how we might roll out a compensation to allow us to hire the people we need to run these programs. So, I guess I would leave it with that, and open it up to questions -- Oh, there's one other slide.

0:43:43:

Slide 8 -- Other Needs for Grid Modernization

So -- Other Needs for Grid Modernization. So, some of the things to allow things to move more quickly is, we need some way of streamlining the contracting process as best we can. Things take a long time in the process right now. You know, an RFP takes about 9 months to get to the end -- an RFP. And contracts, from when you send them out to when they're ready to go is about 6 months today. And if this needs to move quickly, we need to figure out a way to move this process quickly. And then, the last thing I have is, something -- how we would handle governance. And that may help with this issue around contracting and things. Is the current governance we have -- Is this the best way to run a project such as grid modernization? Is there some way we can set up a separate governance structure to push this forward on a faster time schedule, or some sub- -- sub-governance structure put in place by the City, to run this program at a faster speed. Those are just thoughts. I don't know how it would be done right now. But I'm just throwing that out as an idea that -- figuring out how to move this in a much quicker way through the systems that we have.

0:44:49:

And then, just the last thing, I think, in terms of, you know, electrification, solar, battery storage, and microgrid -- these are programs that really have to be managed by the Utilities, because of the infrastructure issues that lie behind these programs, that we need to address. And that's it.

0:45:22:

Chair Forssell: OK. That's a great start. That's a lot to unpack there. I'll let Commissioner Smith go first.

0:45:30:

Commissioner Smith: Thank you, Chair. And thank you, Assistant Director Marshall. I think Chair put it succinctly. There is a lot to unpack in this presentation. And I'm trying -- And I have tried to understand, specifically, a couple of things. One, let me ask -- Let me begin with a question. Have we done a risk assessment by neighborhood, for those neighborhoods that are under stress when it comes to loads?

I'm not sure "risk assessment" is the best term.

0:46:09:

Assistant Director Marshall: So, have we gone through, neighborhood by neighborhood? No. But I can tell you that the majority of the secondary systems and transformers we have will be undersized -- in electrification. And that's going to be pretty pervasive throughout Palo Alto. It isn't -- There are locations where we might have capacity. But, to be honest with you, they're going to be few and far between. So, ...

0:46:42:

Commissioner Smith: So -- sorry, Assistant [Director] Marshall, you're -- When you say that we're under a shortfall, you're basing it on an assumption that there is a certain number of EVs, and load per household? Is that right?

0:46:59:

Assistant Director Marshall: Well, correct. So, here's -- It really has to do with the design of the system. So, we talked before, the system was designed, you know, [in] '50, '60, '70. And, in Palo Alto, at that time, people didn't have electric heating. They didn't have air conditioning. They had gas to do the heating. They had gas to do the water heater. Now, -- And because of that, the system was designed to cover the load that we have. And so, the result of that is, we assume -- The system was designed for about 2 kVA -- or 2 kW -- per home. So -- And, again, I can provide an example -- I have an example I can show you later. But I can show you, like, if it were an example, there's a 37 kVA transformer on a pole. And there are 15 homes connected to a 37 kVA transformer. So -- And that's very typical throughout Palo Alto. And so, this is a particularly difficult problem in Palo Alto, because of the -- also, the climate we're in. So, we don't really have a climate where people really use a lot of air conditioning. It doesn't get that cold either. So, people don't use -- We're not using a lot of, you know, energy for these things. And if they were, they were using the gas. So, when they shift from the gas to the electric system, all that load ends up on the electric system. And it was not built to take it.

0:48:45:

Commissioner Smith: Noted. OK. So, if we haven't done a risk assessment by neighborhood, the risk assessment that we've done so far is based on the way the system was designed historically. Is that roughly correct?

0:49:02:

Assistant Director Marshall: Well, we also have data -- I also have data on all the transformers, and we know how many homes are connected to each transformer. So, ...

0:49:10:

Commissioner Smith: I still -- We could make a determination as to how many are, quite frankly, overloaded at this point.

0:49:15:

Assistant Director Marshall: Yes.

0:49:17:

Commissioner Smith: OK.

0:49:17:

Assistant Director Marshall: I mean, I -- yeah.

0:49:20:

Commissioner Smith: If we -- Has the Utility Department taken an opportunity to do any -- or resource planning done any financial modeling with respect to what are costs necessary to improve, even incrementally, the system? Or, would that be something that you would look to a third party to engage with, to do, on our behalf?

0:45:49:

Assistant Director Marshall: So, that's the process we're engaged in right now. To do the first assessment. And then, the second assessment will be what the costs will look like. Depending on what scenarios we lay out, and choose, as the path forward.

0:50:00:

Commissioner Smith: OK. S- -- OK. So, the -- this first step -- to your -- just your statement right then -- is to prepare the general study? Is that correct?

0:50:12:

Assistant Director Marshall: Correct.

0:50:14:

Commissioner Smith: And is it a general study that we want? Or is it actually a more specific study that we want?

0:50:23:

Assistant Director Marshall: There's going to -- Both need to be done. So, **, we have to go out and assess all the technologies out there that MAY assist us, and MAY reduce the need to do system up- -- the amount of system upgrades that we're going to need to do. So, -- And, on top of that, there are some technical issues that need to be solved. And we need somebody to go out and take a look at what technologies are in development out there that we would need to implement going forward. So that's the kind of study they do. They're going to look at all the different things out there that we could do, make some recommendations on how we would move forward,

based on how our system was put together, as opposed to somebody else's. And then, when we're through with that, we're going to then look at -- system -- each circuit, I would say. And go through each of those circuits, to figure out how -- what the upgrades would look like, and how -- what the cost would be to do those upgrades. From that first study, we can get a general idea of what the costs would be. But we're going to need to do a more detailed analysis. And that would come after that first general study.

0:51:32:

Commissioner Smith: Does our work with metering, or individual metering -- like the AMI -- Does it in any inhibit your ability to do that assessment? Or does it actually help?

0:51:43:

Assistant Director Marshall: So, it would be much easier to do the assessment if we had AMI implemented.

0:51:49:

Commissioner Smith: Much easier. Simply because we would know the use by household.

0:51:52:

Assistant Director Marshall: Correct.

We'd know how much energy was actually being used over a sampling interval, but maybe not how much peak energy could be demanded in a "perfect storm."

0:51:54:

Commissioner Smith: OK.

0:51:56:

Assistant Director Marshall: And time-of-use. I mean, we know the use -- how much energy they use. We just know how much energy they used in the month. So, what we really need is the time ...

0:52:05:

Commissioner Smith: By hour, or by day.

0:52:07:

Assistant Director Marshall: Yeah. Correct.

0:52:10:

Commissioner Smith: Um -- It sounds to me -- I guess I'm asking for a general opinion, but it's tending to -- this is putting our S/CAP goals in complete jeopardy. Is that correct?

0:52:31:

Assistant Director Marshall: If -- I would say, if you want -- if you're really going to electrify every single home in Palo Alto, you're going to have to upgrade the grid. There's no way that you're going to do it without upgrading the grid. The question is, when would you absolutely have to do that? And that's really dependent on how fast electrification rolls out. I think the thing that sped this whole process up, and brought it more as an issue was when the timeframe starts getting compressed. We go -- You know, now, it's 8 years, and we want it done. So, that's a pretty tall order, based on the need for -- needs on the infrastructure out there. Whether that's even possible, I don't know. So, that's part of the discussion, a little bit, is about how fast we can go.

0:53:20:

Commissioner Smith: No, I would agree 100 percent. And that actually turns to the next line of questioning. And

I apologize for monopolizing the questions. But -- Let's talk about recruiting. Because recruiting has been something that has come up repeatedly, with respect to the Utilities Department. We do monitor it regularly. Not specifically for design work associated with improving our existing. This is -- Quite frankly, I think this would be a new recruiting effort. But, in addition to that -- Um, I mean, to my knowledge, this is the first time I've heard that we have an issue that we're not competitive, from a salary bracket and compensation perspective. That was not previously highlighted. Is -- I take it that has been your experience. Is that --

0:54:21:

Assistant Director Marshall: Absolutely. It's very difficult to attract people to come to work in Palo Alto, because the salary levels and the cost of living in this area. There's no question that it's an issue. So, you know, attracting -- We're really only getting -- If we get somebody, they're typically here already, working somewhere. We're not going to attract somebody from, you know, somewhere else in the country to come out here and live in Palo Alto. You know. When they find the cost of living, they're not going to come to it. So, you know, it's just -- And we're not the only ones with this problem. I think anywhere in the City of Palo Alto -- I mean, we're seeing the same issues of attracting people here. You know, it's even more difficult in things like electrical engineers, because there's a very -- with a power -- that are focused in the power area. Because there's a huge demand. I mean, just PG&E in itself, with all the work that they're doing on undergrounding their forest areas. That's a huge demand on engineering count. Nationwide, they're being pulled out here. And they're pulling in the PG&E area. But it -- They're not coming into a high-cost-of-living area like Palo Alto. Maybe they're in, you know, Concord, or wherever they have their engineering facilities. So, they're somewhat able to attract people. But, I mean, it's my belief that you want to attract people, you are going to have to be aggressive. On how we -- You know, what we pay for these jobs. Especially to attract people into Palo Alto. And get these programs moving.

On 02-06-19, UAC considered an item about Utilities Workforce. (See transcript here, pages 47-62.) <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2019/03-06-19-meeting/public-letters-to-uac.pdf> Sandra Blanch and Irene Silipin from Human Resources (HR) attended. What happened to the ideas discussed there?

0:56:08:

Commissioner Smith: Understood. My last question is on a bullet point that you highlighted in governance: "Electrification, Solar, Battery Storage, and Microgrid integration should be a program managed in the Utilities Department." Are you highlighting that they're under the purview of the Building Department at the moment?

0:56:28:

Assistant Director Marshall: I'm -- Yeah. So, I'm not highlighting. I think these are all sort of -- I mean, it's generally being run sort of out of the S/CAP management.

The S/CAP Ad Hoc Committee is currently Mayor Pat Burt, Council Member Alison Cormack, and Council Member Tom DuBois. <https://www.cityofpaloalto.org/City-Hall/City-Council/Sustainability-and-Climate-Action-Plan-Ad-Hoc-Committee> Brad Eggleston, Director of Public Works, led S/CAP's 02-10-22 meeting. There have been seven meetings since the ad hoc committee was created.

It possibly could stay there. I guess the concern I have a little bit is, you know, we're moving ahead with a lot of things sort of on the S/CAP side, but the infrastructure piece is not really being dealt with. So, my concern is that we get that infrastructure piece addressed in the S/CAP. And we've had a discussion with the City Manager. And I think he understands sort of the issue that we need to deal with, in that we need to have a plan that we can present. The piece that's been missing from the plan -- at least in my viewpoint -- is that we haven't addressed this issue about what needs to be done with the grid. And that's sort of why we're bringing this topic up to the UAC today. So you understand sort of the underlying concerns are out there with the infrastructure.

0:57:33:

Commissioner Smith: Thank you. I appreciate the presentation. Thank you, Chair.

0:57:37:

Chair Forssell: All right. Let's move on to Commissioner Scharff.

0:57:40:

Commissioner Scharff: Thanks. So, I actually also thought this was one of the more interesting presentations. With lots to unpack. So, I guess I was a little confused on Option 1 and Option 2. So, Option 1 didn't really seem like an option. I mean, I guess I was confused as to how -- I mean, it's got a list of cons. But the only pro is that we promote doing this, but we don't have the ability to do it, if people then sign up to do it. That was sort of how I read it. Is that ...

0:58:15:

Assistant Director Marshall: I mean, I don't think it's an unfair characterization. I mean, I do think you could proceed that way, though. I mean, you could make the choice to just proceed ahead. Obviously, I guess, the point that we're trying to make, if you do, there's going to be consequences down the road. You might make it a couple years without any major issues. But at some point, you're going to have to deal with these underlying infrastructure issues. And -- Now, you can do that on a case-by-case basis, and possibly you could staff up in a few years to get enough staff on hand -- or have enough contractors on hand -- to deal with it. Whether that's a good way to do it -- I mean, I guess, in my opinion, it may not be the best way. I mean, it's sort of how we've managed the overall transmission grid in California a little bit. Is like, you know, we go promote, and then we run around and try to figure out how to the grid in place to serve it. So, it's not that you couldn't do it. It just may not be the most effective, or cost -- cost --** ...

0:59:21:

Commissioner Scharff: It seemed like a really bad approach to me. I'll just say it. I mean, it didn't -- it didn't seem to make any sense that we would actually do it that way. I mean, that made no sense. So, I assume the purpose of this was to point out that what we need to do is Option 2. And that we need to upgrade the system in advance. And I guess I'm assuming also that the point of this was to bring to our attention something Commissioner Smith just said. Which is, it's great that we have this S/CAP and these goals, and that we're pushing for electrification. But before we can actually DO electrification, we have to modernize the grid. And we can't -- Until we modernize the grid, we cannot meet the S/CAP goals. Was that -- I mean, that's how I read this.

1:00:06:

Assistant Director Marshall: And I would say, yes, that's true.

1:00:10:

Commissioner Scharff: So, what we really need to do is to move forward on modernizing the grid. The only con that I was surprised -- so -- was cost. I mean, the reason for Option 1 is, you don't know if people are going to take you up on it. You don't know if people are actually going to transition. You don't know -- You don't know if you're going to get political backlash. You don't know if -- Right?

1:00:35:

Assistant Director Marshall: Right.

1:00:36:

Commissioner Scharff: And so, that's really, to me -- to seem to be the pro of doing Option 1. Was that you don't spend all the money up-front. Right? But yet, there's no -- there's no discussion of, OK, it's going to cost \$50 million to upgrade the system in advance. And I think that's -- That, to me, struck me as a huge hole in this. It struck me that when you go to -- You know, if I had to make a decision about how we wanted to do this, I'd want to know how much money you're going to spend if we go on Option 2, versus the approach on Option 1. And what we could actually move on the margins in Option 1, versus, you know, the systematic approach in Option 2. I mean, I still think we should probably do Option 2. But, you know, it depends a little bit. I mean, if you tell me it's going to cost \$100 million to do Option 2, and everyone's going to have to triple their electricity bills, -- You know, I mean, I think it makes a big difference. On how we approach it, and how we think about it. So, I think that's a key issue. And I guess that you're getting from your studies. Right? Steps for Modernization.

1:01:49:

Assistant Director Marshall: Correct.

1:01:49:

Commissioner Scharff: So, I mean, -- So, I guess, before any decisions are made about Option 1 and Option 2, and how we approach this, you were going to go forward and do the steps for modernization first. Is that true? Or not?

1:02:06:

Assistant Director Marshall: So, yeah. I mean, I think, like you said, we're going to do another study. I mean, I think there was a study years back that was done. But we're going to go back and take a look at that. I think there was a study done one time that said \$80 million. I don't think that's anywhere near enough to modernize it. So I'm not ready to talk about the numbers, until we do another study, to see how much this is really going to cost. You know. Previously, it was done, I think, maybe by an intern of the City.

Elizabeth Oliphant, intern, authored a study, "Electrification Impact Assessment," September 2020.
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2020/11-04-2020-special/id-11639-item-no-3.pdf>

We're going to have this done by somebody with a little more experience in the utility business, before we come back with the numbers that you're looking for. But absolutely. What we want to look at is the numbers. And present them, so you can make a rational decision on which really makes the best sense to build.

1:03:01:

Commissioner Scharff: And so, is the rub here that we may not be able to, first of all, match the timeframe, from a practical standpoint, of what it's going to take to modernize the grid, and the money, and the current goals in the S/CAP? And so, therefore, the goals in the S/CAP are going to be pushed out, whether or not we admit it or not. I mean, is that -- Because, from a practical point of view, it just simply can't be done.

1:03:26:

Assistant Director Marshall: Right. And I don't think we know. Is it going to be universal electrification? Is that going to be required? Is it not going to be required? Or are we just going to let people make the choice? I think those are all things that have to -- You know, we don't know the answer to, really, today. Although they're talking about universal electrification. So, those we have to evaluate as well.

1:03:49:

Commissioner Scharff: But I'm gathering we can't tell people they can universe- -- they have to universally ...

1:03:54:

Assistant Director Marshall: Right.

1:03:54:

Commissioner Scharff: ... electrify, if we're going to cut the power off to them. And they can no longer have enough power to heat their house then.

1:04:00:

Assistant Director Marshall: Right.

1:04:00:

Commissioner Scharff: I mean, I'm assuming that's not the plan. You know. It doesn't make a lot of sense.

1:05:06:

Assistant Director Marshall: Correct.

1:04:06:

Director Batchelor: Well, if I could add to -- Commissioner Scharff, as Tomm was mentioning, I think the thing is is that Option 1 -- we just put that in there, knowing that if individuals go around and they want to pick and choose whatever areas that they want, and our goals are, -- The goals are going to be is that costs are still going to be high. Because we're going to have to -- possibly, you know, fix the system in that one circuit, or that one area. Because it's going to have impact to all these customers. But the worst thing about it's going to be is, the customer's ready to electrify, but the Utilities is not going to be able to do it with the snap of a finger. So, if you look at number 2, we're going to do a systematic looking at the system portion of it, to see what areas -- Maybe there's some areas out there, as Tomm mentioned earlier, that might be OK. Well, that's where we're going to want to market to.

1:05:05:

Commissioner Scharff: Yup.

1:05:05:

Director Batchelor: You know, to get that goal going. To move forward. So, I think the thing is is, also, as Tomm mentioned, you know, I think it's costly. You know, we think that right now that substations and the main feeders are going to be fine. We think that those aren't going to have to be touched. And that's where the biggest piece is. But it's going to be the secondary. All the transformers. All the secondary wiring, and cabling, and all that. Because that's where the biggest impact is to the connection to the customer.

Among the details to be spelled out in a future staff report: Will the wiring have to change, either to make the wires heftier or to change the number of houses per transformer?

1:05:35:

Commissioner Scharff: Right. No, I'm assuming what you're going to need to do is to sell bonds. That you're going to -- And that would be the right thing to do. I mean, ...

1:05:42:

Director Batchelor: Yup.

1:05:42:

Commissioner Scharff: ... you know, it's probably a 30-year life of the equipment, or -- at least. Right? So you could sell 30-year bonds. And why would -- Why would all the current customers have to pay for everything that people are going to use over the next 30 years? So, I mean, I know. I think -- I mean, it seems to me that, clearly, it needs to be modernized. And that a systematic approach -- where you then go out and sell bonds, get the money, take a systematic approach to do this -- is -- you know -- is the right approach. And then, I think we just have to align the S/CAP with what can reasonably occur from a practical point of view. So that -- You know, frankly, so that people aren't saying, why have you not done this already, in the timeframe that we thought we were going to do it? Or whatever. It's because we're modernizing the grid so we can do it. And I think your two-pronged approach of where we CAN upgrade for people who want to upgrade as quickly as possible, if there's capacity for them, then we obviously should let them do that.

1:06:41:

I do think there is some issue about somebody in the neighborhood taking all the capacity, if other people want to, like, charge their car, or, you know, that kind of stuff. So, I do think we need to make sure that one person, or two people -- that all the capacity isn't used up. That everyone can get an electric vehicle if they want to. In their neighborhood. That kind of thing.

1:07:03:

Assistant Director Marshall: Right.

1:07:03:

Commissioner Scharff: And I'm also assuming it's a lot cheaper to do a systematic approach than to continue to try to do a one-off upgrade. I'm assuming that. But I could be wrong. It just struck me as intuitive.

1:07:17:

Assistant Director Marshall: We would agree that it's going to be more costly to do it systematically than one-off.

1:07:24:

Commissioner Scharff: More costly to do it one-off than systematically. Right?

1:07:26:

Assistant Director Marshall: Right. Yeah.

1:07:27:

Commissioner Scharff: OK. And then, I guess I was REALLY confused, frankly, by the -- the -- oh, where was it -- the governance piece. To be honest. I mean, I get the streamlining of the contracting. I think that's mostly a legal issue, isn't it? You know, how you award contracts -- isn't that mostly state law? And then, obviously, we have some procedures and stuff, which I assume is easier to amend and change. So, it's the intersection of that to get a streamlining process. It's our internal procedures. Right?

1:07:59:

Assistant Director Marshall: Correct. So, I mean, there's not a lot in state law, actually, that sets timelines. It's mainly internal processes that leads to the time to process.

1:08:10:

Commissioner Scharff: So, you're basically saying that, you know -- And those internal processes -- are they set by the City Council? Or, they're probably just set by the City Manager for most of them. Right?

1:08:18:

Assistant Director Marshall: Correct.

1:08:20:

Commissioner Scharff: So -- You know, so this is really -- This is really directed at Ed. Hey, Ed. Guess what we're doing.

1:08:27:

Assistant Director Marshall: Nothing. I'm not doing that. No. [chuckles]

1:08:28:

[laughter]

1:08:31:

Commissioner Scharff: So, the governance piece -- I guess I was unclear about what you mean by that, in that, - - Isn't it just basically your internal -- Are we just talking about changing your internal procedures? What do you mean, setting up a separate government structure? It made no sense to me. I mean, that's beyond me.

1:08:49:

Assistant Director Marshall: OK. So, I guess the thought is -- And, again, I don't even know what legally you could do. So, for instance, you know, for San Francisquito Creek, they created a separate agency just to deal with that issue. And the City participated in some way, but there's another agency running that project. Another -- I guess another example I throw out a lot of times -- On Caltrans projects, they create a separate agency to run the upgrade project. It's not going directly through Caltrans. They're creating a sub-agency that's doing that, and sort of has that as its priority. And they have alignment between, you know, the goals. And the focus on getting this done is not being diluted by all the other issues that you might have at Caltrans. Or other issues you might have in the City itself, where you're pulling res- -- you're competing for resources to get something done. You know, I think if you want this to move quickly, you have to set the resources aside and dedicate them to getting this done.

1:09:52:

Commissioner Scharff: Right. But why would that be different than the City Council running it? I mean, in the JPA, in the creek, it makes sense, obviously, because there's several agencies involved. You know, there's Menlo Park. There's the water district. Right? I mean, it's an inter-agency thing. I mean, there are a lot of cities that have a separate -- Here we go. I'll push for power for our UAC. There are a lot of cities like Alameda, have a -- Right? -- the equivalent of a UAC. It's just not advisory. They actually MAKE the decisions.

Alameda's Public Utilities Board

<https://www.alamedamp.com/9/Public-Utilities-Board>

"Four commissioners are appointed to the Board by the Mayor with the concurrence of the City Council, in accordance with the City Charter. The Alameda City Manager also sits on the Board, as an ex officio fifth commissioner. The commissioners establish goals, approve major purchases, set direction, and create the framework for local control for the utility."

I don't know why this type of governance would be better.

So, you know, I think all of us would be quite happy to spearhead this and run this as a separate project. Right? But, I mean, I think that's a -- you know -- 'Cause we could provide the focus and time to do it. Right? ** I mean, is that -- I mean, I think -- Is that what you're really suggesting?

1:10:39:

Assistant Director Marshall: Oh, I'm not being that direct. But I certainly -- that's an option, would be to run -- to have that focus on ** Utilities standpoint, to make sure this gets done. For sure.

1:10:48:

Commissioner Scharff: And there a lot of utilities -- You know, I think Alameda's the big one that runs it that way. Isn't that right, Dean? I think that's --

1:10:55:

Director Batchelor: That is correct. Yes.

1:10:57:

Assistant Director Marshall: And that's ...

1:10:57:

Commissioner Scharff: I think with LA, they have Utility Directors -- a separate Utility board as well.

1:11:03:

Assistant Director Marshall: I think it's actually pretty common for utilities nation- -- small utilities nationwide to have separate boards, I think. Yeah. And there are the smattering that's also run through the city, too. But --

1:11:14:

Commissioner Scharff: Right. OK. Well, I mean, I think that's an interesting thought. I mean, I'm -- I'm fascinated by it. Um. So, that's -- I'll let -- I'll cede the floor, and let everyone else ask their questions. But it's a great presentation, Tomm. I really appreciate it.

1:11:29:

Chair Forssell: Vice Chair Segal.

1:11:32:

Vice Chair Segal: Thank you. Um. Yeah. Really, really appreciate the discussion, and the questions and comments from Commissioners Scharff and Smith. So, I won't repeat any of those. I had a couple additional questions. Some are little. Some are maybe to come back to. One -- I'll start with the biggest one. This comment about future grid attributes. The last bullet point is "changing funding for the grid away from an energy consumption model." And that's a -- I think -- a big topic, that's coming up with a lot of utilities right now. And as there's more rooftop solar, I know that the PUC's talking about it right now. And I do think that's something that we should be getting some information about. And I would really appreciate a whole 'nuther conversation about that. They're certainly intertwined. But I don't think that that conversation has to hold up until we decide what we're going to do with the electric infrastructure. By any means. And I'd really be interested in knowing how rooftop solar is impacting funding for the electric utility. Anyway, I would just be interested in that.

1:12:48:

And, on rooftop solar, I'm also wondering, on the other side, how much does having more rooftop solar help -- maybe it's not enough, but -- help defer some of the needs in certain neighborhoods for some of the upgrades? Do we have enough rooftop solar going back into the system to help? Or does it hurt it because it's going back?

1:13:10:

Assistant Director Marshall: So, the issue that we have to deal with on the grid -- Yeah, solar produces energy. But it's only producing energy when the sun is out. So, let's say if we move, you know, to vehicle charging. That's not necessarily going to happen when the solar panels are on the grid. So, unless you have some kind of storage system with that solar, you're just going to be loading up the transformers even further, because there's no solar out there. So, it doesn't really provide any benefit, when the solar's not available, unless there's battery storage combined with it.

1:13:47:

Vice Chair Segal: So, we should be encouraging battery storage. Is what that sounds like.

1:13:52:

Assistant Director Marshall: Well, I mean, we could. And those -- You know, there's other issues. We have to deal with the battery storage as well. But, yeah. I mean, maybe that's a solution. The battery storage, with the rooftop solar. But, you know, while we have to figure out how to integrate it. But certainly it would help -- with this issue of, you know, the load -- When the load's there and when the solar's available to supply the load, it's an important issue.

1:14:19:

Vice Chair Segal: Well, it just sounds like -- We need some -- It sounds like we need some kind of bridge solution, and then we need a long-term solution. And so, maybe that's a piece of the bridge solution. Maybe it defers some of those transformer -- one-off transformer upgrades, so that they can be subsumed in a bigger program?

1:14:37:

Assistant Director Marshall: Yeah. I mean, there's other sort of issues on the grid, related to the electrification, which we really haven't talked a lot about. But some things -- So, one of the issues, from a system design point we have to work with is, what happens if we have an extended outage on something? So, let's say a circuit -- or, even the transmission grid outage that we had, that lasted 12 hours.

On 02-17-10, a plane crash knocked out power to the whole City from 7:55 am <https://www.paloaltoonline.com/news/2010/02/17/fatal-plane-crash-causes-major-power-outage> until about 6:00 pm, <https://www.paloaltoonline.com/news/2010/02/19/palo-alto-has-studied-extra-powerlines-costs> according to the Palo Alto Weekly. So the outage lasted about 10 hours.

It would be great if staff reported information about electric outages (SAIDI -- System Average Interruption Duration Index) regularly, e.g., in Utilities Quarterly Reports. For example, the report for 4Q16 (11-02-16), https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/uac-informational-reports/2016-informational-reports/11-02-16-meeting/informational-item_-_utilities-quarterly-report-4th-q-fy-2016.pdf has a section about reliability of the electric (PDF pages 61-64). More detail would be even better.

So, what happens when the grid comes back up? And the issue with that is that, you know, unless you find some way to control what comes on, everything wants to come on, all at the same time. You know, your house is cold, so all your heat pumps are coming on. Your EV hasn't charged in 12 hours, so now your EV chargers are coming on. So, you can see this mass influx of load occurring. And we have to plan and deal with that. And there may be technological solutions, so we can defer all that power coming on at the same time. But when that load is sitting out there with the potential to come on, there are times when the diversity of when those loads come on -- 'cause typically they all come on at different times, and it evens the load out. But when you have a long outage, and then everything comes back on, it all wants to come on at the same time. And we have to design the grid to be able to withstand that when it happens.

For the City's proposed AMI system, the City was planning to buy at least some smart meters with remote shut-off capability. Could this feature be useful for minimizing the surge after a power outage? When there is a power outage, could the meter shut itself off using its "last-gasp" power, so that it is off when power comes back on?

1:16:08:

Vice Chair Segal: That makes sense. And a challenge, all at the same time. I also had a question. So, this -- Commissioner Smith touched on it -- about the compensation, relative to the cost of living. And I would be really curious to know, for each one percent -- or whatever the percentage -- you know, like, a cost-of-living raise for Utility workers, incl- -- like, all, in health care costs, pension, what -- how that translates. And you may not know now. But how that translates on a customer's bill.

1:16:45:

Assistant Director Marshall: I mean, just one thing I would comment on that. That I just -- popped in my head a little bit. But, like, on PG&E, currently, for linemen in the -- on the Peninsula and San Jose, they're giving a \$50,000 bonus for signing on, right now.

1:17:07:

Vice Chair Segal: Wow. So -- Yeah. And, on that, I -- the other question -- which you may not be the right -- it may not be fair to throw this out. But it occurred to me, as we were talking about hiring, is whether we need to think about expanding which unions we negotiate with. Because, as I understand it, that is also a limitation for some of our employees. Because we're not -- we don't --

1:17:34:

Assistant Director Marshall: They're not IBEW.

1:17:36:

Vice Chair Segal: We're not IBEW.

1:17:38:

Director Batchelor: Right.

1:17:38:

Vice Chair Segal: Right. And, again, that's a -- maybe an additional discussion for another day. But it -- it -- When I think about this, it comes back to that question often. And so, that might be something we need to think about. I appreciate there are a lot of legal implications, and a lot of work associated with that. But if we're always short-staffed, that also requires a lot of work, and costs associated with that. Um. Oh, and then, I'm just curious. I don't know. I was just doing the quick math. How many transformers we have out there. It seemed like -- I don't know. 10,000?

1:18:18:

Assistant Director Marshall: Oh, no. Not that many.

1:18:19:

Vice Chair Segal: Oh, sorry. I mean -- Let's see, what was my -- 2,000, or something? 1,000. 2,000. Around there.

1:18:24:

Assistant Director Marshall: Yeah. I think it's more than that. I have the numbers here somewhere. But let me see if I can get that to come up.

1:18:38:

**: Tomm, it's 3,000.

1:18:40:

Assistant Director Marshall. Oh. 3,000. OK. I was going to try to pull up -- I just have an example of the transformer data we pulled. So let me pull that up. And I'll share this.

1:18:52:

Vice Chair Segal: Even while you're pulling that up ...

1:18:53:

Displayed is a graphic of "Single Phase Overhead Transformers." But Google "site:cityofpaloalto.org 'single phase overhead transformers' " no hits.

Vice Chair Setal: ... I guess -- that -- occurs to me if you're talking about that kind of volume, that, you know, if it took 3 or so years to come up with a plan, it would take -- what -- a couple years, even, to upgrade that number of transformers.

1:19:09:

Assistant Director Marshall: Yeah. It's going to be -- it's more -- You know, it's just not going out and hanging the transformers as well. I mean, the poles out there may not be able to handle the weight of these larger transformers. So poles need to be replaced.

How many such poles are we talking about? Every time a pole is replaced for any reason, the City should make sure that a place on the pole is reserved for the City's FTTP fiber infrastructure.

So, it's a general upgrade. Now, I will say that the system is in need, in a lot of ways, for an upgrade. It's old. It needs to be replaced anyway. So, some of this upgrading would have happened, just over the course of time. The issue is sort of the acceleration, AND the additional needs, to put additional equipment out that makes it -- that's where the additional costs come.

1:19:53:

Vice Chair Segal: The -- You mean because we're doing it quicker, or the load has just grown so quickly, or ...

1:19:58:

Assistant Director Marshall: And we're doing electrification. I mean, we were going to -- We were out rebuilding the system. We normally go out and rebuild it. But we're rebuilding it, you know -- um -- adding some capacity as we go, and correcting things as we go. But it wasn't really anticipating having to accommodate electrification in 10 years or 15 years. If that makes sense.

1:20:20:

Vice Chair Segal That makes sense. But now that we're here, and we know what we're talking about, even just sort of maintenance, wouldn't -- and upgrades, and sort of the ordinary course -- it seems to me, at this point, we should be upgrading for that -- for anticipating that.

1:20:36:

Assistant Director Marshall: So, we are. We do do that. Today. But they're only coming in, you know, the few that we get for new customers that come in. If they require a transformer upgrade at that point, you know, we'll be replacing the transformer, and rebuilding parts of the secondary network when we do that. But a lot of them still come in -- 'cause we don't have the -- a lot of electrification occurring, they're just putting the normal homes in, and we're putting them back on existing transformers, just 'cause we don't have staff to do a bunch of extra work right now, **.

1:21:12:

Vice Chair Segal: So, it just -- I'll stop after this -- but it sounds to me like one of the first things we should be doing is hiring staff now. Because we're already understaffed for everyday maintenance, anticipating a greater load.

1:21:29:

Assistant Director Marshall: Yeah.

1:21:30:

Vice Chair Segal: Expanding ...

1:21:30:

Assistant Director Marshall: I just -- I just want to emphasize one other point. That we're not saying we're going to staff up to handle all the electrification. A lot of this is going to be done through contracting. The staff we need is to actually run contracts. And to review work for the contractors. It's not like we're going to be adding all the people to do this work. That's just not probably practical, or even possible. But we have a lot of vacancies in the Engineering right now as well. And we have experienced engineers leaving, still, for retirement and other reasons. And so, we have -- just in our normal staff, we have significant shortages today.

1:22:16:

Director Batchelor: And if I could just add to that, is that, you know, we just asked for 3 additional engineering positions in the mid-year, that we'll be getting approved because of S/CAP. And we know what will end up happening is that we've had these positions, as Tomm mentioned, open for some period of time. And we know that we're going to have to train these individuals. You know, we just did a job faire with San Luis Obispo, where we actually went down. They had a job faire. There's two colleges in California that have power degrees, and that is Sac[ramento] State and San Luis Obispo. So, we went down there. There were two individuals that were interested in Palo Alto. So, hopefully, once they graduate, they'll come our way. We will start them off at an Associate style, and then gradually move them up to Project Engineers, which will take some time. But it's the same thing, as Tomm mentioned, too, is that, you know, we just hired 3 more Apprentices. They're in to their apprenticeship for 6-8 months now. But they got a 4-year deal that they have to go through. So, once those folks get to the 2-3 year period, we'll hire some more Apprentices. Because we've come -- and known that we can't compete with PG&E. At \$50,000 that we're going to try to find. And even if we did -- I mean, some years ago, we raised the Linesman's classification and the hard-to-fill positions, like, 22 percent. One time. 22 percent. And it didn't get us anybody to come here. Nobody even looked at us. And we were -- At that point, we were just a little

bit above Santa Clara. And so, now, we're down a little bit below Santa Clara. But we're competitive with that. But, again, -- So, I think that's -- as Tomm mentioned -- You know, it's the cost of living, compared to what our living wages are. It's really tough to find people that will come here.

1:24:18:

Vice Chair Segal: Right. I appreciate that. Thank you.

1:24:24:

Chair Forssell: Thank you. Commissioner Metz.

1:24:28:

Commissioner Metz: Hi. Assistant Director Marshall, thank you very much for your presentation. It seems super important. I mean, it seems essential, for S/CAP to advance, to, you know, get this grid modernization done. As - I had a few questions. But just sort of general overall comment. In reading this --

In reading what? The slides?

So, I'm very receptive to helping with this. But, in trying to think about how to do that, in reading this, I kept feeling that we need, you know, more detail about what you need. That, you know, we need you to describe, specifically, what is the issue in more depth. And what is the plan? You know, who owns it? And what's the plan for addressing it? So, I think, you know, since this is an advisory body. And then we may be able to help in getting resources. I had a few specifics. But it seems like, in general, the most important things are figuring out, you know, how to do the staffing. And a couple of commissioners have addressed this. Having a roadmap. You know, I understand that you're going to be hiring contractors to be doing, you know, the detailed heavy lifting. But it seems like, you know, mapping out, like, kinda, what's the roadmap for how we're going to go forward. You know, I recognize, looking at the two options, I assume this -- as has been discussed -- that Option 1 is really a straw man. But, you know, I sort of also infer that there's probably some Goldilocks option, a little bit in between. Right? We're not going to spend huge amounts of money without, you know, pretty high confidence that people are going to actually take up that capacity. Right? So, you know, that -- There's going to have to be some bit of just-in-time, in terms of how we build stuff. So, it seems like what we need right now is, you know, what is the core hires that you need? And, you know, what's the plan for getting those folks? What is a long-term roadmap? And especially -- The one thing I didn't hear much about, that this sort of begs for -- is, what are the links? How do we establish -- and what are the links to the S/CAP plan? Right? Because this feeds back -- what's technically possible is going to influence what, you know, S/CAP ultimately does. Right? If we don't have the capacity, as you talked about, to, you know, power all these heat pumps, then they're not going to -- either they're going to be there with, you know, not going to be doing anything -- they're going to be statues -- or we're just not going to install them. So, it seems like there needs to be a feedback loop in terms of scheduling. And, you know, feasibility and costs and all that stuff. And it also suggests -- You know, storage -- You mentioned storage a couple of times. And it sort of says that -- And this is something that I know that in past analyses has come out, you know, it doesn't, you know, make sense from a straight economic standpoint. But, you know, it sounds like we're kind of coming around to that maybe it does. Right? If we -- Given that we already have solar. And I guess we could take what CPUC is proposing and just start taxing solar, and discourage people.

Speaking of straw men.

But seems counter to, you know, our broader sustainability objectives. And if -- so, if we don't do that, and we DO have solar, then it seems like we have to be able to deal with the storage. So, to me, it seems like getting those -- It would be really helpful to me to get -- to see those 3 things. You know. One is the staffing plan. And, you know, where there are barriers that maybe we can help you remove. Two, you know, what is the road- -- the high-level roadmap -- you know, over, say, the next at least 10-15 years? Since S/CAP is kind of on that kind of schedule. And then, you know, how do the two tie together? I mean, it seems like we, collectively, would add a lot of value to the City Council discussions if we could, you know, provide that. And, you know, where necessary, unfortunately, perhaps raise red or yellow flags that, hey, look, you know, this can't happen. Or, if you want it to happen, here's what has to happen first. So, anyway, this is my thought, that, you know, I'd like you to comment on. I guess the one specific comment that was asked, but I didn't understand it, was this comment, change funding for the grid away from energy consumption model. I didn't -- I just didn't understand what that means.

1:29:01:

Assistant Director Marshall: So, I'll -- The way the grid -- The way we collect -- And maybe I should let the rate people jump in. But, typically, the way we're collecting -- Well, rates were set up to encourage energy conservation, at one point in time. And so, the way that they encouraged it was, they took all the costs of the grid and they put it into the energy charges -- costs per kilowatt-hour. Well, there's a lot of fixed charges out there for running the grid. But nobody separates those out and charges fixed charges separately. And so, ...

1:29:32:

Commissioner Metz: Wait, wait, wait. We have demand charges for commercial customers.

1:29:36:

Assistant Director Marshall: Yes. Yes, we do.

1:29:37:

Commissioner Metz: That's why I didn't understand that -- what ...

1:29:40:

Assistant Director Marshall: But not for residential. And we're not on demand. So, I mean, one way to move is to create demand charges possibly for residential customers as well. So, -- And I would just say, I mean, solar applications are on the grid. They impact the grid, too. And there has to be grid upgrades for -- especially if we get high penetration on solar. But the way that the rates are set today, they're not going to be contributing to the grid upgrades. Because they're not really paying anything in the ** energy charges. So, we have to think about how we're going to collect those. Later. Later down.

1:30:18:

Commissioner Metz: Well, it's -- There's two possibilities.

1:30:20:

Assistant Director Marshall: Right.

1:30:20:

Commissioner Metz: There's two degrees of freedom. One is, figuring out how you're going to work out the financial math. And the other possibility is to figure out a way to use the energy in a constructive way. Right? What you talked about before. And by storage would be one example, ...

1:30:36:

Assistant Director Marshall: Yeah.

1:30:37:

Commissioner Metz: ... you know, of how the energy could both be used in a productive way AND help us to achieve our sustainability objectives.

1:30:48:

Assistant Director Marshall: Yeah.

1:30:49:

Jonathan Abendschein: So, if I could just jump in here, I think Tomm has, really, hopefully, queued up something that we're going to have to talk about a little bit in the electric cost-of-service study. A few years back, we dealt with this issue of solar and contributions to the grid, when we set up our second iteration of net energy metering. So, it used to be that we would -- It used to be that we would essentially allow people to offset -- use their surplus solar to offset usage at any time of the year. You know, you could use your summer surplus usage to offset usage

in the winter. And our second generation did away with a lot of those extra incentives. So, I think a lot of the issues around pure solar have been taken care of. And some of the incentives are in place to get storage to operate the way we want it. But energy storage has created some new potential issues that we're going to have to tackle. And we brought that to you folks in our policy objectives for the electric cost-of-service study, when we talked a little bit about the changes we might even make around microgrids. So, I think this is a good intro to something we're going to be talking about later in the year.

1:32:12:

Commissioner Metz: OK. So, anyway, just to summarize, I would really appreciate seeing, you know, what is the plan for these very short-term issues, namely, getting the, you know, just the core individuals, and having, you know, kind of roadmap, and how this connects to S/CAP. I think we could add more value if you guys came with at least a sketch of a plan for how to do both of those three things.

1:32:39:

Assistant Director Marshall: Right. So, -- And I think I'm in agreement with you. I think today, we're just sort of putting the topic out there. We're going to be coming back. 'Cause one of the things we're tasked to do is come up with a plan that incorporates the S/CAP. And it's going to include -- this part of it that we're talking about today, which is the infrastructure. So, I think, at that time, we'd be able to come back and give you a chance to do that.

1:33:07:

Commissioner Metz: OK. Thank you.

1:33:09:

Chair Forssell: Commissioner Johnston.

1:33:11:

Commissioner Johnston: Thank you very much for the presentation. I think this is really one of the kind of most important discussions we've had on the UAC for a long time. Because I think that -- at least for me -- it really brought home that we have these goals -- aspirational goals -- in the S/CAP. But the practical steps to get there are really complicated. And involve a lot of difficult choices. And -- I mean, I am fully in agreement that the Option 1 is just -- is a guarantee for a train wreck. Kind of probably sooner rather than later. And that we ought to be proceeding with a plan. And I just second the comments that all the commissioners have made. And that Commissioner Metz just made. That it would really be useful to go forward from here. And when the next step is to kind of see a more detailed roadmap of, you know, what decisions need to be made -- by the commission, by Council -- to really move this forward, on a timeline that would enable us to make the upgrades, in a way that we wouldn't have to ask a lot of people to postpone -- One of the things that caught my attention was, early on in the discussion, well, we might have to post- -- tell people to postpone electrifying their houses -- installing EV chargers, and what not -- just because we don't have the capacity. I mean, that's obviously not a situation we'd like to be in. So, I'd like us to move this forward. Move the discussion forward. Get a roadmap of -- So that we can kind of move it forward. So that we're not in a position where we're having to ask people to postpone things. And yet, we're still doing things according to a sensible plan. So, thank you very much for the discussion.

1:35:32:

Chair Forssell: Thanks for your input, Commissioner Johnston. Let's see. I don't see any other commissioner hands up. Yeah. I really agree with a lot of the comments and questions that have been raised. This is very timely. Thank you for bringing this to us. I think it puts a lot of things into perspective. About those programs that we've been excited about. And realizing that if all those programs were successful, we would have a completely different problem. So this is really the right place to be focusing. Let's see. There was one -- I just have a couple of very small questions that nobody else asked already. On the very last slide, under governance, you mentioned, current structure does not integrate policy with infrastructure needs. What does that mean, Assistant Director Marshall?

1:36:42:

Assistant Director Marshall: Yeah. So, ...

1:36:44:

Chair Forssell: I didn't quite understand that.

1:36:45:

Assistant Director Marshall: So, I think -- I guess the point of -- really, of that is is that the goals are sort of out there, and they hadn't really considered what was needed on the infrastructure side, as the goals were put out. Now, I'm not saying that people weren't thinking about this. They were. They were looking at it. It's when the timeframe became compressed that it forces the problem to come a lot sooner than it probably would have otherwise. So, if we just let electrification run out as it normally would, without promoting and doing a lot of things. It's when we said, oh, we want to be done by 20- -- aspirationally, 2030 -- or -- That's when it becomes a much bigger problem to deal with.

1:37:27:

Chair Forssell: Got it. OK. So, that bullet point is just like summarizing this entire conversation. On some level.

1:37:33:

Assistant Director Marshall: Yeah.

1:37:34:

Chair Forssell: Yeah. And, you know, we've been talking about, like -- Option 1 -- I guess, it feels like another way of characterizing Option 1 is, the path we're on right now, unless we, you know, pivot, and intentionally put the utility on a different path.

1:37:52:

Assistant Director Marshall: Right.

1:37:54:

Chair Forssell: And one of the things you said along the way was, customers will complain about the service levels they experience. Were you referring to, you know, delays in their ability to electrify?

1:38:07:

Assistant Director Marshall: Yes.

1:38:08:

Chair Forssell: OK.

1:38:08:

Assistant Director Marshall: And even -- I mean -- The other thing is that this all gets in the same queue. So, I have people coming in today, for new -- you know, new services to their home, and there's other things that come in. So, there's just a queue that we take as we come -- as they come in. So, like, on customer connections, we try to do that in, you know, at most a few months to get those taken care of. But if I get a bunch -- huge queue of electrification coming in with that as well, those timelines are going to get extended.

1:38:39:

Chair Forssell: Right.

1:38:39:

Assistant Director Marshall: And, I think, anybody that's dealt with PG&E would -- could tell you what kind of delays they get at PG&E, in terms of even getting a new connection to your home. Sometimes you have to be a

year in advance with them. So, we don't provide that level of service in Palo Alto. We provide a much higher level of service. I mean, it's not that we couldn't provide that level, but I'm not sure that's how we want to move.

1:39:02:

Chair Forssell: Yeah. OK. Well, and I just wanted to clarify, you didn't mean, like, service interruptions, power outages. You meant ...

1:39:11:

Assistant Director Marshall: Yes.

1:39:11:

Chair Forssell: ... new connections and upgrades and permits and --

1:39:15:

Assistant Director Marshall: Yeah.

1:39:15:

Chair Forssell: Got it. Um. So. Yeah. Well, I see Commissioner Bowie has his hand up. So, if you've got something you want to add as well.

1:39:24:

Commissioner Bowie: It was just appropriate to that question. Thank you. Yeah. Sorry to jump in at this point. On the queue system, is there any way to -- So, it seems like Option 1 is our sort of business-as-usual case. On that queue system, is there any possibility to kind of augment Option 1, where if someone can come in with their neighbors, or other people who are on the same transformer, same part of the grid, could you aggregate them, in order to sort of move Option 1 faster, as we're transitioning into a different version.

1:39:58:

Assistant Director Marshall: Yeah, I definitely think that's an option. And I think that's -- We still are looking at programs to figure out how to aggregate people. And find demonstration projects. So, I think there is a way we could do that. There's still ongoing discussions about that. Of, you know, how we can move some of these projects forward in the near term. And that would be one way we could do that, is to have an aggregate of people come in, so we could do a single upgrade in an area, so we aren't doing onesie-twosie upgrades across the City. Which is much more -- excuse me -- difficult to accomplish.

1:40:41:

Chair Forssell: Yeah. I just sort of -- Piggybacking off that line of thought, it does feel like, well, I, for one, certainly am very supportive of preparing a study to scope the problem, to cost out the problem. And it would make a lot of sense, perhaps, you know, if a neighborhood-by-neighborhood plan emerged that could -- um -- that could electrify, then, you know, and perhaps there would be some opportunities to also add fiber. And to also underground. You know, sort of do, like, a whole suite of really fantastic utility infrastructure work in a neighborhood all at once.

Great idea.

You know. And the only other thing, I guess, is just an observation: that, you know, nothing is free. And workers aren't, you know -- Good employees are expensive. And I certainly hope that we find a way to compensate properly, to attract and retain the talent we need. And the infrastructure, sounds like, on some level, is kind of needed anyway. But to the extent that we're pushing regular infrastructure upgrades past where they need to be, you know, it's getting to where -- meeting our S/CAP goals, I guess, it shouldn't come as a surprise if it's not free. And there are some additional costs associated with that. But I will stop there. Thank again for the report. And I see Council Member Cormack has her hand up. So, perhaps the last word.

1:42:19

Council Member Cormack: Thanks, Chair Forssell. Such an important topic. It feels like the beginning of a discussion that has more details than we've had so far. So, one question then. If permissible, may I share my screen?

1:42:34:

Chair Forssell: Oh, yeah. That's fine.

1:42:35:

Council Member Cormack: OK. So, my question would be, Mr. Marshall, when is this particular presentation -- when are you thinking of bringing that to the S/CAP?

1:42:46:

Assistant Director Marshall: So, I believe that that's -- we're working on -- two weeks?

1:42:51:

Council Member Cormack: Is this for next Thursday?

1:42:54:

Assistant Director Marshall: Ah -- Maybe next Thursday or the Thursday after, we were talking ...

1:42:57:

Council Member Cormack: OK. So this is -- OK. This is a preview for when we have the discussion of the funding, per se.

1:43:03:

Assistant Director Marshall: Yeah. And I think the presentation there will be -- We didn't get into the backup stuff and the technical stuff about ...

On Thursday, 02-10-22, the S/CAP Ad Hoc Committee met to discuss funding and financing. (See video [here](#).)

<https://www.cityofpaloalto.org/City-Hall/City-Council/Sustainability-and-Climate-Action-Plan-Ad-Hoc-Committee> It didn't really talk about "modernizing the grid" per se. There was no staff report. There are no minutes.

1:43:10:

Council Member Cormack: **

1:43:10:

Assistant Director Marshall: I think there's a lot more ...

1:43:12:

Council Member Cormack: Yeah.

1:43:12:

Assistant Director Marshall: ... technical questions coming from the S/CAP that we ...

1:43:16:

Jonathan Abendschein: Council Member, we were talking about having this outside the actual ad hoc meeting

first ...

Where specifically? When will the public (and UAC and Council) get to see what happened?

1:43:21:

Council Member Cormack: OK.

1:43:22:

Jonathan Abendschein: ... And then talk about how to talk about this ...

1:43:28:

Council Member Cormack: OK.

1:43:28:

Jonathan Abendschein: ... with the working groups, or through an ad hoc sustainability committee public meeting.

1:43:32:

Council Member Cormack: OK. I'll just translate that for everybody else. There's the workshop meetings, which are once a month, and the Thursday morning. But it's sounding like we do this separately. And then, also, work with the working group. OK. Great. Super helpful. So, I'll withhold all my comments until then. And let me just see if I can share my screen here. It looks like I can. And what I just want to show you all -- It's from the Finance Committee on January 18th. And then we repeat some of this at Council. This is polling data that's related to the business tax. And there's just two slides I want to show you.

1:44:08:

Slide -- Housing costs, climate change and homelessness are concerns for majorities

01-18-22 Finance Committee meeting agenda, page 37:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/finance-committee/2022/20220118/20220118pfscsm.pdf>

Can I get a nod? Everybody can see my screen?

1:44:12:

** Yes.

1:44:12:

Council Member Cormack: Yeah? OK. Well, it looks like it's a little off there. But -- um -- The main thing I want to show you here is the green section for climate change, which is 26 percent. So, 26 percent of the people polled -- ** statistically valid likely voters -- don't think climate change is -- think climate change is not too serious a problem. So, I just share this with you, as we're thinking about how we're going to pay for all this. And then, let me see if I'm going to be able to scroll down -- yeah. Packet page 41 just had some information as well.

Slide -- Voters see a wide range of rationales motivating a tax measure as "acceptable."

01-18-22 Finance Committee meeting agenda, page 41:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/finance-committee/2022/20220118/20220118pfscsm.pdf>

Here, a range of rationales for -- again, this was for a business tax license measure that we're considered acceptable. And you can see, climate change is down at the 68 percent, when you add "very acceptable" plus "somewhat acceptable." So, I just wanted to make the connection between the discussion we're having today and how we're going to pay for everything. And just let you know that we have a little bit of recent data on this topic,

that will, I think, inform all of our discussions going forward.

1:45:25:

And then, I think, just the one thing I want to say about Option 1. Agree with Commissioner Bowie. It feels like business-as-usual. And it's really frustrating for everybody. Right? It's frustrating for the advocates, who want us to get going yesterday. And it's frustrating for our Utilities staff, 'cause, like, you know, we're just -- we're not going to be able to handle this load. So, I'm hopeful that there is -- I hesitate to say a Goldilocks version -- but a way for us to do two things. Which is, I'm a big advocate for a pilot. So, it's possible we can do a small-scale pilot in parallel, with the planning. And I think that will enable us to learn a lot more. But I certainly agree with Commissioner Johnston that this is an important discussion. I'm very pleased to back here for it. Thank you.

In this 02-06-22 blog, Sherri Listgarten said she thought Council Member Cormack's suggestion to do a pilot was a "retreat" from electrification.

<https://www.paloaltoonline.com/blogs/p/2022/02/06/palo-altos-climate-goals-threatened-by-inadequate-power-grid>

I don't think Council Member Cormack intended to propose a "retreat." For example, see her comment at 1:56:58 of the 02-10-22 meeting of the S/CAP Committee,

<https://www.cityofpaloalto.org/City-Hall/City-Council/Sustainability-and-Climate-Action-Plan-Ad-Hoc-Committee>

quoting presenter Dr. Holmes Hummel (but not specifically about electrification): "We just have to get started on anything that we think will work."

Still, I wonder what we'd learn from a pilot that we wouldn't learn from diligent planning.

In principle, I'm not a fan of "ready-fire-aim" pilots. The City's 67-home FTTH Trial was a ready-fire-aim pilot.

1:46:20:

Chair Forssell: Thank you very much. With that, unless somebody -- on staff, for example -- I think we've addressed everything. So, why don't we consider this topic finished. And why don't we take a short break, and then come back for the action item we have on our work plan. So, my clock is 6:47. Why don't we take an 8 minute break, and be back at at 6:55. So, see you all back shortly.

1:46:57:

From: [E Nigenda](#)
To: [Council, City: UAC](#)
Cc: [Sustainability Email](#)
Subject: Grid Resilience
Date: Wednesday, March 9, 2022 5:34:34 PM

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

Dear City Council Members and Utilities Advisory Commissioners,

Thank you for your recent joint session on Palo Alto's S/CAP. As Palo Alto moves towards electrification, please keep the grid's resilience in mind.

[Recent research](#)¹ found that grid resilience varies over the course of a day and that **a high uptake of solar panels can leave the grid more susceptible to failure.**

The researchers also found that renewable energy stored in household batteries is used only to minimize household power costs and does little to minimize the risk of network failure. **They recommend that the supply of power from these batteries should be scheduled to also optimize for power grid resilience.**

I hope that this recommendation is included in the planning and is not an afterthought.

Thank you for your service to our community,
Esther Nigenda, Ph.D.

¹ The effect of renewable energy incorporation on power grid stability and resilience, <https://www.science.org/doi/10.1126/sciadv.abj6734>

From: [Jeff Hoel](#)
To: [UAC: Council City](#)
Cc: [Hoel, Jeff \(external\)](#); [Shikada, Ed](#); [Batchelor, Dean](#); [Horrigan-Taylor, Meghan](#); [Palo Alto Fiber](#)
Subject: TRANSCRIPT & COMMENTS -- 03-24-22 -- Palo Alto Fiber Community Information Session
Date: Wednesday, March 16, 2022 7:10:34 PM

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

Commissioners and Council Members,

Here (below the "#####" line) is a TRANSCRIPT of the 02-24-22 Palo Alto Fiber Community Information Session, with my COMMENTS (paragraphs in red beginning with "###") and notes about where the slides were (paragraphs in orange beginning with "###").

02-24-22: "Palo Alto Fiber Community Information Session"
<https://www.cityofpaloalto.org/Events-Directory/City-Manager/Palo-Alto-Fiber-Community-Information-Session>
Video:
<https://www.youtube.com/watch?v=Pc9e8-AGBao>
Slides: (I don't know of an online source.)

High-level comments:

1. Can future sessions be in a real physical place, rather than (or maybe in additional to) virtual?
2. Only one member of the public spoke for himself and identified himself (55:25). Meghan Horrigan-Taylor rephrased questions submitted by the public, and didn't identify who submitted them, which I thought was a loss.

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

00:00:

Slide 1 -- Palo Alto Fiber Community Meeting -- February 24, 2022

00:09:

City Manager Shikada: OK. Welcome, folks. We are just about to get started here. Or, actually, we're just letting folks into this session. My name's Ed Shikada, Palo Alto City Manager. Welcome to our Palo Alto Fiber Community Meeting. Again, we're just -- folks are just arriving. So bear with us for a minute, and we'll get started. [pause] Hopefully, you can see, we've got a presentation on slide already up. So, hopefully, your screen configurations are such that you can see that. [pause] And we still have folks coming in. Although -- let's see, it looks fairly stable. Once again, let me just do a quick introduction. My name's Ed Shikada. I'm the City Manager here in Palo Alto. And, hopefully, you found the right Zoom session. This is our Palo Alto Fiber Community Meeting. And, actually, I see something a little odd about that slide. I don't know if it's just my screen or not, but -- OK, it looks better there. All right. Well -- And just for your awareness, as a participant here tonight, it looks like we've got 56 attendees. We're expecting a few more. So, we'll see if folks join us as we proceed. But, nonetheless, in the interest of everyone's time, I want to go ahead and get started. Although it started kicking again -- close to 60 now. Or at 60. So -- All right. We'll go ahead and get started. Again, my name's Ed Shikada, Palo Alto City Manager. Thank you very much for joining us here for a Palo Alto Fiber Community Meeting. And we've got quite a bit of information to share with you. And I look forward to our discussion this evening. So why don't we go ahead with the next slide.

02:16:

Slide 2 -- Welcome Remarks & Introduction

And, again, just welcoming everyone. Also, just want to provide SOME background, since some folks may be new to the conversation of providing fiber optics throughout the City of Palo Alto. This is an extremely important initiative. And for those who AREN'T new to the conversation, you've been hearing this talked about for many years here in Palo Alto. Perhaps our Utilities Director, Dean [Batchelor], can cite exactly when the conversation started. But we'll get to that in a minute. But if -- Among the COVID silver linings, as we like to refer to it, certainly a recognition of the value and potential for fiber to the home, fiber to the premises, throughout our community, has certainly come to light. And been an issue of great interest throughout our community. So, as a result of that, the City has undertaken significant effort to really do the homework and legwork necessary to be able to bring a decision forward in the very near future for going forward with a fiber to the premises initiative. So, with that, I look forward to our presentation tonight, as well as our discussion. And also give you an indication of what's ahead. Next slide, please.

03:42:

Slide 3 -- Agenda

All right. So, for tonight, we will be providing a bit of history on the development of a fiber initiative. We'll provide a summary of exactly what that means. And, again, recognize that people are at a variety of entry points to the conversation. Do want to make sure that we can provide some baseline information that everyone who's involved in this discussion has a base of knowledge. We'll go through our schedule and some upcoming

milestones, as well as ways in which community members can be engaged and stay informed of this discussion as it proceeds. And then we'll open it up for discussion. Just to be clear, in case you weren't aware, this session is being recorded. And that way, it will be available for folks who were not able to join us here live. So, with that, next slide, please.

04:37:

Slide 4 -- Palo Alto Fiber Overview

04:41:

Director Batchelor: Good evening, I'm -- Good evening. I'm Dean Batchelor, Director of Utilities. Welcome, everybody tonight. So, a little bit about the history.

This version of history leaves out LOTS of stuff. For a longer version, see pages 3-13 here.
<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>
The lines beginning with ">" are the City's history document. The other lines are my comments about it. (Many of the clickable links to City documents no longer work, because the City did a wholesale renaming of its website's URLs about a year ago. Sorry about that.)

The history has been ongoing since the early 2000s.

I moved to Palo Alto in 1998, in part because the buzz was that fiber to the home was just around the corner.
https://www.paloaltoonline.com/weekly/morgue/2001/2001_07_18.fiber.html

Where various business plans, construction costs, estimations for operational models included private and partnerships. And the City was unable to move forward and implement in the early 2000s. However, the idea behind deploying gigabyte speeds

Speeds are specified in gigabits per second (Gbps), not gigabytes per second.

has always been something that -- serving both to the commercial as well to residential -- has been on the forefront. And, in 2013, staff provided a master plan, looking at some wireless network plans. To Council. Unfortunately, we put an RFP out at that period of time. And we did not get any takers. To look at that plan. Two years later, in 2015, we went through -- we really looked at the master plan, looked at the wireless network, in addition to -- thinking that maybe wireless might be a way to look at fiber to the home. But the capabilities at that period of time -- technology was not as strong as we thought. And so, it was something that we needed to go back and look at again. But in 2019, we did another RFP that would outline areas looking at a high-level design, as well as another business plan. And this business plan was going to look at detailing an engineering design -- a full engineering design -- and cost estimate for fiber to the premise. So, at that point, the City hired Magellan. Who's a fiber expert and has built many fiber plants throughout the United States. And we are partnering with them as we are moving forward with this.

It would be more accurate to say that Magellan is a consultant, not a partner.

So, we decided that creation to the Utility and similarities with this and the fiber efforts -- You know, one of the things is is that we're locally owned. And locally owned is where -- Large corporations are accountable to their stakeholders, and shareholders. Where, today, Palo Alto Fiber network is accountable for the community, creating more responsive and local control. And local control is very important. As we talk about a high-level quality of customer service. As everybody knows, the Utilities have been in business for over 100 years. And we understand the community. We understand what the needs are. We also understand that service -- providing a high-quality service is a very important -- in a timely manner. And it's reliable. Reliability is number 1. On that. You know, fiber is really the gold standard to fast, reliable internet services. I think that, you look at DSL or cable, it's capable of carrying amounts of data. However, when you have fiber, you're able to do it much faster. And that's how you can get your gigabit speeds. And that's what we're looking at as we move forward today. The community investment aspect of it is is that it's public investment in broadband, and it creates competition between services, and keeps the costs low. And that's going to be very important, as you'll see through this presentation tonight. So, with that, I'm going to turn it over to John Honker, who is from Magellan, to walk us through the rest of the presentation. John.

08:23:

Slide 5 -- Local Ownership of Utilities Improves Affordability

John Honker: Great. Thank you, Director Batchelor and City Manager Shikada. Good evening, everyone. My name's John Honker. I'm really the project executive with Magellan on the City's project, and been a -- It's been great to partner with City over the past year -- year and a half -- that we've been working on this with Director Batchelor and his team to make this a reality. And I think -- you know, echoing what Director Batchelor said is really important. Local ownership of utilities improves affordability. If we look at just CPAU, you know, electric rates were 37 percent lower than bills from PG&E in 2020. The same holds true when we start looking at broadband owned by public utilities. Where there's more pricing controls over the network. There's more local ownership. There's more local control. And that creates a scenario where the utilities can deliver more value, potentially, at equal or better prices than can be found in the competitive market.

09:31:

So, what we're going to talk about tonight is, you know, why Palo Alto's doing this. We're going to look at some examples of some other communities. Look at what's been done to date. And Palo Alto's come a long way, now, in this project, to get closer to actually implementing a network. And then, we're going to talk a little bit with Meghan about questions and answers from the citizens of the City. Next slide, please.

10:02:

Slide 6 -- 100 Communities in 20 States Provide Locally-Owned Broadband Today

The URL cited on this slide has nothing to do with fiber.

This document makes the "more than 100 communities across 20 states" claim, but that's an underestimate.
<https://medium.com/paloaltoconnect/five-fiber-tips-to-plug-into-palo-alto-fiber-3e38bfa3fd64>

Great. So, as we look at community -- we call it community broadband, or community-owned broadband.

The FCC currently defines "broadband" to be at least 25 Mbps (megabits per second) down and at least 3 Mbps up. Obviously, that's totally inadequate. If a fifth FCC commissioner can be confirmed, FCC might be willing and able to revise the definition to something larger, e.g., 100 Mbps down and up. But it still won't be as large as Palo Altoans deserve.

<https://www.engadget.com/senators-fcc-change-definition-high-speed-broadband-222150947.html>

You know, Palo Alto is looking at joining 100 -- another 100 communities, over -- across 20 states, that operate and control their own broadband destiny.

MuniNetworks' Community Network Map

<https://muninetworks.org/communitymap>

says there are 414 communities in 40 states that have municipal FTTP networks, either citywide or covering part of the city. (That's 156 citywide plus 258 partial.) See my message to UAC and Council of 01-30-22 (PDF pages 7-14 here).

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/02-02-2022/public-letters-to-uac.pdf>

You know. And the message is clear, I think, for community broadband providers like Palo Alto is considering being. It's faster speeds, lower prices, local control, and community reinvestment. But, in addition to that, one thing that communities all -- who provide broadband all excel at is taking care of the customer. We find, you know, such a significant difference between the customer service levels from the local power companies that provide broadband than, you know, the typical ISPs that are out there. And they hang their hats on that. Because, you know, the reputation in the community of the utility providing great service, providing essential services -- and locally-owned services -- is really critical. And, you know, we look at other communities across the U.S. You know, most of them are power utilities that do this. They own their own electric. They've been the business of providing essential services for many, many years. And they're poised to bring broadband to their communities. Next slide, please.

11:26:

Slide 7 -- What Are Other Communities Doing?

So, what are other communities doing in the U.S. today? You know, three of the relatively notable communities out there today are City of Chattanooga, Tennessee. Which, you know -- They own their own fiber to the home. They provide it to the entire City.

Actually, it's to their entire electric service territory, which is larger than just the city.

A new study came out that shows that over \$2.6 billion in benefits have been generated locally from the EPB fiber optic network over the past 10-15 years.

\$2.69 billion over 10 years.

<https://muninetworks.org/content/study-finds-chattanooga-fiber-network-10-year-roi-269-billion>

They reinvest a significant amount of cash back into their network, and into community programs. They're known for providing some of the fastest speeds in the U.S. Along with city of Longmont, Colorado. And NextLight. Who's a power utility, very similar to Palo Alto. A little larger. But it's providing gigabit and greater speeds. Local customer service. Local control. And is allowing customers to participate in the affordable connectivity program for low-income residents, which gives them discounted prices on their internet, and subsidies for their internet. As well as Cedar Falls Utilities in Iowa. Right? Who was recently ranked the best gaming provider in the U.S.

For 2021, CFU ranked 1st.

<https://www.pcmag.com/news/best-gaming-isps-for-2021>

For 2022, CFU ranked 5th.

<https://www.pcmag.com/news/the-best-gaming-isps-for-2022>

CFU has over 80 percent of the market in Cedar Falls. Meaning 8 out of 10 households subscribe to them. They've really done an excellent job at providing, you know, gigabit broadband services. You know, high-speed internet. To nearly the entire community. Along with their businesses and their anchor -- large anchor institutions. So they're bringing low-cost, high-speed internet to schools, to hospitals, to other community institutions. Next slide, please.

13:19:

Slide 8 -- 3 of the Top 10 fastest ISPs are Community Owned

So, if we look nationally, you know, 3 of the 10 fastest ISPs in the U.S. are community-owned.

Here's the 06-17-21 article. Look at the "All ISPs" bar chart. Click to the year you want to view (2021, 2020, or 2019).

<https://www.pcmag.com/news/the-fastest-isps-of-2021>

I think PCMag is mixing data from products that offer different speeds. So, for example, Chattanooga has a 10/10 Gbps internet service -- way faster than the winner's 366.2 Mbps. But it also offers a 300/300 Mbps service, and most customers take this slower service. If PCMag were comparing only products that all had the same nominal speed, I think municipal ISPs would do even better. Also, PCMag's evaluated speeds are 70 download plus 30 percent upload. If they were 50 percent download and 50 upload, you'd have different winners. (Note that for 2021, the winner was Empire Access, but its upload speed rating was only 40.8 Mbps.)

And we talked about NextLight. Longmont, in Colorado. Chattanooga, and CFU. So, if you look at this, you know, we have some others on here, with a lot of, you know, private companies. But 3 out of the top 10 are community-owned. And what we see in those community-owned networks is generally, you know, symmetric speeds. Meaning fast uploads, not just fast downloads. No data caps. And no throttling. Right? So, you know, no matter how many people you have in your house, watching Netflix and Hulu at the same time. No matter how many game consoles you have going, and Xboxes going, there's no slow-downs and there's no issues. That's a big differentiator from what you see out there typically today. Next slide, please.

14:17:

Slide 9 -- What are the Benefits to Our Community

So, let's talk about what are the benefits to Palo Alto. As we look at this, you know, we work -- we've worked with a lot of communities, and the message has been the same. Right? Really, building service excellence. Over a 100 percent fiber network, all the way to the home or business. Meaning that fiber is actually going into your house, connecting you to the internet, across the Palo Alto network.

14:40:

Local -- Second, local ownership's really important. Right? Local ownership means that local decision-making can be easily made by citizens and businesses of Palo Alto, rather than outside shareholders.

Sort of. Local governments should be making decisions in the interest of residents and businesses. Commercial ISPs should be making decisions in the interest of shareholders. If a City Council member isn't making decisions voters like, voters can always vote for somebody else.

So, you know, it's all about skin in the game. It's all about having local control. Making services available to the community, and the community management of those services.

15:05:

Quality of Life. Right? We've seen this over the last year and a half, two years that the pandemic has been going on. Working from home, distance learning, telehealth and telemedicine. Those are here to stay, and they're growing. The more bandwidth we have, to be able to support those in the community, the better the quality of life's going to be. So, you've got to be really reliant on your broadband, as we continue to need more and more bandwidth.

15:35:

Community Investment. Bringing new dollars into the community, and keeping those dollars local. Right? Rather than exporting them to, you know, a -- shareholders of a corporation that doesn't exist in Palo Alto.

15:49:

Then, Competition. Right? Giving the community choice, while keeping prices affordable.

15:53:

And, finally, Economic Development. How do we lower the cost of doing business in Palo Alto? By bringing more affordable fiber -- to small businesses, medium businesses, and even your big enterprises. Next slide, please.

16:09:

Slide 10 -- Why Will Palo Alto Fiber Be Different and Better?

So, why will Palo Alto's fiber be different and better? Right? These are really the differentiators, as we've worked with the City to really develop the mission statement and the products and the services that will make Palo Alto's fiber internet service superior to what's out there today, is: 1) It's going to reach every Palo Alto resident.

And business.

The goal is 100 percent coverage of the City. No matter where you live. And that also means not only COVER everywhere where you live but at the same speeds. So, today, you know, depending on what side of the street you live on, or how far you are from, you know, a -- a -- central office, your speeds may vary. Right? We don't like that. We don't like the "speeds may vary" bit. But pricing doesn't vary. You pay the same amount. But your speeds may vary. The goal with Palo Alto Fiber is fiber that reaches every resident, AND at the same speed.

17:05:

Number 2) is really building the network for the future. Gig speeds as a baseline. Right? Gigabit internet is the gold standard today. But also making it available up to 10 gigabit. Which is the next generation of broadband. Which only a few communities in the country have available right now. And that sets Palo Alto apart in being one of the fastest broadband communities in the country.

I'm told that a future version of MuniNetworks' map

<https://muninetworks.org/communitymap>

will identify the communities offering 10 Gbps internet service. MuniNetworks also has a "10gbps" tag

<https://muninetworks.org/tags-344>

that lists articles about munis that offer 10 Gbps. Clarksville, TN; Dalton, GA; BrightRidge (Johnson City, TN); UTOPIA; Salisbury, NC; Chattanooga, TN. Articles not on the tag list that mention 10 Gbps include Fort Pierce, FL; Cedar Falls, IA; Loveland, CO; Fort Collins, CO; etc.

17:32:

[3]) Symmetrical. So, the same upload and download speeds. So, when you're on Zoom, when you're gaming, whatever you're doing -- you're video chatting, you've got the opportunity to push more uploads. Right? More -- faster uploads. So you don't get starved, and you're video connections don't drop out.

17:52:

[4]) Privacy and no sharing of data. Right? That's a commitment to ensuring the network and the system maintains residents' privacy.

18:03:

[5]) No data caps, and ...

18:04:

[6]] Straightforward pricing with no hidden fees. Right? Those are the goals. No promotional discounts. No, you know, 12-month contracts, when your rates then go up 20 percent, 30 percent. So, the goal would be to develop straightforward pricing. You know, simple pricing, that everyone can understand. With no hidden fees.

18:24:

Slide 11 -- What Progress Have We Made?

So, this shows a real -- a timeline of where we're at today. And -- [pause] Excuse me. my ** -- This shows us a -- really a timeline of where we're at today, and where we're headed. Right? What work has been completed. And to date, broadband design and initial planning was started in August of 2020. Followed by the planning and design, which was complete in April of '21 -- of last year. Then, the detailed engineering of the fiber to the home network started in May of last year. As well as the business model analysis. Right? The business model analysis really showed one of the best opportunities for Palo Alto to serve the community effectively, at a low cost, you know, keeping in mind, you know, the organization and how it can, you know, manage the business in an effective way. In May of this year [2022], we'll be finishing the design engineering for the network. Meaning the blueprint for the network is effectively complete. And is ready to potentially build. And the final business modeling, the financials, and pro formas will be completed in May. Followed by, really, presentations of that information to the UAC and City Council, right around that quarter 3 of 2022 mark.

Honker seems mean that "quarter 3" is from 06-01-22 to 08-31-22. (The City's fiscal quarters work differently.)

So, this is a significant step for Palo Alto. Moving through the design engineering stage is really the first major step in implementing broadband. Because it gives you the opportunity to know exactly -- like -- as if you were building a house. The first step is to have an architect create the blueprints from the house. Can't build it without the blueprints. So, this engineering design is really the blueprint for the fiber to the home network that will be ready to build again. And presented to City Council and the UAC in quarter 3 of this year. Next slide, please.

20:56:

Slide 12 -- What Are the Next Steps?

So, what are the next steps? So, we're at the first step here. We're at "Community Awareness/Engagement." Which is really engaging the community. Focus groups. Helping educate and build awareness of the broadband program that Palo Alto is putting together. eNews sign-ups. And the Palo Alto Fiber Hub are all ways to engage, which Meghan can go through in just a few moments. The next step, in Q2 of this year, the UAC and City Council presentations and project updates. And then, Q4, we're looking at City Council direction, to potentially move -- toward a vote to move forward with funding and construction of the network. So, you know, over the next, effectively, 10 months, you'll be hearing a lot about the project. A lot of presentations. And then, some final direction by City Council toward the end of the year. Next slide.

22:05:

Slide 13 -- Common Community Questions

So, before we turn it over to Meghan, talk through a little bit of Q&A. We have been fielding questions from residents and businesses, to -- Some of the common questions. So, what we thought we would do is just pin up some of those most common questions, so we don't go through sort of duplicative Q&A with the residents. So, we're just going to talk about a few of those here first. And I'll turn it over to Meghan, who will go through some Q&A -- live Q&A -- with the folks on the call.

22:39:

So, how do I sign up for updates? (Number 1) I'm going to let, actually, Meghan carry that on the next slide. Because it gives all of the engagement and information sources that you can -- where you can sign up and get information.

22:56:

When can I expect to get and sign up for Palo Alto Fiber internet service? So, again, as we're looking this year, you know, we would expect Council direction sort of in the 4th quarter. So, based on that Council direction, then, into next year will be potentially the first year of fiber construction. And some potential sign-ups, if the City decides to move forward.

23:23:

How much would the monthly costs be to residents and businesses? So, this is a really important question. And it's one of the most -- You know, when we get into these projects, it's one of the most common questions. People want to know what they're paying and when they're going to get it. So, one of the key things about this -- the costs are -- you know, we're going to find out what residents are paying today, through a resident and a business survey, that's going to be coming out in the coming months. We are asking residents to tell us how much they're paying today. So that the City can really shape the costs for internet service to be competitive with the market -- or, potentially, lower than the market. The goal is really, you know, to survey the folks who have internet today, understand what they're paying, what they're getting, and then really craft packages to meet good competitive prices, and to be as low as possible.

24:21:

This next question is something we've gotten a few of, but it's important to address. So, what's the purpose of the project if AT&T and Comcast already provide fiber to Palo Alto? So, when we look at, you know, AT&T and Comcast, they DO have some fiber in Palo Alto. They have some neighborhoods. But they are far away from providing fiber in all neighborhoods. Meaning that there's only SOME people who are able to receive service. So, again, the goal of this project is really to make sure ALL residents and businesses in Palo Alto have the opportunity to use -- to connect to fiber, you know, at a reasonable amount of time. Because we don't know when those existing networks will ever be built -- or if they WILL be built. So, Palo Alto's goal is really to push that goal forward. To make sure it's available to all residents and businesses. The other thing that's important about that is, you know, even if there were an area where AT&T or Comcast operates with fiber, competition is a good thing. Right? For the residents of Palo Alto. Competition reduces prices, and makes providers more competitive. So, this just creates more choice for Palo Alto's

residents and businesses, if there's an additional provider there with fiber.

25:24:

The next question -- also very important. Where would it be deployed first? And it may be a little early to talk though that. But, you know, we would be working with the City to help understand what the most efficient way to build the network is, and least impactful to the community. Right? So, there would be -- there's a lot of construction involved in building a fiber to the home network. And, you know, we want to be very cautious of protecting the community, and building the network in a way that's efficient, minimizes issues, and gets service as quickly as possible.

26:21:

The final question was, who would be able to have Palo Alto Fiber. And I think I sort of answered that in the beginning. Is, you know -- the goal would be, you know, connectivity across the entire community. So, if you live in the City of Palo Alto, you would be able to have access to Palo Alto Fiber.

26:42:

Slide 14 -- Join the Conversation

And with that, I'd like to turn it back over to Meghan, to talk a little bit about the engagement piece.

26:49:

Meghan Horrigan-Taylor: Right. Thank you so much, John. Hi, everyone. Good evening. Meghan Horrigan-Taylor, Chief Communications Officer for the City. Wanted to highlight just a couple of ways to stay informed and be engaged through the -- this overall effort. And a few folks already put some questions in the chat around this as well. So, I wanted to make sure to share a little bit of these ways to stay up-to-date. We do have a newsletter that's specific to Palo Alto Fiber, to provide updates as the project progresses. So, that will be something that folks can sign up for. Which, if you go to either the cityofpaloalto.org/paloaltofiber or fiber.cityofpaloalto.org, there will be -- there's a sign-up button there to receive updates. We are also planning to schedule some smaller focus group opportunities within March and April. And so, both of our websites will have information about these events as they're scheduled. In addition, we do have an email. So, if there are questions that we have not answered tonight, other detailed questions that you might have, you can also email us at fiber@cityofpaloalto.org. And we will get back to you with answers to those questions. So, just a few ways for you to sign up and get information

0:28:19:

In terms of being engaged, I did want to mention that we have a fiber hub, which provides some fun and unique ways to share your support by pinning your neighbor -- your household, and/or your business, to demonstrate that you are interested in fiber. That does help us understand the overall community interest in this project as we move forward. So, just a note there to pin your house, or -- and encourage your neighbors to do so. And/or also pin your business, and encourage your business colleagues to also share your support that way.

28:59:

There are a couple of folks in the chat that are interested in being part of a beta test. And thank you for that. We're excited that you're excited. I did want to mention that we're also creating a feedback committee. So, for those who are very interested in this project, if you'd like to be kind of on the front end, as we have -- as we're rolling out surveys, as we're rolling out information, to help us with that effort, feel free to email us your interest, and you could definitely be a part of that, as well. Next slide, please.

29:35:

Slide 15 -- Question and Answer Session

Thank you. So, I did want to mention, for our question and answer session this evening, there's multiple ways to share input, or ask a question. We will be taking some questions live. So, if you do want to raise your hand, and you're interested in a live question, we can definitely accommodate that. There are several questions, as well, in our Q&A feature of Zoom. And so, I'll be helping to facilitate some of those questions and answers tonight, as well. As part of our process. And then, of course, like I mentioned, if there is a question that's not answered, because we ran out of time tonight, or because you'd prefer to ask it outside of this venue, we do have an email address: fiber@cityofpaloalto.org, and we could set up time with you directly to answer questions that you might have. As part of the follow-up to our meeting tonight, we are going to expand our Frequently Asked Questions that are available online. So, we appreciate everyone's input tonight, and your engagement around this. It helps us to be able to provide additional information to the public, as the project progresses. We also have a blog series, through our medium.com platform, called [paloaltoconnect](https://medium.com/paloaltoconnect).

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<https://medium.com/paloaltoconnect>

And we will be answering -- offering a form there to answer questions that we've heard, and provide some overall themes with answers there, as well. So, we'll share that with -- through our website, once those are **posted tomorrow**. So, I did want to mention that. And the rest of the things I think I already mentioned. The only other thing I did want to mention, that John highlighted a little bit, was, the Utilities Advisory Commission does provide -- does receive updates on this project on a regular basis. And they will be receiving additional updates. And so, those are open to the public. So, if you're interested in staying kind of lock step on the project, you can definitely sign up to participate in those conversations. And, of course, the UAC and City Council are planning other conversations as we go. And all of that information will be available on our website. So, just wanted mention a few opportunities.

32:01:

So, I think, with that, Ed, would you like to say a couple closing comments? And then, we'll open it up for a Q&A session?

32:07:

City Manager Shikada: I'm really -- not closing comments, since we're really just at the beginning of these discussions. I did just want to note, for

folks who were tracking -- I can't remember what number I cited at the start of the session.

60.

But we are currently at 80 attendees. In addition to the presenters here. So, that's a very well-attended session. And clearly represents a level of interest and excitement from the community on this project. So, with that, back to you, Meghan.

32:33:

Meghan Horrigan-Taylor: Thank you. So, I think we can unshare our screen at this point. And then, I think what we'll do to start is answer some questions in the Zoom chat. And then, if there are people who are interested in asking a question live, please raise your hand, and as we get to some of the questions in the chat, we'll then go back and forth between the Q&A that we have received so far online, and then take some live questions after that. So, with that, I'll help facilitate some of the questions, and then ask some of the other panelists to assist with answers, as we go through. There are a lot of questions through the chat, around potential costs of a local service, in terms of what a customer might pay. I know, John, you had talked a little bit about that. Is there a way that you could go into that a little bit further, for folks on the meeting tonight?

33:36:

John Honker: I think we can, Meghan. You know, I see a couple of questions in here around, you know, current pricing, and what other providers may charge. And, you know, as we -- As we get into this further, and we understand what those rates look like, you know, the goal is to be competitive -- or, really, potentially, more competitive in, you know, pricing bands that really represent, you know, the most value to the network. So, we look at a couple of pricing bands for service. And I think what's really important for the Palo Alto community is to know that pricing is always subject to change, based on what factors are happening in the market. Right? And exact pricing -- Rather than saying exact pricing, which, you know, if the service is rolled out next year, then, you know, at that time it's -- pricing might be slightly different. But, you know, some general pricing bands that we see in most community networks for, say, gigabit service, which is really the gold standard in broadband services right now, are sort of in the, you know, sort of the \$70 to \$80 range -- maybe \$85 -- typically. Which is what you'll see in a lot of the other networks. For example, in Longmont, Colorado, you'll maybe see \$70.

In Longmont, folks who signed up for gigabit service within three months of the network's availability in their neighborhood became Charter Members, and pay only \$49.95 per month for as long as they take service.

<https://mynextlight.com/terms-conditions/>

Folks who aren't Charter Members but have taken gigabit service for a year qualify for a price of \$59.95 per month. New customers can get gigabit service for \$69.95 per month.

<https://www.longmontcolorado.gov/home/showpublisheddocument/20733/637247948547870000>

When Longmont did its FTTP feasibility study, it figured it could count on a take rate of 35 percent, and that therefore a \$99.95/month price was feasible.

<https://www.timescall.com/2013/05/09/longmont-fiber-plan-projects-three-years-to-total-coverage/>

Then they thought a Charter Membership program would increase the take rate, so they went for it. In 2018, the take rate was 58 percent.

<https://ilsr.org/wp-content/uploads/2021/05/05-2021-Snapshots-Fact-Sheet.pdf>

See more details in this 01-29-20 interview:

<https://muninetworks.org/content/transcript-community-broadband-bits-episode-392>

In Sandy, OR, 1 Gbps symmetric internet service is \$59.95 per month, and 300 Mbps symmetric internet service is \$41.95 per month.

<https://www.ci.sandy.or.us/sandynet>

In a higher-cost market, you'll maybe see \$75 or \$80. So, you know, exact pricing, again, will come down to a lot of factors. But, for, like, a gigabit service, those are typical prices that you would see. And, you know, the goal would be to kind of stay within those pricing bands. But for lower speed service -- say, you know, your, potentially, 300 [megabit] to 500 megabit speeds, which is what a lot of people get out there, you might be in the \$50 to \$70 range for service, depending on what features and what options are included in that. And then, also, potentially, a lower speed, you know, for people who don't need all that speed, and all that connectivity, you know. Potentially a value package that is, you know, sort of in the \$30 to \$50 range could be a potential. So, those are really the three tiers of pricing that we typically see. Again, all subject to change. But those are typically in those community networks like Palo Alto is planning. That's what we would expect.

36:05:

Meghan Horrigan-Taylor: Thank you. There are several comments about different services that might be able to be offered through Palo Alto Fiber. From voiceover, to phone service, to TV service. Is that -- I'm kind of summarizing some of those, 'cause there's -- there are many. I'm wondering, John or Dean, would you be able to assist with answering that?

36:35:

John Honker: As we look at services, you know, that's something that will come out in the survey data. So we really are pushing residents to take the survey to tell us what they have. And when that survey comes out, it will land in everyone's email boxes. So, it will be an email survey, delivery. And it will ask you what you currently have for internet. And also, what other services you get along with internet. Do you get a phone -- home phone? VoIP? Do you get TV? Do you get home security? And the goal there is to really understand what Palo Alto's residents need. And businesses need. So, all -- I think, as we would say it, multiple options are on the table right now. You know, internet access is fundamental. Right? All of the other services kind of ride on top of that.

I'm not sure what "ride on top" means.

So, I would say, nothing is off the table right now. But we want to learn more from residents, to figure out exactly what the City needs. What should be provided.

37:39:

Meghan Horrigan-Taylor: Thank you. There's questions about the fiber build-out and how that might be deployed. Underground? Overhead? Is there an opportunity to talk a little bit about how that might phased out?

I think Meghan means deployed (not phased out).

37:55:

John Honker: Sure. Happy to. So, as you know, Palo Alto has a lot of utility poles out there today, and fiber can use those utility poles. So, a portion of the network will be -- will utilize the poles. And a portion of it will be underground. Depending on where those different resources exist. In terms of the scheduling of deployment, that will still be a question, really, I think, that comes a little later this year, and where it will go first, and what would be the overall schedule for rollout of services to the community.

38:38:

Meghan Horrigan-Taylor: And there's a few interesting comments about -- And questions. There's one here about -- Fiber's already immediately adjacent to Palo Alto and Gunn High Schools. And wondering about leasing some of that fiber from the existing provider, T-Mobile, to connect the schools as a first step. And if we've considered something like that.

Palo Alto's schools are already connected via the City's dark fiber network.

https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2012/final-staff-report-id-3329_pausd-dark-fiber-service.pdf

39:01:

So, we're looking at all options. Right? If there's -- If there's a specific need. Especially if there's if there's an opportunity to bring more broadband to schools. Or libraries.

Palo Alto's libraries are already connected via the City's dark fiber network.

Or wherever there's an opportunity to do that, that's a big win for Palo Alto. Right? I mean, Palo Alto already has a siz- -- a strong fiber backbone. That has been around the City for the past, you know, 20 years,

Council voted to do a dark fiber network in 1996 -- so, 25 years ago.

that's doing, really -- I mean, when we look at it -- and we see a lot of communities -- Palo Alto is one of the leaders in the dark fiber -- in the, you know, just fiber itself -- among other communities. And if there's an opportunity to go after some low-hanging fruit, like some more schools, or some other community organizations, as part of this, it'll be in the plan.

The problem with going after low-hanging fruit as first steps is that the institutions that already have world-class bandwidth are less likely to advocate it for everybody else.

39:56:

Meghan Horrigan-Taylor: There's a couple questions about how the plan to roll out might be phased with prioritizing different neighborhoods. And there's also a lot of interest from members of the community to sort of be a part of that beta. Is there an opportunity for that to potentially occur as part of the analysis? And how will that work?

40:23:

John Honker: You know, I think we're going to get great data from the survey, and from the Palo Alto Fiber hub.

By "the Palo Alto Fiber hub," does Honker mean the "Get Involved" map?

<https://fiber-palo-alto.hub.arcgis.com/pages/get-involved>

Because both of those tell the City where on the map people are really interested. So, the more that you use those systems -- You know, responding to the survey puts you on the map -- as far as an interested household -- for fiber. And being on Palo Alto Fiber hub also puts you on the map. So, register your interest on those two engagement platforms, and it will impact, you know, just -- I think it will -- keep me wrong,

Correct me if I'm wrong? Or, keep me honest?

Dean and Ed, but it will create some opportunity for decision-making around where fiber goes first.

41:16:

Meghan Horrigan-Taylor: Thank you. There's a few questions about how the overall build out might be funded. Is that something that we can go into today?

41:35:

John Honker: Dean or Ed, would you guys like to chime in on that one?

41:42:

City Manager Shikada: Dean, do you want to take that ** ...

41:43:

Director Batchelor: I'm sorry. I missed the question. I apologize. What was the question?

41:48:

Meghan Horrigan-Taylor: The question is the potential of how to fund such a large rollout of the fiber network.

41:56:

Director Batchelor: The thing is that we've looked at some different funding mechanisms. We've looked at ways of building some sections, and then see what the take rates are going to be, and then collecting some funding from that, to move on to the next sections.

Staff presented this "incremental" model to UAC on 04-21-21, and UAC recommended rejecting it because it would take too long. And Council took UAC's advice, voting to direct staff to work on a plan to deploy FTTP citywide in 5 years. The incremental model couldn't achieve this goal. With FTTP, you need to spend money rapidly to deploy and then get it back slowly as customers pay for service.

We've also looked at creating a bond. That we might do some bond financing of the entire rollout. This rollout will take -- building of 100 percent of the system -- John mentioned that the plan would be is to roll this out -- probably the fastest that we could do something is probably 5-6 years, to get from the very beginning to the very end. To build this.

Council said 5 years (or less).

On 03-20-18, Fort Collins, CO, voters approved changes to the city's charter that were necessary to implement citywide municipal FTTP. [Fort Collins council tweaks election code, approves city broadband bonds](#)

Currently, they expect the citywide FTTP network to be fully deployed "in late 2022."

<https://www.coloradoan.com/story/news/2021/06/10/fort-collins-broadband-service-connexion-releases-construction-map/7637616002/>

So, that's less than 5 years. Their population is 165,609, compared to Palo Alto's 66,573. The fiber is 100 percent underground, which is harder to do than aerial. They have rocky soils. They had to deal with winter. They had to deal with the COVID pandemic.

Due to -- as John mentioned -- that -- utilizing the poles, as well as using the underground sections that we would have to build. It will be a little bit of a construction time. But there are -- We're looking at ways of how we can fund this. But those are some of the op- -- two options that we've looked at so far.

43:01:

Meghan Horrigan-Taylor: And there's also a follow-up to that. There's a question around, is there already existing funding available? And, if so, how much is that?

43:13:

Director Batchelor: There is existing funding right now from -- from fiber. It's about \$35 million that's been collected to date. Which has been from the dark fiber network. That could be utilized at this point.

The Utilities Quarterly Report for 3Q21, dated 10-06-21, projected (page 8) that there would \$34,283,000 in the Fiber Optics Rate Stabilization Reserve Fund at the end of the fiscal year (05-31-21).

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/uac-informational-reports/2021-informational-reports/10-06-2021/10-06-2021-id-13545-info.pdf>

The Utilities Quarterly Report for 4Q21, dated 02-02-22, says (page 8) there's \$33,343,000 in the Fiber Optics Rate Stabilization Reserve Fund, as of the end of the fiscal year (05-31-21).

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/uac-informational-reports/2022-informational-reports/02-02-2022-id-13878-info.pdf>

The 02-24-22 meeting was more than eight months beyond the end of the fiscal year, so it's to be expected that the fund would have increased.

43:33:

Meghan Horrigan-Taylor: Thank you. And there's a few questions about business models. And I know that's part of the analysis that's underway. Could Dean or John -- or Ed -- help the community understand where we are in that process?

43:50:

John Honker: Sure. I'll -- Dean and I can start off on that. So, really, the business model -- we're kind of in the business model planning process right now. What's the best way to deliver services to homes and businesses the most efficient way, and the way that the City can maintain the best quality service to the community. And that process is really looking at things like, you know, operations. And customer service. And -- you know, in the same way that CPAU manages the electric plant -- and all the miles of electric, you know, lines throughout the City. Well, CPAU -- or the City -- will have manage all that fiber in the same way. It's a very similar business to electric. But there's some key differences. So, really, building a good organizational structure -- operating structure -- around the business, to make sure that the City can deliver top quality services, and become, really, a gigabit community, like so many others have, is going to be fundamental to the project. And then, also, making sure -- you know, Palo Alto is already connected to the Palo Alto Internet Exchange downtown.

It used to be called the Palo Alto Internet Exchange (PAIX). Now it's called Equinix.

<https://www.equinix.com/>

And that is a blessing for the City, because it allows the City to get, you know, as much internet from the world as it needs. Right? For a very low cost. And that -- for broadband, and for connectivity, it really puts the City on the map, as far as a leading broadband community, by having that internet exchange in Palo Alto, where, you know, 100 carriers exist, and can, you know, reach -- have global reach, to the rest of the world.

45:42:

Meghan Horrigan-Taylor: Thank you. There's a couple of questions around -- I'm just trying to group some of the questions together, because they sort of relate. So let me look at that really quickly. There's a question around, has Palo Alto asked neighboring cities to join together in an alliance, since several cities together might achieve a critical mass fairly quickly?

46:14:

Director Batchelor: I think, at this time, we have not looked at neighboring cities. We've been concentrating on doing a high-level -- or, a full-detail design phase of the network, that's necessary for the community in Palo Alto. We have had some small conversations with East Palo Alto, about maybe some expansion at a later date. But our main focus right now is the community of Palo Alto.

In 1983, Palo Alto, Menlo Park, Atherton, East Palo Alto, and portions of unincorporated Santa Clara and San Mateo counties formed a Joint Exercise of Powers Agreement (JPA) to cooperate on getting a cable TV service provider. In those days, cable TV service providers had to have a "critical mass" of customers to get content at good prices.

Internet is different. There are many municipal FTTP networks that serve communities much smaller than Palo Alto. Internet service doesn't need "critical mass."

The UTOPIA FTTP network was formed by a bunch of cities in Utah. (The number of cities in the consortium has varied over the years.) In the early days, there were lots of squabbles among the cities, and that was a problem. But now they seem to have their act together.

On the other hand, Chattanooga's EPB serves not only the city but also other jurisdictions within its electric service territory. (State law forbids going outside its electric service territory.)

<https://muninetworks.org/content/transcript-community-broadband-bits-episode-110>

Wilson, NC, provided internet service to Pinetops, NC, that is, until the incumbents invoked North Carolina's HB 129 to forbid it.

<https://muninetworks.org/content/documentary-do-not-pass-go-battle-broadband-now-free-watch>

46:47:

Meghan Horrigan-Taylor: Thank you. There's a couple of questions about kind of the overall plans, to have point-to-point or PON service. And there's actually a few questions related to that.

Great question. I wonder who asked it.

47:10:

John Honker: Sure. I can take that one, Meghan.

47:11:

Meghan Horrigan-Taylor: Thank you.

47:11:

John Honker: I see those questions here. So, the question's sort of around the technology that's actually going to be delivering service. So, really, the network that's being designed right now supports the NEXT generation of fiber to the home. Which is what we call a passive optical network, with an Ethernet overlay.

This is a little misleading. Currently, some FTTP networks are passive optical networks (PON) and some are active Ethernet (AE) (point-to-point). And both PON and AE have roadmaps to future generations.

For PON, the most popular transceivers in use today are GPON, which supports 2.4 Gbps down and 1.2 Gbps up, shared by typically up to 32 premises. GPON has been used to provide nominally 1 Gbps symmetric internet service to customers, on the theory that the AVERAGE bandwidth used by a customer of 1 Gbps service is a LOT less than 1 Gbps. Instantaneously, on a bad day, the 32 premises on a PON net might demand up to 32 Gbps in aggregate and get only 2.4 Gbps. So everyone has to slow down.

Additionally, PON uploads are delayed because of the way the system assures that at most one customer premises electronics is transmitting at any given time.

GPON has been in use since about 2008, so it's getting pretty old, and you wouldn't want to deploy it for new systems. (A rule of thumb is that you should expect to have to upgrade electronics every seven years or so.)

The most likely popular successor seems to be XGS-PON, which supports 10 Gbps down and 10 Gbps up, again shared by typically 32 premises. These days, its price is comparable with GPON.

<https://potsandpansbyccg.com/2022/01/27/deploying-10-gigabit-pon/>

For AE, a popular technology today is 1000BASE-BX, which supports 1 Gbps down and 1 Gbps up, for the exclusive use of one premises. The next generation is 10BASE-BX, which is 10 Gbps down and 10 Gbps up.

Honker seems to be proposing a "next-generation" hybrid network where most of the premises would get XGS-PON (shared), but a few premises could get 10BASE-BX (not shared).

In the bad old days, a consultant for Palo Alto proposed deploying enough fiber to serve up to only 50 percent of premises, on the theory that the City would never get a take rate above 50 percent. These days, I hope it's obvious to everyone that that was a bad idea. Honker's proposal seems to me to be a bad idea for the same reason. What happens once you use up all the AE overlay capability?

And that's a lot of fancy jargon for a 10-gigabit-capable network. You know, 1 gigabit's standard. With long-term growth to 100 gigabits. Right? So, today, 1 gigabit is the gold standard.

In context, the "gold standard" seems to mean the fastest internet service that a significant number of people want. Over time, this kind of "gold standard" will change.

That's 1,000 megabits. 10 gigabit is immed- -- would be immediately available. As an upgrade.

If 10 Gbps is only available "as an upgrade," that seems to imply that Honker recommends deploying GPON for most premises. That's a bad idea. GPON is at end-of-life.

That's 10 times the gold standard today.

XGS-PON is only about four times faster than GPON for downloads (but about 8 times faster for uploads).

And then, the long-term -- long-range plan is for 100 gigabit. Which is 100 times that gold standard today.

It's hard to know what PON's next generation after XGS-PON will be. It might be 25/25 Gbps.

<https://potsandpansbyccg.com/2021/12/08/25-gigabit-pon/>

Or 50/50 Gbps.

<https://cdatatec.com/next-generation-pon-technology-war-25g-pon-vs-50g-pon/>

IEEE 802.3CP defines point-to-point (AE) bidirectional transceivers up to 50/50 Gbps.

<https://blog.siemon.com/standards/ieee-p802-3cp-bidirectional-10-gb-s-25-gb-s-and-50-gb-s-optical-access-phys#:~:text=IEEE%20Std%20802.3cp%E2%84%A2,Board%20on%20June%2016%2C%202021.>

So, today, we don't even have applications that are available to support 100 gigabit, or actually use 100 gigabit. But in the future, as, you know, we all look forward, more and more broadband usage is going to eventually lead to there. So, you know, Palo Alto's network will be one of the fastest in the country. And then dimensioned really for the next 10-15 years.

I think we want to have a FTTP network where the fiber infrastructure lasts 30 years or more. You wouldn't want to deploy a PON fiber infrastructure now and then, in 10-15 years, wish it were an AE fiber infrastructure.

48:34:

Meghan Horrigan-Taylor: Thank you. There's a question about the Google Fiber project, and how that was actually not something that they ended up moving forward with, partly because of the overall expense. And kind of wanting to better understand how the Palo Alto Fiber project might be different from that overall effort.

49:01:

John Honker: Sure. I see -- Yup. I see the Google question here.

Honker is looking at a screen with questions on it. So he got to see the original question before it was paraphrased. But the public can't see that screen.

So, the -- really, Google -- you know, Google's entrée into Palo Alto, and their ultimate sort of departure, was -- like, you know, a private company sort of making a decision not to move forward based on overall economics. And one of the big differences -- Well, there are two big differences we look at when Palo Alto's actually going to be building the network. And financing the network. Palo Alto does not need -- The City does not need to make the same levels of return on investment that Google does. And -- a private sector return on investment. Which changes the economics dramatically, when you're trying to do fiber to the home. And is, actually, why a lot of cities have moved forward with fiber to the home. Because the private companies, in those cases, haven't been able to do it. So, because of those differences in economics, because Palo Alto doesn't have a return on investment requirement anywhere near what a Google has, it's much more financially feasible for the City to do it.

50:14:

The second reason is, Palo Alto has a lot of infrastructure out there already, which helps lower the cost of the broadband project. So, you know, you already have 50 or more miles of fiber out there, some of which can be used for fiber to the home. You also have poles. You have underground conduits. There's a lot of infrastructure that's available currently that helps lower the price of building the network. And that's really been sort of incorporated into the engineering that we're going through today. So, those are a couple of differences between sort of Google and Palo Alto, and why, possibly, Google didn't move forward.

Before Google Fiber committed to seriously consider deploying FTTP in Palo Alto, it required the City to provide a lot of information about what infrastructure the City had and what infrastructure the City was willing to let Google use. Because of a mutual non-disclosure agreement between Google and the City, the public doesn't know all the details.

50:59:

Meghan Horrigan-Taylor: Thank you. Um. There's a couple of neighborhood-specific questions that I'm trying to see if I could answer -- or, ask them together, as one cohesive question. One question is around the South Palo Alto / Barron Park area. Does Palo Alto own these utility poles? And would the neighborhood potentially be served through fiber through those poles? Or not? That's one question. There's another question about the Palo Alto Hills area, and how they might be served as part of the project as well.

51:53:

Director Batchelor: I -- John, I can kind of take the Barron Park question. So, the poles that are located in the Barron Park area are solely to Palo Alto. We own those poles in that areas.

A 09-28-15 staff report says (PDF page 68) that 5,400 of the City's 6,000 poles are owned jointly by the City and AT&T.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2015/id-6104-ftp.pdf>

A November 2020 Magellan report (PDF page 17) says 150 poles are owned jointly by the City, AT&T, and PG&E, and the rest (450 poles) are owned by just Palo Alto.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/attachments/05-24-2021-id-12117-broadband-policy-rpt.pdf>

What I wanted to hear is that regardless of who owns a particular pole, Palo Alto has the right to use it for FTTP. (That's true, isn't it?)

And so, the idea would be is that we would build fiber on those poles in that neighborhood. As we've talked in the past, for folks on -- customers that are up in the hills -- yes, as John mentioned, you know, we will provide service to customers. We are in the process of working out some details with a third party vendor, on trying to get some fiber up in that area. As we speak. We don't have fiber all the way up to the top of the hill yet. But

we're trying to work with a third party vendor to be able to serve those customers off of our fiber network. Today.

52:57:

Meghan Horrigan-Taylor: Thank you. There's a question about will the internet service be rolled into our electricity-gas-water-sewer-garbage bill? Or will that be a separate utility entity, created completely? That's kind of two -- a two-part question there. How will it potentially be billed? And the kind of motto question, which I know John had answered a little bit already.

53:30:

Director Batchelor: So, I -- So, the plan would be is that the utility would be a separate utility, by itself. It would be a fiber utility. The question that I think we are still looking at is, how does that bill -- going to formulated? Do we separate it off of the existing Utilities bill? Or do we roll it all with it -- And I think that that's something that we'll have to determine at -- for a future date.

54:04:

Meghan Horrigan-Taylor: Thank you. Um ...

54:09:

City Manager Shikada: You know, just as we were talking about the other utilities, I did see a question that related to advanced metering infrastructure [AMI]. So, the question of how does this project relate to advanced metering infrastructure. Dean, could you respond to that?

54:25:

Director Batchelor: So, this project, at this period of time, has nothing to do with our advanced metering infrastructure. It was one of the ideas that we were looking at, in the history, that we would try to combine this with the fiber. But we have found ways to use the existing backbone, that we use for our SCADA systems, to integrate where the fiber was needed for -- to build what are called "collectors." And we are in the process of making those connections. And we are moving forward with the -- with that project. At this time.

55:02:

City Manager Shikada: Independently. So, that's proceeding, irrespective of the fiber project.

55:08:

Director Batchelor: Yes.

55:08:

City Manager Shikada: Thank you.

55:09:

Meghan Horrigan-Taylor: Thank you. There is a community member with their hand raised. So, I'd like to ask Scott O'Neil to participate live. You'll have to unmute yourself.

55:25:

A graphic says "Scott Oneil," which is a misspelling.

Scott O'Neil: Thank you. Yeah. I want to say, I support this project. I have to say, it's been a point of frustration for me that, ever since I moved to Palo Alto nine years ago, that I've had a physical municipal fiber tap on my multi-family complex property. Though it cost us, if I recall, like, \$800 per month to access. And, all the while, you know, commercial customers that have been paying into the dark fiber system have been building up this big fund -- for, like, \$35 million, I think you said -- that it's now up to. Which I understand its purpose -- the -- there for delivering fiber to residents.

Not exactly. The purpose of Palo Alto's dark fiber network is to provide point-to-point fiber connections (from point A to point B) to customers who can provide and manage their own electronics. Most of the customers are businesses, but there are a few residential customers.

And, you know, I'm in this complex. We've got 75 people here. Across the street, I think they're in a similar boat. Another, you know, similar number of people. We own our own trenching. Like, we -- I'm sorry -- We own our own conduit. Like, it could have been delivered here, like, 10 years ago. Like really cheap. And it's just been really frustrating -- um -- that that's never happened. And this network's been here since 1996. Or at least we started to build it. So -- Yeah. Like, by all means, full speed ahead. This is really awesome. Like, I really support you guys. And you can really tell. Like, there's a lot of thirst for the community for getting this fiber network, and getting into it. And --

56:39:

But, like, as far as we, like, we've kind of got it now. Where we've got connected with vianite.

ViaNet.

<https://www.via.net/>

When the City had a 67-home FTTH Trial network (2001-2005), it outsourced the operation to ViaNet.

You might be familiar with them. They're a local ISP. They built a -- They took advantage of our conduit. They're beaming a point-to-point connection to somewhere else. And they're plugging in there. So they're getting a little bit better than that \$800 per month price point. And so, they're able to get us some service. And it's awesome. [laughs] I'm here to tell everyone here. Like, you know, getting that symmetric gigabit. Like, it's great. Especially in COVID. So, good luck, and godspeed. Thank you.

57:14:

Meghan Horrigan-Taylor: Thank you.

57:17:

City Manager Shikada: That's probably a good note to end on. Don't you think, Meghan?

57:20:

[laughter]

57:21:

Meghan Horrigan-Taylor: That is. [laughs] Thank you for that. I don't see any other hands raised. And there are additional comments. But I know we are running out of time.

I don't understand why there was a hard time limit.

So, we definitely will answer these through other means, including our Frequently Asked Questions, and through our blog series.

02-25-22: "Palo Alto Fiber Blog Series: Potentially Providing Local Internet Services"

<https://medium.com/paloaltoconnect/palo-alto-fiber-blog-series-potentially-providing-local-internet-services-7476c395e950>

So, I appreciate everyone's participation tonight. Do you have any last questions?

57:44:

City Manager Shikada: Nope. So, with that -- Yeah. I just want to encourage folks to sign up to receive additional information. And stay in touch with the project as it proceeds. As has been noted, we've got some key decisions, that the Utilities Advisory Commission and, ultimately, the City Council will be making over the next few months. So, please stay in touch. And let's hope we'll have some good news and good decisions upcoming very shortly. So, with that, thank you very much.

58:13:

END

From: [Jeff Hoel](#)
To: [UAC](#)
Cc: [Hoel, Jeff \(external\)](#); [Council, City](#)
Subject: 04-06-22 UAC meeting -- Item VIII.2 -- FTTP
Date: Sunday, April 3, 2022 6:31:25 PM

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

Commissioners,

At your 04-06-22 meeting, you will discuss FTTP at Item VII.2.

Agenda:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2022/04-06-2022/04-06-2022-agenda-and-packet.pdf>

The staff report starts on PDF page 25 (packet pg. 22).

Here are my comments:

1. The item is agendized as a discussion item, so UAC can't express its advice to Council by voting. I think that's inappropriate. Staff seeks input from UAC, which is fine, but UAC's responsibility is to be advisory to Council, not staff.

1a. Is there a UAC subcommittee for FTTP these days? And has it been active recently?

2. The staff report doesn't provide much information. Rather, it suggests that staff and consultant are working on providing that information later. That doesn't help the public now.

3. In the past year, the feds have initiated lots of programs for funding broadband networks, including municipal broadband networks. For example:

<https://muninetworks.org/tags/federal-funding>

Has staff investigated the possibility that Palo Alto's FTTP network might be partly funded by any of these programs? And, if so, what is the status of these investigations?

4. One of the things staff is supposed to be working on is what funding mechanisms should be used to fund FTTP. This report doesn't talk about that. Recall that in 2004, the City's citywide municipal FTTP effort was derailed when a problem arose with the assumed funding mechanism.

5. This report doesn't say anything more about the architecture of the network. AE or PON or some combination? (What combination?) If PON, how many premises per PON net? How many huts? Etc.

6. I continue to think that the case for doing an upgrade of the dark fiber network has not been made. If I were Council, I would insist that staff make that case.

6a. Does the 65 percent underground, 35 percent aerial split for the dark fiber upgrade correspond with where the electric wires are along the routes proposed? If not, what explains the difference?

6b. The staff report seems uncertain about what Palo Alto's spacing rules are for underground deployment of fiber conduit vis a vis other utilities. Why is that? What are the rules? And do they make sense?

6c. The question of what kind of conduit to use for undergrounded fiber was discussed at length last year at UAC's 04-21-21 meeting. (See my TRANSCRIPT here, pages 49-53. Do a browser search for "2-inch" (24 occurrences) and "4-inch" (16 occurrences).)

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/public-letters-to-council/2021/06-01-21-ccm-public-letters-set-5.pdf>

Why has this not been resolved? Consultant John Honker said, "We think you can achieve exactly the same goals with the 2-inch, versus the 4-inch." And 2-inch is less expensive, and easier to install. I also think HDPE is better than PVC.

7. The cost estimate has risen, due in part to adding an additional 20 percent contingency on materials and labor. Is that the only reason for the increase? The total construction contingency for materials and labor is now 40 percent. Maybe the consultant can talk about how to avoid the upper range of this contingency.

8: I continue to think that a six-year build-out schedule (packet pg. 34) is not aggressive enough. Other municipalities have done better.

9. Under "Next Steps" is a proposed joint UAC/Council study session in August. Previously, I had the impression that by August, staff would bring to Council the information Council need to make a "go/no-go" decision on FTTP. Is this another schedule slip?

Thanks.

Jeff

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