

DOCUMENTS IN THIS PACKET INCLUDE:

LETTERS FROM CITIZENS TO THE
UTILITIES ADVISORY COMMISSION

467 Gary Court
Palo Alto, CA 94306
ccomeyjp@yahoo.com
650-283-6315

October 5, 2022

Via Email: UAC@cityofpaloalto.org

Hon. Lisa Forssell, Chair
Hon. Lauren Segal, Vice Chair
Honorable Commissioners
Hon. Eric Filseth, UAC City Council Liaison
Mr. Dean Batchelor, UAC Staff Liaison
250 Hamilton Ave.
City of Palo Alto, CA 94301

Re: 4190 Willmar Power Box Connection / Street Excavation Costs

Ladies and Gentlemen:

I am a long-time Palo Alto homeowner and taxpayer, having resided here with my wife Judith and three boys initially from 1992-1994, and again (following postings to Tokyo and then Shanghai relating to my work) since 2010.

I write to inform you of an issue that has arisen in connection with a remodeling project that we are in the final stages of completing. The project involves a single family home that we own located at 4190 Willmar Drive, just west of Gunn High School off Arastradero in the Green Acres neighborhood. The house was built in 1953 and we purchased it in 1992. Since our boys are now living on their own (in the case of our older two sons) or in college (our youngest), Judith and I plan to downsize from our current mid-town home and move back to the Willmar property once the project is finished.

In the process of initiating power upgrades to the house to accommodate standard 200 amp service, we learned that - unlike the other homes on our street - the in-ground power box (or "draw box") where the home's in-ground power line connects to the City grid is located *not* in our own front yard or front sidewalk, as would be typical, but rather in front of the home across from us (!) (4189 Willmar).

Unbeknownst to us when we began the project (or indeed when we bought the house), aging in-ground conduit lines run from the draw box located in front of 4189 Willmar, across the street, underground across the street to our property and underground across our yard to the fuse box at the side of our house.

This very odd and unique placement of the draw box that we would otherwise rely on for our power in front of a neighbor's home across the street (and omission of

installation of a box on or in front of our own property) is the result of an internal decision taken by the City many years ago that we had no knowledge of or input on.

Based on email exchanges and phone discussions that I had during August and September with CPA Utilities Staff members Mr. Henry Nguyen and Mr. Tikan Singh (Mr. Nguyen's supervisor), we have been informed that for this project, City is requiring us to pay the cost of:

- Installing new 2-4" conduit lines to accommodate the updated / standard power capacity of the 4190 Willmar home,
- Installing a new 24"x36" in-ground draw box in front of our 4190 Willmar home, and
- *Excavating a trench across the street between our house and 4189 Willmar to lay the new conduit lines referenced above to connect from the "old" to the "new" draw box.*

(The City had initially wanted us to also pay to upgrade the 4189 Willmar property's own draw box, but following my inquiries fortunately on August 30 withdrew this demand.)

Based on several estimates I have received, the cost to dig a trench across Willmar Drive to lay the new conduit lines will be in the range of \$20,000-\$27,000.

We would be willing to bear a fair portion of the costs referenced above, namely to install the new power draw box on our property - notwithstanding the fact that a draw box should have been located on (or in the sidewalk in front of) our property to begin with, had the City followed its normal configuration protocols.

However, I respectfully submit that it is neither fair or reasonable to impose the significant cost of street excavation/trenching and replacement of under-the-public-way conduit lines, on us as the individual property owners. I say this because the necessity of having to dig up a public street to replace conduit lines to conform with City requirements for our project in the first place is the result of the City's own internal decision about a non-conforming draw box placement that was made many years ago, without our knowledge or involvement.

Instead, the appropriate treatment is for these costs to be borne by the City and amortized across the CPA Utilities system as a whole, since that system (including the anomalous draw box placement noted above) has been designed/configured by the City to begin with, and incorporates public thoroughfares like Willmar Drive which individual property owners do not and should not have to pay individually to maintain or repair.

Mr. Singh indicated to me by phone that the City would not pay these costs, would not reconsider its decision, and that any appeal from this position would have to be taken up with the City Council. On its merits as well as from a procedural standpoint in terms of a proper appeal avenue, the decision seems both incorrect and fundamentally unfair.

For these reasons, we respectfully request the UAC's support and input, so that CPA Utilities could promptly reconsider its decision and so that we would not have to pay the estimated \$20,000-\$27,000 cost to dig up a public street to lay new conduit to a draw box that should have been located on or in front of our property to begin with.

In closing, by way of further background and in the interest of full disclosure, I am a corporate partner in the Palo Alto office of Morrison & Foerster LLP. I have practiced law at Morrison & Foerster since 1991 and am grateful to count A.C. Johnston as a highly respected former colleague and friend. Before submitting this letter, I spoke briefly by phone with A.C. last week to explain our situation and understand the UAC's role in utilities related issues.

Thank you very much for your attention to the foregoing, and please contact me if you have any questions.

Very truly yours,

Chuck Comey

From: [Jeff Hoel](#)
To: [Council, City](#)
Cc: [Hoel, Jeff \(external\); UAC](#)
Subject: AMI -- Smart Meters -- Part 2
Date: Wednesday, October 13, 2021 2:50:53 PM

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

Council members,

Thanks to Council Members Kou, Tanaka, and Stone for pulling Item 5 -- which was about AMI (Advanced Metering Infrastructure) -- from the Consent Calendar of your 10-04-21 agenda. It's now Item 12 on your 10-18-21 agenda as a (non-consent) action item.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/city-council-agendas-minutes/2021/10-october/20211018/20211018pccsm-linked.pdf>

The 10-04-21 video (0:15:13-0:19:29)

<https://midpenmedia.org/city-council-152-1042021/>

doesn't reveal why the item was pulled. (Although City Attorney Stump said that, in general, those who want to pull an item should explain to staff why they want to pull it.)

The staff report for this item (PDF pages 170-342 of the 10-18-21 agenda document) is PROBABLY the same as the 10-04-21 staff report for Item 5 (PDF pages 40-212 of the 10-04-21 agenda document)

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/city-council-agendas-minutes/2021/10-october/20211004/20211004pccsm-amended-linked.pdf>

except for the date (10-18-21 vs. 10-04-21, the ID number (# 13513 vs. # 13460), and the report type ("Actions Items" vs. "Consent Calendar"), and a paragraph (PDF page 172) indicating that Council Members Kou, Tanaka, and Stone pulled the item on 10-04-21. But I'd need a computerized file comparison app to know for sure. What I'd prefer is that each staff report be in its own file (with its own URL). And that, in this case, the 10-18-21 staff report be a very small document that just a) points to the 10-04-21 staff report, and b) explains that the 10-04-21 agenda item was pulled. That way, you'd know that the content hadn't changed.

The 10-18-21 staff report says (PDF page 174) that electric meters will (probably?) transmit once per hour, providing data about the four 15-minute intervals in the previous hour. But the customer can have "day-after" access to the information only on an hourly basis. Why not provide the 15-minute interval data? And why does it take so long to make it available? The same report says (PDF page 246) electric meters will have the "functionality" to provide residential customers with access to hourly data, but some commercial customers will have access to 15-minute interval data, and other commercial customers will have access to 5-minute interval data. Is this saying that what customers will get is different from the "functionality" of what they could get? Why does staff think some customers should have access to data at smaller intervals than others?

Same question for water meters and gas meters, with different details.

Thanks.

Jeff

Jeff Hoel

731 Colorado Avenue
Palo Alto, CA 94303

PS: Here's a copy of the message I sent on 10-04-21. I've taken the liberty of "fixing" the numbering scheme (highlighted in yellow).

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

From: Jeff Hoel <jeff_hoel@yahoo.com>
To: City Council <city.council@cityofpaloalto.org>
Cc: Jeff Hoel <jeff_hoel@yahoo.com>; UAC <uac@cityofpaloalto.org>
Sent: Monday, October 4, 2021, 01:31:22 PM PDT
Subject: AMI -- Smart Meters

Council members,

I'd like to comment on Item 5 of your 10-04-21 agenda, which is about AMI (Advanced Metering Infrastructure), i.e., Smart Meters.

10-04-21 agenda (PDF pages 1-5) AND staff report (PDF pages 40-212)
<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/city-council-agendas-minutes/2021/10-october/20211004/20211004pccsm-amended-linked.pdf>

I intended to comment earlier, but I didn't notice that a staff report was available until today. I apologize.

1. I think the item should not have been placed on the Consent Calendar. Council should have been allowed to discuss the issues raised by UAC on 07-07-21, when they considered AMI. Also, the staff report is huge, and considerably different from the staff report that UAC considered on 07-07-21.
2. The proposed AMI system will use a point-to-multipoint wireless network. I think this means that no smart meter device at a premises will transmit to the collector until it is interrogated by the collector.
 - a. Water and gas meters will report data only twice per day, to conserve battery power. Does that mean that there could be a delay of up to 12 hours in reporting a leak? Or could the collector interrogate the meters more frequently, and the meter would respond (i.e., use battery power) only if a response is appropriate? Also, does this mean that "real-time" data for water and gas simply won't be available?
 - b. At one time, electric meters were not going to have a battery for backup power during a power outage, but rather only a capacitor large enough for one "last-gasp" message. Is this consistent with approach of transmitting only when interrogated?
3. Radiation:
 - a. I don't know that I'm personally affected by radiation from wireless devices. But I'd hate to find out the hard way. I think the City has chosen a networking technology (point-to-multipoint) that minimizes the radiation risk.
 - b. The City's opt-out policy (see below, 7.f) seems more than fair. But it's not stated in the 07-07-21 staff report for UAC or the 10-04-21 staff report to Council.
 - c. I'm unclear about the networking technology proposed for communicating between the electric meter and an in-home gadget for displaying real-time electric use. Is it turned off unless the customer is actively using the information?
 - d. The 07-07-21 staff report didn't report signal strengths in microW/cm², but rather in Watts for the whole radio.
 - e. I suppose that people concerned about radiation would be more concerned about transmissions from the meters than transmissions from the collector (because the collector is a lot further away).
4. Privacy:
 - a. I'm inclined to trust the City not to misappropriate information about my utilities uses.
 - b. In other places, hackers have intercepted smart meter information being transmitted wirelessly. I don't

know whether those places were using a different technology. During the 07-07-21 UAC meeting, staff said they were adhering to industry standards. But I don't know whether the other places were adhering to the same industry standards.

5. Safety:

- a. In other places, smart meters have started fires when they were misinstalled. I'm inclined to trust the City not to do that.
- b. The 07-07-21 staff report says SOME premises will get smart electric meters where power can be shut off remotely. Could hackers use that feature maliciously? WHICH premises will get these meters?

6. Pricing:

- a. I'm inclined to believe that the City's plans for pricing electricity will be fair. Will CPAU give customers a choice of plans: either time-of-use (TOU) or not?

7. Other:

- a. When there's an electric power outage, does the smart meter stop working until power is restored? In a previous staff report, staff proposed to use a meter that had only enough stored electric charge to make one "last-gasp" transmission to the central office. I think the current plan (point-to-multipoint network) is for the meter to transmit only when asked by the collector, which will be once every 15 minutes. That's incompatible with the "last-gasp" idea, I think.
- b. What is the proposed data rate?
- c. How flexibly can the meters be programmed?
- d. Can the customer get real-time usage about water and gas. The 07-07-21 staff report (page 43) seems to say yes. Does this mean that these meters also have an (optional) Zigbee interface for doing that? Note that these meters must be especially frugal with consuming electric power because they're battery powered.
- e. When PG&E first started using smart meters, some customers complained that they were billed for electricity they didn't use. I think the problem turned out to be that PG&E sometimes couldn't read the meters, and PG&E had software that would make up use data for billing purposes. (So, for example, the software said folks were using electricity during a power outage.) Hopefully, Palo Alto won't have this problem, or this "solution."

f. Opt-out: This FAQ (07-20-21) says:

<https://www.cityofpaloalto.org/Departments/Utilities/Customer-Service/Meter-Reading/Advanced-Metering-Infrastructure-and-Smart-Grid>

Q: "If I do not want an advanced meter in my home, can I opt out?" A: "Yes. The City Council will be deciding how customers will be able to opt-out, without having to pay a fee to cover manual meter reading and processing costs incurred by CPAU." I was surprised. Most utilities charge a fee. I don't know what Council will actually do, or when they will actually do it. I don't know if they've read the FAQ. (Incidentally, the Q says "in my home." I think it means "near my home.")

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

From: [E Nigenda](#)
To: [Council, City](#); [UAC](#); [Batchelor, Dean](#)
Subject: Wired: How Hacked Water Heaters Could Trigger Mass Blackouts
Date: Sunday, October 24, 2021 6:19:00 AM

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

As we transition to smart meters and "smart" cities please keep cybersecurity in mind:

"Just as utilities carefully model heat waves and British tea times and keep a stock of energy in reserve to cover those demands, they now need to account for the number of potentially hackable high-powered devices on their grids, too. As high-power smart-home gadgets multiply, the consequences of IoT insecurity could someday be more than just a haywire thermostat, but entire portions of a country going dark."

[How Hacked Water Heaters Could Trigger Mass Blackouts](#)

Thanks,
Esther Nigenda

TRANSCRIPT & COMMENTS -- 10-06-21 UAC meeting -- Item VII.1 -- FTTP



Jeff Hoel <jeff_hoel@yahoo.com>

To UAC; Council, City

Cc Hoel, Jeff (external); Shikada, Ed

level that we're analyzing for you. to determine at least if there's part -- you know. SOME funding that could be utilize



Wed 10/27/2021 12:50 PM

Commissioners and Council members,

I have made a transcript of UAC's 10-06-21 meeting, Item VII.1, which is about FTTP. (See below the "#####" line.)

Agenda:

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/10-06-2021-regular/10-06-2021-uac-agenda.pdf>

Staff report (with presentation slides on pages 3-17):

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/10-06-2021-regular/10-06-2021-id-13591-item-2.pdf>

Video (0:21:25-1:45:56)

<https://midpenmedia.org/utilities-advisory-commission-31-1062021/>

I have also added my comments (paragraphs in red beginning with "###"). (And paragraphs in purple beginning with "###" mark where the presentation slides and other visuals appeared.)

I'd like to make some additional comments here, above the "#####" line..

1. I failed to notice this item until 10-06-21, when it was too late to comment before the meeting. My bad.

2. The staff report was pretty minimal, so there wasn't much to comment on. Nevertheless, Herb Borock made some good comments here (pages 18-20):

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/10-06-2021-regular/10-06-2021-public-letters-to-uac.pdf>

3. The discussion by communications staff about "community engagement" (between 0:26:57 and 0:58:33) focused on how staff was developing automated tools so that members of the public could converse with each other about the FTTP project. But, as Commissioner Smith pointed out, the task Council asked staff to do was to let the public know what the FTTP project was all about, and why the City supported it, BEFORE staff sent out a FTTP-related survey to selected residents

and businesses, so that survey participants would be more knowledgeable about it. If staff wants to do the surveys in the November timeframe (0:22:54) they're running out of time to inform the public first.

4. There was NO discussion of the dark fiber network expansion. That's extraordinary. Is the \$22 million cost estimate still valid? Are any new dark fiber cabinets required?

Now that staff is recommending that the City's FTTP network have only 2-3 huts, maybe it's time to re-evaluate whether you really need a \$22 million backbone just to connect 2-3 huts to the central office (plus whatever else staff wants the dark fiber network expansion to do).

By the way, I wonder whether it might be better to have, say, 9 huts -- say, one at each electric substation. Fiber already goes to each electric substation. Having more huts would shorten the average premises-to-hut connection. I suppose the public already thinks that electric substations are ugly but necessary, and that adding a hut wouldn't make much difference.

5. Up to now, the choice of FTTP fiber architecture -- Active Ethernet (point-to-point) or PON (point-to-multipoint), and, if PON, then split how many ways -- has been a can kicked down the road.

a. A 05-07-03 staff report (no longer available online) proposed a hypothetical "reference system" that featured a point-to-point fiber architecture but non-standard 8-way PON electronics in 100 cabinets. (Go figure.) (And it proposed eight hut-equivalents at the next hierarchical level.)

b. A 06-16-08 "overview" document from the 180 Connect Consortium (Attachment B here) <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2008/cmr-304-08-12688.pdf>

proposed point-to-point.

c. Had Google deployed here, that would have been PON.

d. A 09-28-15 staff report proposed (PDF page 45) a mixture:

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

"It is important to emphasize that the suggested network design will have enough fiber capacity to provide either Active Ethernet service or Passive Optical Network (PON) service to any business or resident."

e. A 04-21-21 staff report

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/04-21-2021-special/id-12118-item-no-1.pdf>

mentions both Active Ethernet (point-to-point) and passive (PON) but doesn't propose anything.

f. Magellan's website says (I think) that it could deal with either architecture.

<https://www.magellan-advisors.com/solutions/design-engineering.stml>

So, why am I concerned that staff and consultant might have decided it should be PON without telling UAC, Council, and the public? Because they're proposing cabinets that would contain only

passive elements (splitters and patch panels, I suppose), which would not be needed in an Active Ethernet network.

6. Here's why I think Active Ethernet is better than PON:

a. It's more futureproof. You can upgrade the electronics of one premises without having to worry about other premises. (Some PON roadmaps have figured out how multiple generations can share a PON net by requiring each generation to use separate wavelengths. For example Nokia's 25G PON is compatible with both XGS-PON and GPON.

<https://www.globenewswire.com/news-release/2020/11/19/2129760/0/en/Nokia-launches-world-s-first-25-Gbps-symmetrical-PON-solution.html>

But it's more complicated.)

b. It's lower latency, because a premises' electronics can send messages without waiting for permission.

c. It doesn't send data meant for you to your neighbors too.

d. It's possibly less expensive than PON. "Much cheaper," according to this:

<https://www.bbcmag.com/multifamily-broadband/gigabit-fiber-comes-to-los-altos-hills>

e. It's easier to debug problems.

f. No unsightly splitter cabinets. Also, no having to route fiber away from the preferred path in order to site a cabinet in a non-controversial location.

7: How big would a hut have to be, as a function of:

a. How many premises it could support (3,300, 10,000, 15,000)

b. Architecture supported (Active Ethernet, PON)

c. Premises supported per PON net (16, 32, 64, 128)

d. Battery backup (various duration options)

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

TRANSCRIPT

0:21:25:

Chair Forssell: The next item, then, is our discussion of the fiber backbone and Palo Alto broadband expansion. Are there any members of the community that want to speak on this topic?

0:21:41:

David Yuan: Does anyone from the public want to speak on this item? If so, please raise your hand. No hands are raised, Chair Forssell.

0:21:48:

Chair Forssell: All right. Then, I assume there is -- is there a staff presentation on this?

0:21:54:

Dean Batchelor: There is, Chair Forssell. So, tonight, we thought that we would bring back some updates on what we've been doing with the fiber backbone. We have our consultant, Magellan, with us. Jory Wolf and John Honker, who have been our consultants, and working with us on this.

0:22:15:

Slide 1 -- Title (Slides 1-15, appear on PDF page numbers 3-17 of the staff report.)

And we also have some staff members, that will be giving some of the presentation as well. So, with that, I'm going to turn it over to John.

0:22:24:

John Honker: Great. Thank you, Dean Batchelor. And good evening, Chair Forssell and commissioners. Good to be back in front of you again. It's been a few months. And what we wanted to do is really kind of provide an informational update on the fiber project. Since we last saw you, which I believe was April of last -- of earlier in the year.

It was item VII.1 on UAC's 04-21-21 agenda.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/04-21-2021-special/uac-agenda-april-21-2021.pdf>

So, a significant amount of progress has been made since that time. And we're on track, in really all phases of the project. Which is exciting.

0:22:54:

Slide 2 -- CURRENT ACTIVITIES

Because this is a significant undertaking for you, for the community, and also for the entire Palo Alto team. So, I wanted to first really bring you back up to speed. Since it's been a little bit of time, just a quick refresher on what's happening with the fiber project currently. So, as you remember, we had consolidated a couple of the phases in the fiber project, to really accelerate the timeline, to get to a combined fiber-to-the-home broadband AND a fiber backbone design. What we've been able to do is pull together, really, the first piece of this, which is the community engagement, as well as the broadband surveys that will be going out in sort of the November timeframe, for residents and businesses.

0:23:49:

And, in parallel, what we're working on on the technical and the engineering side is Phase 2, which is the detailed backbone engineering design. As well as the aerial and underground design, construction standards, and the final packages. This Phase 2 really gets you to a point where you can put the construction -- I'm sorry, put the engineering design out for bid to construction contractors, and begin building the fiber backbone.

0:24:23:

Concurrent to that, we're also working through Phase 4, which is the fiber-to-the-home design. And we have a lot of synergy between Phases 2 and 4, because the backbone and fiber-to-the-home both interconnect with one another. Both, you know, interoperate with one another. And it gives us efficiencies of being to do both designs simultaneously, and get those completed for you well ahead of the timeframe that it would be to do them separately. So, Phase 4 design is really focused on your fiber-to-the-home. Or fiber-to-the-premise, as we call it.

Some of us call it fiber-to-the-premises (FTTP).

<https://dictionary.cambridge.org/us/dictionary/english/premises>

The broadband engineering design, to pass -- to reach 100 percent of homes and businesses across Palo Alto. It will focus really on the best way to deploy, and at the least cost to deploy, both aerial and underground fiber. Utilizing your existing telephone -- or, utility poles, and your existing right-of-way that's out there. They will also be coupled with construction standards for fiber-to-the-home that are based on the City's existing civil standards, as well as more specific standards for fiber construction itself, and equipment specifications, and other things that are associated with the fiber -- the final fiber-to-the-home build. You'll also have, with that, a full set of construction prints and packages that, like the backbone, you'll be able to go out and immediately put this out to bid for construction, if it's the Council's decision -- or the Commission's decision -- to do so.

It's Council's decision, but UAC can recommend.

So, along with that, there's some other planning tasks that we're working on for you, which include the Broadband Business Plan, which is going to be kicking off this month. As well as an

assessment of the potential grant opportunities that are out there that may be able to fund certain components of the fiber optic network. As well as, really, a regulatory risks analysis of what Palo Alto, as a city and a municipal utility, needs to be aware of, as you're moving closer to fiber-to-the-home. So, building the awareness around those regulatory issues of potentially providing service -- internet service -- will be coming in the next 45-60 days.

Did Honker mean a report about these things will be coming to a UAC meeting? The 12-01-21 UAC meeting is 54 days from 10-06-21. The agenda for this meeting would be posted on 11-25-21 (Thanksgiving), which is 48 days from 10-06-21. If staff can't be ready by then, the next regular meeting date would be 01-05-22. Historically, UAC often cancels its January meeting (e.g., in 2011-2018, 2020), but sometimes it doesn't (e.g., in 2008-2010, 2019, 2021). UAC could also consider meeting at an unusual time.

Will the "regulatory risk analysis" include an analysis of any limitations on how the City can finance the FTTP network?

0:26:50:

So, this really provides a snapshot of where -- what, you know, the activities that are happening in the project today.

0:26:57:

Slide 3 -- COMMUNITY ENGAGEMENT

As we talk about them in a little bit more detail, you know, one of the key -- and most important -- aspects of the fiber-to-the-home campaign is really to develop the community engagement around that, and help bring the community along, to understand where Palo Alto is today, solicit feedback on -- understand demand, and communicate, and educate the community about fiber-to-the-home. You've done this already in the past. But now we're at a new stage, and we're in a new era. Right? Of needs for broadband internet. And this Engagement Campaign is really focused on, really, bringing that information to your residents. And then hearing back from them what they want to say. What they have to say. And it's really a couple of tools here. One is, the fiber website has been established. And we'll link over to those in just a minute. But I want to just go through these quickly.

0:28:01:

The FAQ and the content's been completed for the website, and, really, all the front-facing Palo Alto pages. An Engagement Portal has been established, which Meghan and Amanda from Communications are going to go through with you.

At 0:30:11.

The residential and business surveys have been developed, and are actually ready for launch. So, you know, in addition to just the engagement activities, we also want to look at the quantitative demand in Palo Alto for internet services. Which will help you gain intelligence on pricing, on packages, on speeds, on things that people really want, and what's really important to Palo Alto citizens' and businesses' internet services. So, think of this as really true-to-the-market analytics behind the engagement and behind what the community -- how the community feels about broadband.

0:28:58:

Finally, branding has been complete. You can see the new Palo Alto Fiber logo up here [upper-right corner of each slide]. And there's a whole set of brand guidelines that have been developed with that.

0:29:11:

Community Engagement Next Steps are really to 1) launch the residential and business surveys. As I mentioned before, we're looking at sort of the November-December timeline to have those surveys out to your citizens and your businesses.

The residential survey should be surveying a representative sample of residents, not just "citizens."

Separate surveys for both. Right? Or, for each group. Because the broadband needs and the markets are very different. As we go through that launch and collection of those surveys and responses, we'll be providing you results back in January. So, those are very -- There's a quick turn on these surveys, generally, because we'll be using email distribution for them.

Using email rather than phone is good, because people have the opportunity to think about the questions before they answer them. From what email list will the survey participants be selected, and how will you get a "representative sample" of participants? (People without email addresses will be underrepresented.)

Will the system be secure, in that only the people chosen to do the survey can send in the completed survey form?

That gives us an opportunity to get the results back of that, and then come back at a later date to report those results

0:29:57:

And, with that, I'd like to turn it over to Meghan and Amanda, from Communications, who are going to walk you really through the

0:30:03:

Hub view 1 -- Connecting the Community Through Local Broadband ----- This view does not appear in the staff report's slides.

portal, and some of the branding that's been created for Palo Alto Fiber.

0:30:11

Meghan Horrigan-Taylor: Good evening. Thank you, John. I appreciate being here this evening. Meghan Horrigan-Taylor. Wanted to introduce, first, the other members of our team, that will help walk us through our new digital platform. Wanted to make sure to introduce, of course, Darren Numoto, our IT Director. And a member of his team who's critical to this project, Jay Sivarajah. And also, a member of my team, Amanda de Jesus. They will all help this evening to help walk you through a preliminary look at our digital platform that we're launching very soon. It's a pretty exciting collaboration between our office and the IT department, as well as the Utilities department. And John's team as well. So, we appreciate all the work there. A lot of the content developed that you'll see, as part of this effort. And we're really excited. We're piloting this new platform with the fiber initiative.

0:31:16:

And, closely thereafter, another topic that I know is of interest to Commission is sustainability and climate action. And that is actually the next initiative that will be launched through this platform. So, we may be back with you at another point, to walk through that secondary content with you at another time.

How will the City prioritize a) getting the platform to work at all, b) using it in support of FTTP, and c) using it in support of any number of other worthy causes? Who's going to focus on FTTP?

0:31:40:

So, what we wanted to do tonight is just walk through the platform itself. But before we do that, I did just want to take a moment to talk about the goal. The goal of this overall platform is both to inform the community about different major initiatives that the City is working on. And also help to engage around these major initiatives. Obviously, fiber is -- has been and is -- a major initiative for our community. And we're excited that -- and hope that this platform helps to bring the community together, in an exciting, different way than before. And so, tonight, you'll have a preliminary look at what we'll be launching soon. As part of that effort, we will be launching a robust communications plan, as part of the process, as well. And some of the tools. To, hopefully, engage the community, and have THEM engage with each other, through being ambassadors for fiber. We'll see some of those tools, as well, as part of the platform tonight. So, I think I covered most of the items that I wanted to cover. So, I think, at this point, I'll hand it off to Darren, to say a few words. And then we'll get into showing you the platform itself.

0:32:58:

Darren Numoto: Yeah, thank you, Meghan. Just briefly wanted to give an overview. So, we are leveraging a platform that we have been building over the past few years. And it's built on the ESRI platform. Which is a market leader in the GIS space. And, you know, the great thing with this is, it's included with our licensing. So, the only cost is really development efforts to develop the content and the -- some of the backend features. But, again, we're just leveraging an existing platform to be able to deliver this service. And I will introduce Jay to walk through some of the other details on it as well. So, Jay, off to you.

0:33:41:

Jay Sivarajah: Thank you, Darren.

0:33:48:

Meghan Horrigan-Taylor: And while Jay pulls up his screen, to show you the platform, I did just want to mention, you'll see, as part of the -- as we walk you through it -- we do have some add-- new branding opportunities, as part of this effort. You'll see that we have a fiber logo. And some fiber branding colors, as part of that. And that is an opportunity, as well, to help us communicate about this overall initiative. So, -- Thank you, Jay.

0:34:18:

Jay Sivarajah: Thank you, Amanda. Thank you, Meghan. Before I dive in and show you guys the fiber hub, I just want to take a minute and just give an overview of the technology and the platform we have been using to build this fiber hub. As part of the CDS/GIS modernization efforts, as Darren mentioned, a few years ago -- which started a few years ago, we started leveraging and transitioning into -- from our legacy GIS system into ESRI's ArcGIS platform. It is - ESRI's ArcGIS platform is the leading mapping and analysis solution, and it's also -- It's been estimated that a big portion of the GIS systems used in federal, state, local government is running on ESRI ArcGIS platform. And they are also a dominant player in utilities -- electric, gas, water, telecom -- and also other departments, like public works and public safety. They're a big player in those too. So, this specific solution, we used ESRI's platform called ArcGIS Online,

ArcGIS Online:

<https://www.esri.com/en-us/arcgis/products/arcgis-online/overview>

plus another component, called Hub.

ArcGIS Hub

https://doc.arcgis.com/en/hub/get-started/what-is-arcgis-hub-.htm?adumkts=industry_solutions&aduse=national_government&aduc=email&adum=list&aduc=NGwebinar&utm_Source=email&aduca=cra_national_government_community_building&a

[duco=transformengagecollaborate&adut=hubdoc&adulb=multiple&adusn=multiple&aduat=webpage&adapt=awareness&sf_id=7015x000000agEBAAY](https://www.paloalto.gov/duco=transformengagecollaborate&adut=hubdoc&adulb=multiple&adusn=multiple&aduat=webpage&adapt=awareness&sf_id=7015x000000agEBAAY)

With Hub, what it does is, it gives you an ability to configure community engagement platforms, like you're going to see like now. And this also helps engage and collaborate with the community easily.

0:35:31:

And here is the hub that we set up for the fiber initiative. Amanda, do you want to walk through the different --

0:35:38:

Hub view 1 -- again

Amanda de Jesus: Sure. Um. Yeah. So, this -- Hub is a great communication and -- engagement tactic really. This first page is just an overview. The whole point of this, as Meghan and others have stated already, is a way to help inform and engage with the community on fiber and eventually other topics, like sustainability and climate action.

Note: de Jesus says (0:35:38) other topics "eventually," but Horrigan-Taylor (0:31:16) says "closely thereafter."

So, this page is just an overview about what Palo Alto Fiber is. What it entails, what the project is. If you want to scroll down a little bit, you can see pretty basic, good information.

This Hub view 1 is way too complex to work well as a presentation slide.

Moving on to the benefits. It provides a high-level introduction about the benefits to having fiber in Palo Alto -- specifically to residences -- residents. And businesses. We'll skip over the "get involved" tab for now.

0:36:38:

Hub view 2 -- resources

The resources. This page, in particular, is where we identify various resources that will be useful to the community. For example, our FAQs that we've developed. And then, on the right, there, is a fact sheet that is downloadable. And as we create more elements, more infographics, fact sheets, other things that come up, as the project progresses, we will be including them on this resources page. Eventually, our idea is to have a type of page -- maybe on this one, maybe an entirely new tab -- that connects the community to different social -- essentially we're calling it social connections -- being able to connect the community to different stakeholders related to fiber. And then, on other pages, related to the topic.

Hub view 3 -- Contact Us

Contact us is a very basic. Just provides information for people to connect with the City, specifically through the fiber email.

fiber@cityofpaloalto.org

And back to the City's home site. One thing, too, I think, that was glossed over is the -- On the resources page, we also connect back to the City's website, which we created a dedicated project webpage. I think it's on here. A dedicated project webpage that's consistent with the rest of our City projects' websites -- or, webpages. Excuse me. Clearly, that needs to be updated. [laughs]

0:38:02:

So, then, moving over to the "get involved" tab, Jay, do you want to talk a little bit about the mapping feature? Or do you want me to go ahead with the engagement feature?

0:38:10:

Jay Sivarajah: I can talk about the mapping.

0:38:11:

Amanda de Jesus: OK. Thank you.

0:38:13:

Jay Sivarajah: And -- So, part of the GIS, it will be used -- this is the biggest advantage we get. Mapping, really, of the functionality. We can easily leverage. And so, here, you can -
- Anyone in the community can put in these entry fields.

Does the system make any attempt to verify that the user really is a Palo Alto resident or business?

PaloAltoOnline has a system where people can comment anonymously on articles. They can identify themselves using a made-up name if they want. Sometimes, people try to comment using multiple made-up names, so they can fake online discussions, and PaloAltoOnline has a way of detecting that (sometimes?) and disallowing those comments.

https://www.paloaltoonline.com/about/terms_of_use/

We are collecting -- These are the fields we're collecting: First name. Last name. Are you a resident or a business?

Or both?

How would you use fiber? At home? Your current service provider?

Also, your current service? Mbps down? Mbps up? Current service provider's technology?

Any other thoughts, a free-form exports where you can put in whatever. Neighborhood you belong to.

Can't the system figure out the neighborhood from the address? I don't think we want people to be able to use different names to identify the same neighborhood.

And -- So, you have two ways to mark in where you live. You can either drop a pointer, wherever you live.

This may be a misfeature, because it might specify the wrong address.

Or you can also type in an address. If you type in an address partially, it will fill it out.

How does the system know how to fill out the address accurately? If it can't, this may be a misfeature.

Like you could see right now. In this small section here. I will just drop a pointer. And once you do drop a pointer, and you can say report it. And then, data gets recorded, in the cloud system. And, for privacy reasons, we don't show the precise location.

Please rethink this. Perhaps give the user a choice about whether to show the precise location or not. Regardless of what's shown, does the City know what the precise location is?

We put a 50-meter buffer. And that's the location we show.

The "50-meter buffer" (yellow circle) apparently obscures the map behind it, which is maybe not a good idea. Is the 50-meter buffer centered on the precise location? If so, that's doesn't really assure privacy. Or is centered on a random location that is within 50 meters of the precise location? If so, that's potentially misleading.

And all entered records -- we have lots of test records here -- we would clean it up before we go live. And once an existing collective record is clicked, these are the attributes we display. First name. How do you use fiber.

Previously (0:38:44), Sivarajah said the user would be asked how the user WOULD use fiber.

And the neighborhood.

0:39:55:

Amanda de Jesus: So, this feature we wanted to implement to allow an extra level of engagement on -- for the community. Really, just to show support, learn about what other people think about Palo Alto Fiber, and really have a way where people can interact with each other through this platform. Eventually, of course, as you can tell, that this website is still in the process of being finalized and fine-tuned. And we have some really great ideas to help facilitate more engagement through this site. And, in a way, that may be something to where we -- people can interact with each other, and talk to each other. Whether it's a "like" button, or something like that. We're talking about having a little bit more of an in-depth engagement aspect on this page. Versus just being able to see what people are saying about Palo Alto Fiber. We're in the process of completing our communications plan. And, in that, we -- we're planning on developing a video series to complement the launch of the -- of this hub site. A social media campaign. And other fun ways that the community can engage on this topic. Right now -- I mean, we're -- right now. And we will continue to seek excited community members -- community members who are ambassadors, who want to become further involved. And this is one way that we envision being able to identify people who are excited about Palo Alto Fiber. By being able to sign up through here, providing your email address, we can send notifications, updates, what have you, as this project progresses. I think that's a little bit about the engagement piece that I have. So, back to Meghan.

0:41:44:

Meghan Horrigan-Taylor: Yeah. Thank you so much. Thank you, ** ...

0:41:46:

Amanda de Jesus: Oh.

0:41:46:

Meghan Horrigan-Taylor: Sorry, Amanda.

0:41:448:

Amanda de Jesus: One last thing I wanted to say is that -- Like I was saying, the Palo Alto Fiber webpage is live right now. On the City's website. It's just cityofpaloalto.org/paloaltofiber.

A.k.a.

<https://www.cityofpaloalto.org/Departments/City-Manager/City-Policy-Initiatives/Palo-Alto-Fiber>

So, this hub will be integrated onto that -- Not integrated. It will be on that website, so you can go back and forth. Once this hub is live, you'll be able to go back and forth between the two. **

0:42:11:

Meghan Horrigan-Taylor: Thank you. I was going to ask you to share the direct link to the project page. So, thanks for that. And thank you both for all of your work. We appreciate getting to this point. We're pretty excited to share this with the Commission, and also to gain input and feedback on this new tool and other thoughts you might have. So, I think -- John, I'm not sure if we can take questions at this point. Or do you have some other slides that you wanted to present first.

0:42:40:

John Honker: Um. No. I think that's fine. That -- Meghan, that would be great. It's a -- Why don't we take some questions now. And then I'll continue with the slides.

0:42:48:

Meghan Horrigan-Taylor: Perfect.

0:42:48:

Darren Numoto: Yeah. I just want to clarify one thing, just with this demo site. We don't have it publicly available. So you have to have a userID and password to get into it. And once we launch it, then we will make it anonymous access. So -- but at this point, it's not publicly available. So, --

Update: it seems to be accessible as of 10-14-21.

0:43:04:

Meghan Horrigan-Taylor: But it will be soon. And we're very excited about that. So, thank you.

0:43:14:

Chair Forssell: All right. Commissioner Johnston, and then Commissioner Smith.

0:43:20:

Commissioner Johnston: Well, thank you for the presentation. It's really good to see that we're making progress on this project, which we all have been talking about for a long time, and are excited about. One of the things that we spent a lot of time talking about back in April, when you were last with us, was kind of the importance of educating the community before we really did the community survey. So that we would get kind of meaningful results from the survey. So, my question really is, how are you going to put out information about this project, other than the webpage that you just showed us? Are there other means by which you're going to put information out?

0:44:11:

Meghan Horrigan-Taylor: Yes. I can start that conversation. And then, Amanda, if you'd like to add some additional information, that would be great. So, yes, we are working on a robust communications plan to share information about the project. This portal is one-way. And is also a pretty major means to share the benefits of the project. Really help inform the project, and all the different attributes of the -- of fiber, to the community at an initial stage, at an initial point of -- now. As part of that, we will be doing a social media campaign. And so, we'll be sharing information, of course, through social media, through our website. The project page has other details and information, which I think will be helpful and valuable to the community, including a project timeline, and project costs, and a number of things that I know this Commission has been very involved with helping to set and define. In addition, we are creating some video series as part of this effort, to help inform and engage the community. And we're also looking for ambassadors, as part of this process, to host small group meetings, to talk about fiber together, as a team. And print the different materials. And that is one reason why we made them printable. And share those with their community networks as well. So, part of the opportunity is to provide the information, and then hope that the community also -- it stimulates conversation, between the community members themselves, as well.

0:45:48:

Amanda de Jesus: Yeah, no. One -- well, two -- pieces I would add to that is -- We're going to be sharing this information throughout our regular communications channels -- newsletters, what have you. As well as connecting with local organizations, like the Fiber League, to help promote this work.

What is this "Fiber League"? Google " 'palo alto' 'fiber league' " 10 hits, but none relevant.

And, of course, you all. [laughs] If you could help out, too. The more people that is sharing this information, the more people that we're actually going to reach.

0:46:13:

Meghan Horrigan-Taylor: Thank you.

0:46:13:

Commissioner Johnston: So, I'm glad that you're thinking broadly about this, because I think it IS going to be important to find multiple ways to kind of let the community know that they need to be paying attention to this. Am I correct in thinking that the way you're going to survey the community is really through the website?

At 0:29:11, Honker said email (not the website) would be used for the official survey.

0:46:38:

Meghan Horrigan-Taylor: Um. Well, John can speak directly to the actual survey tool itself. It will be -- We will be sharing it through the website, but also through the community. All of our channels. But John's really helping us to -- with a platform of how the community will take the survey.

0:46:55:

John Honker: Thanks, Meghan. And, Commissioner Johnston, really what we're looking at is kind of two -- two approaches. One, as Meghan said, using the sort of the engagement, and the tools that have been developed by the Palo Alto team to sort of push that out and get some direct engagement from the community. We also want to survey, in sort of a more quantitative, and a more -- sort of a technical approach, that will give us good information on, you know, market -- market data, demand data, pricing. You know, ask all the questions. The more detailed questions, that will really help shape the demand picture for Palo Alto. And we'll do that in a way that is very statistically significant and relevant, by, you know, doing more email-based distribution and random samples across the community. So, we see it really as two tiers. One, to really get the -- some more of the anecdotal and the engagement information directly from the community. But then, get that quantitative data on the back end, that we really need to help shape the business side of broadband for Palo Alto.

0:48:10:

Meghan Horrigan-Taylor: And just to know something that I remembered, in discussions with John is, part of the survey will also be a tool to inform. And so, we'll have links to these different online resources for the community, than may not have heard about the project yet but want to get more information before they take the survey. So, it will also be an opportunity for us to share more information, as well.

Good idea.

0:48:36:

Commissioner Johnston: So, I'm comforted by the fact you've obviously thought about this deeply. And I appreciate that. My last concern really has to do with the timeline. It sounds like you're looking to get responses back from the survey in the November/December timeframe. And I'm just wondering if that's -- if that's too short a timeframe to both get the information out, get the level of engagement that -- that you want -- and I think that is important -- and then get responses back that are really going to be kind of comprehensive and meaningful.

0:49:23:

Meghan Horrigan-Taylor: John, do you want me to --

0:49:24:

John Honker: Um. Sure. You know, we've discussed that quite a bit. And, you know, because of the holidays, you know, it's -- we have a good window between, you know, Thanksgiving and Christmas. There's a couple of weeks there where the quantitative work can get done. Right? Because that piece of it -- the actual, sort of the scientific survey that goes out, usually, we get the results within a week. I think the question becomes, is there enough runway in the front of that just to get the education completed. We think there is, because the process has already started. But we'll continue to track it. If we see -- If we need to push things forward a bit, it's always an option. Because there are other tasks in the -- in this phase of the project that can still be -- that they're still not going to be done until sort of the March timeframe. So, you know, I think there's an opportunity to push it if we felt like it needed to be.

0:50:23:

Meghan Horrigan-Taylor: Yeah. I want to just echo that. I think that there is some flexibility with the timeframe. We did take a look at the overall timeline, and tried to use some of our best practices as some of the other campaigns that we've launched. And looked at some of the timeframes of those. And, really, it seems like the 6-8 week timeframe is a good one, in terms of informing the community, especially with what we're planning. So, I do think that that does provide us with a good window of time to do that informing and engaging, and in advance of the survey being launched.

0:50:58:

Commissioner Johnston: Because, obviously, it's not only -- I mean, the survey will build -- hopefully -- build support for this project, as well as gather information. And I think that one of the things that I think we're concerned about is to make sure that there's an adequate kind of take rate from the community to make this project really work. So, I appreciate the fact that you're going to be looking at making sure you've got thorough engagement and response, here, before moving forward. So, thank you very much.

0:51:36:

Chair Forssell: Commissioner Smith.

0:51:38:

Commissioner Smith: Thank you. I think Commissioner Johnston and I were reading from the same playbook. And, quite frankly, his concerns are mine. But before I get to concerns, I want to say, first of all, kudos. Because I think the website is fantastic. And it really does -- I love the logo. I love the branding. I love the fact that we're trying to get out there on a front foot. And I think that's fantastic. But, harkening back to our conversation in April -- and this was -- we spent a couple of meetings going in depth on what the requirements would be for making this happen. And we had extensive discussions about our need to not only inform but to educate. And the reason is because we are literally talking about black-box stuff. And most of us know broadband from -- we turn on our computer and we'd better be connecting very, very

quickly. That's about what we know. We know we have to pay AT&T, or we know we have to pay Xfinity. But it better be fast. And that's what we know. And one of the things that I think we are -- we need to pay particular attention to is drawing a distinction between "inform" and "educate." And they can't necessarily be one and the same. Nor can they be necessarily simultaneous efforts. They can be. But it's better if you inform -- In my view, it's better if you "inform," and offer an alternative to "educate."

I'm not quite clear on this point.

0:53:11:

There are a couple of concerns that I have with respect to a survey tool that asks you for your opinion about broadband -- and all this detailed information about your own broadband bill and experience -- but at the same time, I'm going to offer you a little bit of education on what broadband is. It's slighted, if you will. It would -- From my view, it would be better to have education first, and then go forward with the survey. I think, also, as I go back upon our notes from April, one of the things that we, as a Commission, really -- Quite frankly, we were quite direct in our language. And that was that education would take place BEFORE the survey.

Yes. For example, in my transcript of UAC's 04-21-21 meeting, at 2:58:08 (PDF page 110 here), Commissioner Smith makes this point.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/public-letters-to-council/2021/06-01-21-ccm-public-letters-set-4.pdf>

And I think that's -- I think that was done purposely. And, in fact, as I look back from my own memory, that is my impression. I, too, am concerned about the timeline. As Commissioner Johnston had highlighted. Yes, it's true that many of us will be "available," if you will, during the Thanksgiving and Christmas holiday, even into the new year. Simply by the fact that we'll probably be taking some time off for the holiday. But you have to count on the fact that many of us take time off during those periods, quite frankly, to be with family, not necessarily to be online, when we've had to be online for the last few years. So, I would encourage us to reinvestigate not only our sequencing of events but the timing associated. I think there is still time for you to extend your results to the end of Jan with February, and still meet your March deadlines.

0:54:50:

From a platform idea, it's great. I've seen similar platforms via other alternatives. I think it's fabulous. It's very interactive. I get to see within my own community of Palo Verde who would be interested, even if it is a 50-meter bubble. Which I think is, from a security and a privacy perspective, is also fantastic, and a great way of working -- and going forward.

0:55:24:

I think, my last commentary, I would like to see a little more -- um -- detail with respect to when we are launching, what are we looking for in terms of ambassadors, how are we getting those ambassadors up to speed, and how -- quite frankly -- are we qualifying ambassadors? Are we educating our ambassadors? Are we putting together a program for our ambassadors? Or are, simply, they are going to the website, downloading the website, and holding a coffee chat? Which is perfectly fine. It's certainly a -- definitely way. But the hope is that ambassadors would be truly ambassadors, to build -- to A. C. Johnston's earlier comment -- to build this take rate. This is an extremely -- Well, this is a HUGE investment for the City of Palo Alto. And it's going to shape the City of Palo Alto. Not for the next ten years. For the next 20-30 years. So, we need to take the time necessary to do things exactly right. And that's my comment.

Is "ambassador" the right word? Ambassadors usually go to foreign countries to negotiate things.

<https://www.dictionary.com/browse/ambassador>

Neighborhoods are not foreign countries. I don't know if the City's "ambassadors" should be negotiating things with individual neighborhoods (so that each neighborhood gets a different FTTP deal).

Los Altos Hills Community Fiber calls them champions.

<https://lahcommunityfiber.org/champions/>

0:56:30:

Chair Forssell: Thank you, Commissioner Smith. Is there any response?

0:56:37:

Meghan Horigan-Taylor: Sure. I can talk a little bit about the items that he listed with just some detail. Of course, we're wanting to have this conversation first, before we actually launch the platform. So, it's pretty much ready to go. So, very soon, within the week, it will be launched. So, just giving you a timeframe related to that. In addition, your questions around the ambassadors and kind of what tools will they be provided, we are working on a tool kit, as part of that process, to provide them with tools, so that they have an idea of how to launch a meeting. With what type of tools they could use to help communicate and educate the members that they're inviting in to have conversations. So, that is part of our opportunity, and part of the next steps. Which will be launched as part of the website as well. The fact sheet, of course, is kind of the first piece of collateral that we have. It is a good starting point to educate. It provides benefits. It provides information. It provides tools. And the project page also has very detailed information about just overall timeframe, what it means, what the project is. So, there -- it's a lot of detail is available there as well. So, we're pretty excited about that. It's -- New webpages. They didn't exist before. So, it also will be collateral and pieces that the community can absorb and use as part of the effort. So, I don't know if I answered all your questions there. I can definitely -- and would like to meet with you offline, and discuss other ideas that you might have, to build on that tool kit. So, we can definitely do that, as well, as a next step.

0:58:33:

Commissioner Smith: Terrific. Thank you.

0:58:35:

Chair Forssell: So, did I understand correctly? There's more presentation. Right?

0:58:39:

John Honker: Yes, Commissioner Forssell. I've got a couple more slides just on the update for the engineering design. And we should be through.

0:58:46:

Chair Forssell: Yeah. Why don't we go ahead with that, and then we'll see if there are additional questions at the end.

0:58:51:

John Honker: Perfect. Share my screen again. OK. So, switching topics. Over to the engineering design. We just wanted to provide you, you know, a high-level update on where we are, as far as the backbone and the fiber-to-the-home engineering. You know. Our goal, again, is to have this completed by March of 2022, if not sooner. The backbone for fiber-to-the-home. The backbone, we're expecting to have completed by the end of the year.

0:59:18:

David Yuan: John, sorry to interrupt. We're not seeing the presentation.

0:59:22:

John Honker: Oh. I'm sorry. Let me try to share that again. [pause] Is everyone seeing my screen now?

0:59:38:

Chair Forssell: No.

0:59:57:

John Honker: Hmm.

1:00:15:

John Honker: How about now?

1:00:17:

Dean Batchelor: Still no.

1:00:22:

John Honker: OK.

1:00:38:

David Yuan: I can try to share the presentation that we attach, John, if you want.

1:00:41:

John Honker: That would be great, Dave, if you could. I'm going to try this one more time, but in the interest of everyone's time, -- That would be great.

1:00:54:

Dean Batchelor: Still no.

1:00:55:

David Yuan: OK. Let me try then.

1:01:03:

Some graphic thing appears, but it's not any of the presentation slides.

1:01:07:

John Honker: We'll be on Slide 4, Dave.

1:01:09:

David Yuan: OK. ** try to minimize some of this.

1:01:22:

David Yuan: OK?

Slide 4 -- FIBER BACKBONE & BROADBAND ENGINEERING

1:01:23:

John Honker: OK. Let me start again, quickly, just to refresh. So, as far as the engineering design work that's being done on both the backbone and the fiber-to-the-home, we have basically completed the 30 percent design on both fiber-to-the-home and on the backbone. Which is a pretty important step, because we actually met the deadline about 30 days ahead of schedule. Which puts us in a better position to move into the next stage of design. Which is really what we call a constructability fielding. Where Magellan's field engineers will be in -- on - - in market, within Palo Alto, really serving all of the areas where fiber will be installed. Both from the pole lines and underground. And the goal of that phase is really to make sure that, as the design is being developed, we know exactly what the construction environment's going to look like. Down to the street level. Down to the literally the flower pot level. Throughout the community. And to every pole in Palo Alto, as well. So, this is going to -- As you develop this design, it's going to give you a very, very detailed understanding of both construction costs and actually how construction will be carried out, in the aerial environment and in the underground environment.

1:02:48:

So, as we're going through this process, you'll see, we basically provided signage. We've been working with the utility to bring our fielders in market, give them the right signage, give them the right policies and procedures, as they're walking these routes throughout Palo Alto. They'll be wearing hard hats. And Magellan vests. We have magnets with "City of Palo Alto Contractor" on them -- on our fielders' vehicles. And they will be in market for a good 4-5 months. For the entire project. So, you'll probably come across them, in just your daily goings in Palo Alto. They are basically -- They are very discrete, though. They kind of stand out of the way as much as they can. They want to be, you know, invisible, as -- wherever possible. So, that fielding will really give us all of the data that we need to actually get to the final design, which will be toward the beginning of the -- the end of the year for the fiber backbone, and in the first quarter for fiber-to-the-home.

1:03:56:

There are a couple of important aspects that we do want to discuss tonight, around placement of facilities. Specifically, for fiber-to-the-home. Dave, if we can go to the next slide. So -- OK. Yeah.

1:04:21:

Slide 5 -- FIBER BROADBAND OVERVIEW -- HUT & CABINET REVIEW (1st)

Great. Thank you. So, we really have -- In the community, we have what we call fiber huts and we have fiber cabinets. The fiber huts -- you'll also hear them termed "points of presence" [POPs]. These are prefabricated buildings that are specifically designed for telecom. Specifically designed for fiber-to-the-home. Everything comes back into them. Just like your substations,

you know, aggregate customer meters across your electric plant, the POPs are the fiber equivalent to distribution substations. They bring all of the customers across the market into one area, where they're aggregated, and then their connections are basically routed out to the internet from those locations. These are really -- can be strategically located in Palo Alto. And we've identified 4 or 5 locations that are optimal. We've been working with the CPAU team to determine, you know, what the best locations are. But we realize that it also needs to be a process that goes through, you know, Palo Alto's permitting, and, you know, just the governance process, to identify the locations. Because they are relatively large. These are, you know, 10 x 20 si- foot -- x 8 foot high -- tall -- sized structures. And most of our municipal clients that we work with either try to conceal them, in a -- you know, in a substation area, in an unused portion of a park, that can be fenced and can be covered with landscaping, or even integrate them inside an existing facility. So, we're looking, basically, on -- based on the size of Palo Alto -- we're looking at 2-3 of these huts, being strategically placed throughout the community.

The slide says each POP will serve 10,000-15,000 customers. I assume that means the POP will handle all the fiber that passes 10,000-15,000 premises, regardless of how many premises are customers.

And we'll show you some of these locations in a moment.

1:06:16:

The other aspect is -- are the fiber cabinets. Now, the fiber cabinets are considerably smaller. They're about, you know, 3 feet x 4 feet x 2 feet. In volume. And they will be placed throughout the community. You have some of them today -- out in the market today -- that connect to your existing fiber network.

For example, two cabinets used by the City's dark fiber network are:

- * 1131 Colorado Avenue (across from Colorado Place) -- #2994 -- 30" high x 64" wide x 23" deep
- * 2675 Middlefield Road (at Palo Alto Cafe) -- #3479 -- 36" high x 44" wide x 22" deep

But we're looking at, you know, about 130 locations where these cabinets would be placed. And we also have options for the cabinets. We can place them on the ground. Right? On a pad. On a mounted foundation. We can actually also conceal them underground, inside of vaults, so that it's not disruptive to sight lines in neighborhoods. The goal would be to try to work through these locations with the Palo Alto team, to identify the least disruptive places where they can be located, and then use the technology to conceal them wherever possible. You know, the goal would be to try to go underground with some of these cabinets. But we realize that some of them will likely have to be above ground.

1:07:22:

Just to give you some visuals of this, Dave, if we could skip to slide 9, actually --

It's actually slide 7, on PDF page 9 of the staff report. (Slide 6 appeared later, at 1:19:38.)

Slide 7 -- FIBER BROADBAND OVERVIEW -- HUT & CABINET REVIEW

So, really, this is what the huts and the cabinets look like. So, in your top-left corner, the fiber hut exterior. Typically, what you'd see at the bottom of a cell phone tower. So, you know, your fiber hut is, you know, approximately 10 feet wide by 15-20 feet long. And generally needs to be fenced, but then can be landscaped, and, you know, relatively -- concealed relatively well. Behind the landscaping. It does need, generally, a generator.

I'd like a lot more information about this. What kind of generator? What kind of fuel? Located inside the hut, or outside? (I assume outside.) Does a person have to start it? Does it have to be tested once a month? How much noise does it make?

Years ago, staff created a specification for a fiber-to-the-premises network that required that huts have backup batteries that could power the equipment for up to two weeks. That might be overkill. But I think it didn't require an on-site generator.

And HVAC systems, which you'll see on the front of the hut. So, we're looking for locations for 2-3 of these throughout the Palo Alto community. And we can look -- you know, we can really squeeze it in, we can probably shoot for 2. Inside of each of the huts, you'll basically -- You know, they don't look like much from these pictures, but all of the electronics for fiber-to-the-home basically sit in the huts. And those are going to be accessed typically by telecom technicians, fiber contractors, potentially City staff. They're secure facilities. Generally, they'll be fenced. And they'll have, you know, security systems, both on the doors and, on the inside, for motion sensors.

1:08:48:

So, this really covers those huts. Then, the underground -- Or, I'm sorry, the cabinets, you'll see here in the two pictures below. This is, on the right, a typical above-ground cabinet. So, you know, proportions of this are about 4 feet tall by about a foot and a half wide by about 3 feet long.

In other words, not the same shape as cabinets used by the City's dark fiber network.

Generally sits in a concealed area, again. And they're normally going to be landscaped. Alternatively -- Because this is generally the best access platform. It's easiest for technicians to be working in

The technicians would be working next to the cabinets, not in them.

for fiber-to-the-home. But, you know, one of the newer technologies is to actually bury these cabinets. So, what you see on your left-hand side, is one of the same cabinets -- enclosures -- but it's actually mounted in an underground vault. And, you know, again, in those sensitive areas,

which are going to be probably more than less, we can look at using these underground cabinets, to conceal, you know, anything that's, you know, visibly sensitive to the community.

How often would technicians have to access a cabinet? Would access involve moving the cabinet from underground to above-ground? Does this potentially cause reliability problems?

1:09:56:

Slide 8 -- FIBER BROADBAND REVIEW -- HUT & CABINET REVIEW (part 2)

So, we'll be going through a process of locating those. What we've done to date is really identified some locations. This is a schematic from one of our customers up in Hillsboro, Oregon, that is actually utilizing some parkland. And built the hut on the corner of that park. But completely concealed by tree cover and shrubs in front of it. Generally, these are -- can pretty well easily be concealed. But we want to take note of any, you know, sensitive areas in Palo Alto. So, Dave, if you want to go to the next slide, we've got a couple of locations we can quickly go through.

1:10:43:

Slide 9 -- FIBER BROADBAND REVIEW -- HUT & CABINET REVIEW (part 3)

Um. The goal would be -- Maybe before we do that, let's just talk through this slide. You know, as we look through the hub and cabinet locations, our goal is really to try to narrow those down to the best locations. By, really, the end of 2021. That doesn't mean, necessarily, that all the permitting and all of the governance to get that passed through as an actual location has to be done. But it allows us to really finish the fiber-to-the-home design. Because those huts really become important. Just like in your electric network, your substations, you know, tie in multiple theaters and multiple distribution cables, your huts do the same thing. So, our goal is to kind work with CPAU, and, you know, bring these to leadership, so that some decisions -- at least preliminary decisions, or preferences -- could be made around the hut locations. And then determine what steps would need to be taken to move those forward through the governance process. Which may take open space approval, you know, planning review, or Architectural Review Board, just the engineering review, maybe public works permitting. You know, anything that the City needs to really be focusing on, to move a location. Or, to finalize a location. So, again, we don't necessarily need to be through all that process by the end of 2021. We just need to have a good level of confidence that that's where those huts will be placed. If we want to scroll down to the next page, we can kind of go through some of these locations.

1:12:26:

Slide 10 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (1st example)

So, the first one is really that Colorado substation. Which is at Colorado and Bayshore.

The street address is 1082 Colorado Avenue.

This is a -- these can be good locations. Because, again, you know, it's substation property. Access is good. There's available space. You can see the red outline of that hut, where it would be. On the substation property. So, this is one of five choices that we have.

The existing building shown here is 23'-5" wide x about 58' long (and 12'-4" high). So the red rectangle illustrates a hut that is about 23' wide x 50' long. That's larger than what Honker said (at 1:07:22) a hut would typically be: 10' wide by 15-20' long. Anyhow, it's good to know there's room to spare. The red rectangle is within a fenced-in area.

1:12:56:

Slide 11 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (2nd example)

We also have the Animal Shelter, at 3182 East Bayshore. A lot of different potential opportunities here. We located it here in the corner, over by the -- it looks like the maintenance yard. But it could -- You know, it could -- we didn't want to take it out into the open space here, because I know there's some restrictions on that. But somewhere within that property, on the existing pavement, could work.

Three buildings close to the red rectangle have a combined footprint of about 20' x 80' (scaled using Google Maps), so the red rectangle is about 20' x 38'. Apparently, the red rectangle is not within a fenced-in area.

1:13:24:

Slide 12 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (3rd example)

Next location is Fire Station #5. So, Fire Station #5 has some property, sort of on this corner here, that could be utilized for the hut. Again, a good, convenient location. And there's ample space in that location for it.

An existing building to the left of the fire station is about 20' x 31' (scaled using Google Maps), and the red rectangle is about the same size. The location of the red rectangle is not within a fenced-in area. Is it perhaps in Briones Park?

Next --

1:13:47:

Slide 13 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (4th example)

Ryan brought this one to us. The water facility at 1955 Old Page Mill Road. Where the City has some existing property.

1:14:01:

Slide 14 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (5th example)

And then, finally, the Hale Well, at 998 Palo Alto Avenue. So, each of these locations -- You know, our goal is to try to find, geographically -- or, let's say, network-friendly locations for placing a hut. We also have, instead of, you know, looking at a new construction with these huts -- or, these prefabs -- we also have -- Dave, if you want to scroll to the last page --

1:14:31:

Slide 15 -- FIBER BROADBAND REVIEW -- POTENTIAL HUT LOCATIONS (6th example)

City Hall. Right? So, we could look at integrating one of the huts inside City Hall. With some retrofit, and some remediation work, to make sure the environment is, you know, acceptable for all the electronics, and -- That's another alternative. We like that alternative, of course, because, you know, no new huts in the community. Right? No community impact. You've got an existing facility. But we just need to work on sort of the retrofit plan, to make sure that hut can function like a stand-alone hut would.

1:15:07:

So, these are like five or six of the best locations that we've found. Again, they're -- In terms of where they are in the network. They work well for the fiber network. For placement. And placement's important, because, as we have all those fiber lines coming back into the hut -- linear miles of fiber -- increases. Right? So, where we place those huts becomes very important, to minimize the amount of construction we have to do, and the amount of fiber that comes into them. Because we want to keep those linear assets as short as possible. So, this is really where we're at, in terms of the huts. Or, potential hut locations. No decisions to be made tonight. This is informational, to get you all thinking about it. But those are really the six locations we've identified as being most optimal for the project.

1:16:04:

Dave, was there anything you would like to add on the huts? Or discussion?

1:16:11:

David Yuan: Hmm. OK. Sorry, I'm trying to get back to my buttons here. Yeah, I think, as John had mentioned, we do have to go through the Planning and Architectural Review for the visual impacts of the huts. And then for the construction of the huts, we will have to go through the building department review process. We'll have to look for fire, if there's urban forestry, utilities -- conflicting utilities. Also, Public Works will be involved. And traffic control plans, and what not. So, there is a -- lots of reviews that will be required. But, like John said, we are just bringing

up to your consideration tonight, just to see if any sound feasible, or if there's other opportunities elsewhere that you can think of, and propose. And we'd be happy to explore.

1:17:02:

Chair Forssell: All right. Well, thank you. Looks like Commissioner Smith has additional questions.

1:17:10:

Commissioner Smith: Super. Thank you, John. Great presentation. I really have just one question. What determines the number of huts?

Great question.

1:17:17:

John Honker: Ah --

1:17:18:

Commissioner Smith: Sorry. Go ahead.

1:17:20:

John Honker: No, finish your question, Commissioner Smith. Sorry.

1:17:22:

Commissioner Smith: Well, I was just getting thrown by the number. If each POP serves 10-15 thousand customers, and we have 27,000 residences, plus 4,000 businesses.

Staff should maintain more precise data, in a place that can be conveniently referred to going forward. Also, what about infill, as property owners take advantage of SB 9 and SB 10? <https://www.paloaltoonline.com/news/2021/09/17/newsom-signs-housing-bills-that-reform-single-family-zoning>

Also, why not have more huts, each serving fewer premises?

We're at either 2 or 3 [huts]. I think that's the way that math works. But the locations that you've chosen don't necessarily match with all of those customers.

1:17:46:

John Honker: Right. So, as we look at -- We'll have to make some decisions on, you know, which huts we want to use in those areas. So, you know -- out of the different huts. We don't want to

locate two huts right next to each other. Right? We want to sort of geographically disperse them. But we can keep within the ones that we've shown. We could select, potentially, three locations out of there, and still serve the entire customer base. So, the goal would be to really kind of refine the numbers down, and determine which ones are the best. And then, from a network plan, we can go back and basically do all the engineering, to determine how that serving area would look. Right? If -- And then, if there are any issues with that, we can actually move some to another hut. Right? Because it gives us -- In the feeders -- Just like in the electric system, we can move a feeder from one hut to another hut relatively easily. And that gives us flexibility to say, well, OK, if we need to re-dimension huts, or rebalance huts, we can do that in the network design. Within each of these options.

1:18:56:

Commissioner Smith: Great.

1:18:56:

David Yuan: And, also, I think if we were to reduce the number of huts from three to two, we may need more of those fiber cabinets, or the size of them, to serve the same number of customers.

This makes no sense.

That's the alternative.

1:19:06:

John Honker: That's correct.

Why is it correct? Changing the number of huts will change the average number of cabinets served by each hut (if the average number of premises served by each cabinet remains the same). But that's different.

1:19:07:

Commissioner Smith: Yeah. So, just a point of clarification. And I think it was in your slide presentation. We were talking about the internet exchange. Or the data center. The huts. To the cabinets. Right? It's almost like a web. Is that roughly correct?

1:19:21:

John Honker: That's correct. Yup. So, think about your exchange -- or, your head end, or your data center -- as the center of the universe. Right?

1:19:29:

Commissioner Smith: Yup.

1:19:29:

John Honker: The nerve center of the entire network. And then, one tier down from that, -
- Dave, if you want to pull down that diagram, that would be --

1:19:38:

Slide 6 -- FIBER BROADBAND OVERVIEW -- HUT & CABINET REVIEW (2nd)

Oh, beautiful. [laughs] Great timing.

1:19:40:

Commissioner Smith: Bingo.

1:19:40:

John Honker: So, this is really your data center. Right? This -- Well, it's actually upstream from this. So, the fiber hut really is connected to the backbone. Right? So, this is your fiber hut here. Your data center would be back here. Right?

Because the image on the screen is coming from Palo Alto, not Magellan, it's not showing any cursor Honker may be using to point to various "here"s.

That would be your central point where multiple fiber huts are connected.

1:20:01:

Commissioner Smith: Is there any power in the fiber cabinet? Or is power only required in the hut?

Great question.

1:20:05:

John Honker: It's only required in the hut. So, the cabinets are all passive.

Well, in that case, what IS in a cabinet? If the architecture is PON, splitters and patch panels would be there. But what if the architecture is Active Ethernet? If NOTHING would be there, then maybe we don't need any cabinets. That would be one way to deal with the contentious issue of which cabinets should be undergrounded.

1:20:09:

Commissioner Smith: Yup.

1:20:10:

John Honker: And no -- Nothing energized. Nothing with a plug is in those cabinets.

1:20:15:

Commissioner Smith: Gotcha.

1:20:16

John Honker: Yup. So, your fiber huts will have multiple cabinets coming off of it. Just like you have multiple transformers coming off of a -- you know, off of a substation. And each one of those cabinets, then, will feed homes and businesses along those routes, either aerial or underground. So, as we look at the placement of these huts, and the cabinets, you know, we want to place them strategically. But what we can also do is, if we find one location that's not as optimal is better for the community, then we extend our feeders. Right? Into that hut. We send our feeders further into that hut, wherever that's located within the City. So it increases our feeder lengths a little bit. Right? And our costs a little bit. But, for the sake of the community, if that is a much more palatable option, you know, it's not -- it's not breaking the bank on the network. You know. There's small incremental increases of feeder cost, versus, potentially, the community impact that it has. So, we always -- we al- -- that's why we start this conversation early. Because it's good to really identify, you know, where the least path of resistance

Path of least resistance?

is for fiber huts.

And, presumably, cabinets.

Or, through utilizing existing facilities. And then we can design the network around that.

1:21:42:

Commissioner Smith: Understood. Fantastic. Thank you.

1:21:47:

John Honker: Absolutely. You're welcome.

1:21:48:

Chair Forssell: Vice Chair Segal.

1:21:52:

Vice Chair Segal: Thank you. I'm still trying to understand. When I look at this plan, it almost seems like we've bent over backwards to have the huts sort of outside any community area. Which I understand, if we're sensitive -- we're concerned about community members being sensitive. But, I mean, like, I look at -- the Animal Shelter's on the other side of Highway 101. We're worried about sea level rise. It seems so far away. We're adding cost. And I'm just wondering whether we looked at things like parks, the Community Center, areas that are much more central to the community, where maybe we can control costs, and maybe there is an area that we can set aside, and try to make it look nice.

1:22:29:

David Yuan: Well, we do have a park ordinance. We did reach out to CSD. And the City is very dear to the park.

That is, the City loves its parks.

So, -- In order to undedicate any parkland, it would require a residents' vote. So we have to put it out on a ballot. And the residents would have to decide. So, that would take some time, as well.

1:22:56:

Vice Chair Segal: OK. So, that's parkland. And what about, like, the Community Center library. Is it the same situation? With -- Or a school, you know, for that matter? Or is it the same with any of those?

1:23:05:

David Yuan: Right. If it's inside a City facility, that's something we're also exploring. But, for schools, we would have to probably negotiate some sort of deal with them, I'm sure. To find the suitable space. But that is something that we are definitely exploring. Is inside of facilities of existing buildings. So it won't be an eyesore, and there won't be as much public scrutiny, I guess. And their infrastructure is already there.

1:23:29:

Vice Chair Segal: So, yeah. So, yes, I'd like to understand -- Or maybe it's next time -- understand what those tradeoffs are. And what you said -- You said it would be a LITTLE bit more expensive. I'd like to to understand how much a little bit more expensive is. Because we're talking about the other side of Highway 101, up in the foothills. I'm not seeing a lot of -- Maybe the one at ** -- or. Colorado station is a little more community-centered. But --

Maybe there should have been a presentation slide showing a map of all of Palo Alto, showing the boundaries, with dots of one color for each of the nine electric substations, <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2020/id.-10698-cip-projects-update-december-2019.pdf?t=59254.69>
dots of a different color for each of the 20 schools, <https://www.pausd.org/schools>
dots of yet another color for each of the seven fire stations, <https://www.cityofpaloalto.org/Departments/Fire/Operations>
etc. Ideally, the viewer could zoom in to get the kind of detail shown on Slides 10-12, with the dots morphing into rectangles (scaled to the right size) representing the huts.

1:23:54:

David Yuan: I think Dean's even asked us to reach out to the real estate manager, to see if there's any properties for sale. And there's really nothing for this size available. Anything available right now would probably be in the million-dollar range. For a vacant building. For sale.

1:24:10:

Dean Batchelor: Well, also, if I could just add, Vice Chair, you know, one of the -- the thing with these huts, we were looking, actually, for three different locations: one on the south side, one in the middle, and then also one on the north side. So, that way, there, when you build your network, or a portion of it, you're actually breaking it in sections, so that when you build out to an area, you're not overloading, as John said. And not having too many huts all in one area. Or, you know, making one giant hut, that you would then want to then disperse. It doesn't make sense that way. So -- as you build it. So, we had looked at a couple locations on the south side, which is down by Fire Station #5. It's kind of the far south side. And then Hale Well is something that the Utilities owns, as you saw in that ** -- in that fenced-off area, the we could probably -- MAY be able to build something back there. Something that we're also anticipating. And then, Colorado is in the center, more or less. And it's on the other side of 101.

The Colorado substation, at 1082 Colorado Avenue, is on the southwest side of Highway 101, that is, the same side as Fire Station #5 and Hale Well. It's the Animal Shelter, at 3281 East Bayshore Road, that's on the northeast side of Highway 101.

So, you know, we're looking at those considerations.

1:25:13:

Vice Chair Segal: I guess had one more follow-up. Sorry. But if there is a hut -- So, most of these huts, one or two sides of them doesn't really have a lot of customers, if you look out from one or two sides of them. Whether you're talking about Animal Center, or Colorado Substation, or even Hale. Right? You're along the water, or the road -- the highway, or something. Does it matter,

from a build-out in the future, is it better to have it where you have potential customers surrounding it 360? Does that matter? Does it shorten the amount of -- I don't know -- wiring, or whatever it is that has to be built?

1:25:56:

Dean Batchelor: Well, I think, as John and Dave talked about, is that -- You know, I think the thing is that we would have to put in more huts -- Or, I'm sorry -- more cabinets.

Batchelor repeats Yuan's claim at 1:18:56 above, which I think is false.

These cabinets throughout the neighborhoods. Which -- I think that those are going to be more of an eyesore. As we get deeper into neighborhoods. Which is something that we really don't want to have. Maybe on the outskirts. Or if there's areas -- But, you know, no -- As I can look at it as wanting customers to want to build underground for their overhead -- you know, trying to find places for those transformers is really difficult.

Batchelor is comparing the siting of FTTP cabinets with the siting of above-ground transformers in the Green Acres neighborhood, which has underground electric wires, and historically had underground transformers.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2018/final-uac-minutes-of-august-1-2018-meeting.pdf>

Anyway, it's changing the subject. Vice Chair Segal was talking about the siting of huts.

And so, I'm thinking that, even though that these are smaller than a transformer, they're still going to be a problem. Nobody's going to want that in front of their home. So, if we don't have as many huts, then we're going to have to put more of these cabinets throughout the City.

Batchelor repeats Yuan's claim at 1:18:56 above, which I think is false.

Which -- I just don't think that that's really going to be something -- Right now -- You know, when you look at a traffic signal -- We have traffic signal boxes mostly at all the traffic signals. And that's about the size of the boxes that we're looking at. But, you know, they're downtown areas, wherever the traffic lights are, they're at the corners, things like that, that we've been able to find. But I think, though, that if you get deeper into it, you're going to find that some of these cabinets are going to have to be inside the neighborhoods. So, I think -- that was the trade-off. Correct me if I'm wrong, John.

1:27:25:

John Honker: No, no. You're exactly right, Dean -- Director Batchelor. We look at -- You know, the cabinets hold about -- up to about 500 customers. Typically. So, think about that as a neighborhood area -- a neighborhood cabinet. Some are smaller. Some will be 250. But, generally, that's the range of size -- the number of customers served by those cabinets. So, you

know, if you increase the number of huts, we can use fewer cabinets. And we can also reduce the size of the cabinets, generally. Because we can bring more of the feeders out into the neighborhoods. Versus having so much distribution. And that, actually, is good for the network, because it keeps our costs down. But, as he mentioned, it's a trade-off. So, we'll work through those trade-offs with you all, as we get further along, to try to really dimension it the best way. Keep the costs down. But also to keep the sightlines in the community minimally impacted. Because we deal with it in every project. We -- In Hillsboro [OR], we're just -- You know, we went through sort of a four-month planning process, to relocate four huts that were originally designed in a certain area, and the city -- you know, community -- just -- We went through a charrette process with them. And they decided, yup, these are the locations we want them. And this is how we're going to do it. So, it's just -- It's a process. It'll take some work.

1:28:48:

Vice Chair Segal: I'm a little more worried about the hut -- sorry, the cabinets. The huts, I think we can find places. But, you know, we've sort of been to that rodeo before, with transformer boxes. And so, I don't want -- You know, it would be good to start thinking about that early, I guess. We have experience, but --

1:29:08:

John Honker: Chair Segal, I can -- Or, Vice Chair Segal, I think also we can -- you know, we can get pretty customized with the network. And even if we had communications closets, if we have more property that we can use, other City facilities, you know, more, smaller spaces can be good in this respect. To limit the amount of those cabinets that are out there. So, we'll take a deeper dive on that as we get into this phase of the project. Because our staff will actually be out there visiting sites, and working with your team to find the best locations.

1:29:48:

Chair Forssell: Let's see. Commissioner Bowie.

1:29:52:

Commissioner Bowie: Yes. So, my question with these huts versus the cabinets. There's been significant allocations of state money, I think, over the summer. For middle- and last-mile. Is there a distinction within this infrastructure that puts us in that realm? Of those new pots of money that are coming available? And whether that's being considered?

1:30:15:

John Honker: It has. We're actually -- Commissioner Bowie, we're working on, really, a grant portfolio for you now, to show you what's out there and available. Palo Alto is -- is -- There are programs at the state level that are bringing new infrastructure into cities. One of Palo Alto's challenges is that the demographics are strong. And that doesn't necessarily lend the best when

you're going grant funds. You're pretty well served, from a telecommunications project. Most of the grants are designed for rural and underserved. And low- and moderate-income areas. But there are programs that are coming up with the state and federal level that we're analyzing for you, to determine at least if there's part -- you know, SOME funding that could be utilized in the build-out. So, we should have that in the next few weeks. And presenting to the project team.

Honker didn't directly address Commissioner Bowie's question about whether grant funding is related to the huts vs. cabinets issue. I think it's not, but I'm not a grants expert.

1:31:10:

Commissioner Bowie: Great. Thank you.

1:31:11:

John Honker: You're welcome.

1:31:13:

Chair Forssell: Commissioner Johnston.

1:31:17:

Commissioner Johnston: Well, I share the concerns that others have mentioned, about these -- the cabinets. And what the community reaction is going to be, to cabinets spread throughout the neighborhoods. So, -- And I expect that there's going to be a strong preference -- if we give people a preference -- a choice -- to have underground cabinets. What's the cost difference between the underground cabinet and an above-ground?

1:31:47:

John Honker: It's not significant in the overall scope of the project. So, really, the most -- the most significant is the fiber and the construction. The materials for the cabinets and the underground enclosures, you know, may be a 20 percent delta from a pad-mounted cabinet. Or above-ground cabinet. The one challenge is the size. Right? We have to scale down, because we can't get as many customers into that. It's just too big of a space, you know, to mount undergrounds. So, we would need to find locations -- You know, the goal would be, if there are some locations that could have an above-ground cabinet, great. But for others, that need those underground ones, dimension the network so that we can use those as much as possible.

1:32:33:

Commissioner Johnston: So, you mentioned, in the slide, reusing existing cabinets. What's an example of an existing cabinet?

1:32:41:

John Honker: Oh, well, just existing facilities. If there's an existing -- any of the City's existing facilities that are out there, we can potentially use that as a -- as either a hut or even as a cabinet location. So, instead of having that, you know, cabinet mounted in a neighborhood -- or, let's say, a hut mounted in a neighborhood -- we can move that inside of an existing facility. If there's available space. And the environment is supportive of, you know, power, cooling, security -- you know, the things that you need to basically run a broadband facility.

1:33:19:

Commissioner Johnston: I take it you're not talking about collocating these cabi- -- these fiber cabinets with kind of other cabinets for traffic signals and what not that are scattered around.

1:33:29:

John Honker: You know, it sounds like a great idea. But it's a real challenge when it comes to security. I mean, especially with traffic, and transportation. And even electric. Right? It just -
- The operational challenges become a little bit more.

1:33:44:

David Yuan: We did talk with the operational team, and there are some potential cabinets that are out there.

Or, rather, some actual cabinets out there that potentially could be used.

Some co-ax power supply that are abandoned. So, 27 of those.

Does the City own these cabinets?

So, we would retrofit those. Or, reuse those cabinets. As one -- to reduce the new ones. So, there are a few opportunities.

Also to be considered: are the existing cabinets in the best places?

1:34:02:

Commissioner Johnston: Thank you.

1:34:06:

Chair Forssell: Commissioner Metz.

1:34:09:

Commissioner Metz: Yes. Chair Forssell, I had some broader questions. I don't know if this is the correct time. If we're still talking about infrastructure. Do you want to wait? Or, I can address them now.

1:34:23:

Chair Forssell: Ah -- I mean, do they pertain to the topic as listed on the agenda?

1:34:28:

Commissioner Metz: Yeah. to the broad -- fiber broadband expansion, but not the physical infrastructure.

1:34:35:

Chair Forssell: Yeah. Go for it. I mean, there's nobody else with their hand up, so I think this is a fine time.

1:34:39:

Commissioner Metz: OK. Great. Um. Folks, thank you very much for the presentation, and also for the immense amount of work that went into this. That's very evident. And, also, the idea of piggybacking on the City's network needs, I think, is really a great idea.

Historically, it's the other way around. Council believed a 09-28-15 staff report that said FTTP was financially infeasible, so Council was looking for an affordable way to take a first step towards FTTP, and staff offered what it called FTTN -- bringing fiber to a bunch of nodes, and then seeing how much closer we were to FTTP. Only later did staff propose to beef up FTTN to meet all of the City's present and future dark fiber needs.

I had three questions. One a technical question and two kind of business planning questions. The technical question is, I inferred from reading the documents

Which documents? The 10-06-21 staff report to UAC really only provides the presentation slides,

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/10-06-2021-regular/10-06-2021-id-13591-item-2.pdf>

but it cites a 05-24-21 staff report to Council, which cites a number of other documents.

<https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/2021/id-12117.pdf>

that the service that we're providing to residents is -- would be 1 gigabit internet. Something like that.

I think "everybody knows" (except possibly new commissioners) that what the City wants is a municipal network that can provide state-of-the-art wired telecom services for the next several decades. And that will require supporting speeds that increase exponentially over the years. And that will require fiber infrastructure. From time to time, premises that want to go faster will need to upgrade electronics. But they won't need to upgrade the fiber infrastructure.

A rule of thumb is that to keep up with the state-of-the-art, you need to upgrade the electronics every 7 years or so. Some municipalities have been using GPON technology (2.4 Gbps down, 1.2 Gbps up, shared by, say, 32 customers on a PON net) since 2008 or so. So, those systems that haven't upgraded from GPON are past due. Some municipalities have been offering 10 Gbps internet service since 2010, and 10 Gbps residential internet service since 2015.

<https://muninetworks.org/tags-344?page=1>

Palo Alto should probably plan on using technology that can support 10 Gbps internet service from the beginning, even for customers who only want 1-Gbps internet service.

And if that's the case, do we really need fiber-to-the-home? I can see the need for fiber in the network. But do we really need fiber-to-the-home?

See this 02-01-21 article, "Why Fiber?" by consultant Doug Dawson. (The title might not be entirely clear, but I believe he's answering the question "Why FTTP?")

<https://potsandpansbyccg.com/2021/02/01/why-fiber/>

It seems like -- you know, that drives most of the cost of this implementation.

Deploying new wires is not cheap, but deploying new fiber is often LESS expensive than deploying new copper.

And, you know, I wonder if we really need -- from a technical standpoint -- if we really need that, you know, kind of approach. Um. I don't know if you want to talk about that now. Or -- We could address that now, and then we could talk about the other questions.

1:35:46:

John Honker: Sure. Would you like me to field that, Commissioner Metz?

1:35:50:

Commissioner Metz: Sure.

1:35:51:

John Honker: OK. So, sure. So, I mean, at a fundamental level, fi- -- I mean, fiber really is the only technology that can truly provide 1 gigabit symmetrical. So, you know, there are other technologies out there that provide "up-to-gigabit," but the difference is twofold. One, those

technologies are very oversubscribed. Very shared. Meaning that there may be 1 gigabit available, but the actual speeds that everyone is receiving in that area -- let's say, connected to that cabinet -- may be much lower, because they're all -- it's 5 o'clock, and everybody's home from work, and is on the internet. So, you know, the difference with fiber is -- and this specific type of infrastructure -- is that, you know, everyone has their dedicated connectivity.

There are different FTTP architectures. An Active Ethernet architecture provides a dedicated (not shared), point-to-point fiber from the customer premises to the electronics in a hut. With a PON (Passive Optical Network) architecture, fibers from several premises go to a splitter, and then the fiber from the splitter to the electronics in the hut is shared. So a PON net is point-to-multipoint. It might connect to as many as 16, 32, 64, or even 128 premises. In the old days, when internet traffic was mostly "bursty," premises might not notice that they were sharing a PON net. But with applications like Zoom, which require more continuous bandwidth, they might start to notice.

The second difference is, it's symmetrical versus asymmetrical. So, even though those other technologies may be able to provide higher speeds -- or, let's say, high speeds -- close to fiber, the uploads are still, you know, 5-10-20 meg. Right? You can't get gigabit uploads or even 100 Mbps uploads with the other technologies that are out there today.

Comcast might choose to upgrade its hybrid fiber-coax (HFC) network to DOCSIS 4.0 technology so it could offer 1 Gbps symmetrical service. But it won't happen soon.

<https://potsandpansbyccg.com/2021/05/20/comcast-tests-docsis-4-0/>

Anyhow, DOCSIS 4.0 isn't going to allow an HFC network to provide 10 Gbps internet service to individual customers.

So, that's really the first aspect of this, is the difference between sort of the shared and the copper technologies versus fiber.

1:37:15:

Commissioner Metz: OK. Thank you. Um. One of the two business plan questions I had relates to the market. I was, you know, kind of concerned, in reading the document, that there was an assumed take rate, which I know is pretty high -- 30-50 percent -- you know, depending on the details of which area you're talking about, for residential. But it sounds like, from the discussion tonight, that we're really just starting the market research. That's what I understood you to be saying before. So, I guess my concern is -- and I guess the market research will tell the tale -- that, you know, based on my experience, you know, a 30+ percent market share for a new -- small, new entrant, against 2+ large competitors, you know, selling essentially an undifferentiated service, against two well-entrenched competitors -- and very well financed companies, in their core business, you know, getting a third of the market sounds pretty challenging. Is -- I mean, do you have experience that, you know, that's doable?

1:38:24:

John Honker: Yeah. If you look at most of the -- most of the municipal utilities that provide service today, their average take rate is around 40 percent. And when they're in a market dominated by the -- a duopoly. Right? Meaning the existing cable provider and the existing telephone company. So, a good example of that is like Longmont, Colorado. Longmont's competing against Comcast and CenturyLink in their market. They're a little bit larger than Palo Alto. They're 36,000 homes, give or take. They have 57 percent market share. They've been operating for 6 years. Chattanooga is very similar. They have about 53 percent -- 54 percent -- maybe higher. Their market is a little bit larger. They're at 180,000 population. A lot of the municipal providers out there today are sort of in the 40-percent sweet spot. Seem to grow over time, beyond that. And those are all sort of in the suburban, tier 2, tier 3 cities. Similar in size and scale to Palo Alto.

1:39:39:

Commissioner Metz: OK. And thank you. And what -- You've just raised, you know, what is actually my biggest concern, which is retaliation by the incumbent competitors. You know. I mean, there's a statement in one of the documents that they may temporarily lower their prices. But it just seems like, you know, basic business strategy that, you know, we're attacking a core business of very large companies. And it seems like they're going to retaliate in every way they can. Because -- I don't know. Threatening to sue. Or, you know, using their market power. For example, offering a premium service at a lower price. Or bundling services that we don't offer. Like cable TV. Maybe, eventually, lowering price. But it just seems like -- You know, I welcome your experience, and what you're seeing in other cities. It just seems like these folks, you know, really, you would expect to fight to the death, to defend this market.

1:40:40:

John Honker: Yeah. It's -- And there's a couple of different dynamics that are going on there, Commissioner Metz. One is -- one of pricing. Right? Price competition. Against an entrant like Palo Alto, or any municipal utility that's entering the market. Two is really the product differentiation. Right? When we look at, well, what does the existing provider have, versus Palo Alto, how is that different? Because the products are a bit different -- Right? -- in terms of the aspects of fiber that I talked about earlier. That's really what the municipal utilities use as a competitive advantage against the existing providers. Right? Higher speeds. Symmetrical service. And higher reliability. Those are sort of the three features of fiber that are -- really dominate the -- or, in the consumer's mind, is -- are the important aspects in their choices of internet providers. When we look at the pricing, I think one thing that's interesting is, you would tend to think that pricing -- you know, the big providers would just drop their prices. But, you know, what it does is, it has a knockdown effect on communities -- the neighboring communities. So, for example, we saw some price decreases -- maybe 5-10 percent in Longmont, when Longmont, Colorado, launched. From the incumbent. But, you know, we didn't see significant decreases. And, really, why that was was, you know, they control a much larger market in the Front Range of Colorado. Right? Between Fort Collins and Loveland and Longmont, there's, you know, 350,000 residents. Right? And that's a large subscriber pool. So, we see that in those markets, where a large provider, you know, could drop their price. Regionally, they have

to be very careful. Right? Not to erode prices at the larger levels. So, they'll make a calculation. And how important it is to maintain their market share in Palo Alto, versus, let's say, the general Bay Area. Because if they start eroding their prices in Palo Alto, to compete with Palo Alto, but they don't have that type of competition in other areas -- other parts of the Bay Area, it starts to give them more erosion across those other markets. Right? Meaning that, oh, my prices are now lower in Palo Alto. Well, why am I -- a Comcast customer in Mountain View -- paying a higher price than I'm paying in Palo Alto? So, you start to see that erosion. They want to keep that price as high as possible. And we've seen small decreases in price. But we haven't seen significant price competition.

1:43:21:

Commissioner Metz: OK. I'm kind of surprised. Because, I mean, you know, if you're in Menlo Park or Mountain View, you know, you can't really move easily. And it's easy for them to change the price. But, anyway, you -- I think that you've addressed what I was concerned about. Because I didn't see these issues addressed in the documents that we received. So, I would hope that this would be addressed, in detail, going forward. It sounds like we're just getting into this quantitatively.

1:43:48:

John Honker: Yeah. And in two parts, Commissioner Metz. One is really the market research. And two is the -- sort of the business planning. So, those two go hand in hand, to really determine what the business risks are, how we mitigate those risks, you know, as Palo Alto, and what should we expect as -- you know, in the competitive environment. Right? Because, you're right, there are, you know, deep pockets. And they -- the providers -- are intent at stopping, you know, municipal projects where they see it feasible.

1:44:21:

Commissioner Metz: Right. And I'm actually kind of surprised. I mean, it's -- I think it's really important what you describe. Some of the empirical outcomes that you've seen. I think that's really critical to knowing, you know, what's going to happen, rather than, you know, what people say they will do, you know, in terms of take rate and such.

Consultants have various rules of thumb for discounting what survey participants say when coming up with predicted take rates.

1:44:39:

John Honker: Absolutely.

1:44:40:

Commissioner Metz: And -- But I'm a little surprised, because, you know, it seems like -- ah -- if I were them, you really want to put out the fire. Right? You wouldn't want one municipality to be doing this, because everybody else would look at it and say, wow, they're doing it, why don't we do it as well.

1:44:49:

John Honker: Yeah.

1:44:50:

Commissioner Metz: So, it seemed that would be viewed as quite a threat. So, you know, I'm concerned about that, in terms of us being able to do this, viably. So, anyway, thank you very much for addressing that.

1:45:14:

John Honker: Sure.

1:45:17:

Chair Forssell: OK. Well, thank you. I don't see any other hands up. I don't have any additional comments myself. Great presentation. Good discussion. Thank you, everybody, for coming and sharing all this material with us.

1:45:32:

END

From: [Don Jackson](#)
To: [Planning Commission](#)
Cc: [Shikada, Ed](#); [Hoyt, George](#); [Lait, Jonathan](#); [Burt, Patrick](#); [Cormack, Alison](#); [UAC](#)
Subject: Comments regarding upcoming PTC Study Session on "Furthering the Electrification of Buildings in Palo Alto"
Date: Wednesday, October 27, 2021 12:18:33 PM
Attachments: [DCJ-Comments-re-Permit-Processes-for-Various Energy-Technologies-UAC-2021-09-01.pdf](#)

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

Honorable Planning and Transportation Commissioners:

Herein please find my comments regarding your upcoming Study Session on "Furthering the Electrification of Buildings in Palo Alto"

As a former UAC commissioner and as a resident who has been electrifying my home via a series of projects for the last 18 months (and counting!), I have studied the City's electrification related codes, requirements, and permitting in detail, and I have direct personal experience with them.

Many residents (myself included) and contractors feel that the City's current code, requirements, and permitting process for electrification technologies are excessive, onerous, and unnecessary, and are in direct conflict, and are an impediment to, the City's sustainability and carbon-reduction goals. Some of these issues are described reasonably well in a [recent newspaper article](#).

The Staff report for your study session provides both descriptions of current planning policies, and poses questions regarding potential revisions to these policies.

In the table summarizing "Current Planning Review for Clean Energy Technologies", regarding Solar Panels, it states "(1) If installed a few inches from the roof, no planning review required".

I do not understand how this could be the case.

In my (very recent) permit application, with PV panels directly attached to my standing-seam metal roof (and following the contour/pitch of the existing roof exactly), resulting in the top surface of the panels being about 3 inches above the current roof, the planning department made numerous comments regarding the proposed plan, requiring at least one revision/resubmission, and the planning department further required two to three times more PV-panel to roof attachment brackets than the manufacturer of these brackets recommends and requires.

It is difficult to understand why the City imposes this additional requirement, overruling and ignoring decades of experience with this product/technology across the US, in regions with far more extreme weather (snow, wind) than we experience.

Later in the Staff report, a number of policy revisions/tradeoffs/revisions are posed.

Without getting into the details, I observe and suggest that many of these topics boil down to "which is more important, sustainable/clean energy, or some-existing-concern?"

In virtually every case, my opinion is that transitioning to sustainable, clean energy should "trump" other concerns.

If we as a planet don't do everything within our ability to slow/stop climate change, trees and their canopies are at a far greater risk, therefore we should allow reasonable tree removal and canopy trimming now to facilitate, support, and encourage PV panel installations.

There are a number of other tradeoffs not mentioned in the Staff report:

- **PV panel layout versus fire-department access to rooftop:**

Current code requires significant rooftop pathways for firefighters, at the expense of PV panel generating capacity.

In my case, these requirements/codes prevent me from adding approximately 2 kilowatts of additional PV panels.

Given the steep pitch of my metal second story roof and providing a 3 foot walkway along the roof ridge, with access to the ridge provided by the panel-free west and east roofs seems sufficient, but I was/am required to provide additional clear pathways along the north and south roofs, which limit the potential generating capacity of my panels. Which is more important, clean energy, or unneeded pathways for firefighters?

- **Energy Storage System (ESS) Battery Restrictions:**

Current code requires that ESS batteries mounted to the exterior of a house must maintain a minimum 3 foot (measured horizontally) to any dwelling opening (e.g. window or door).

This can be an extremely onerous requirement (as it is in my case).

At the completion of all my electrification projects, I will disconnect from the natural gas system, which is a much higher fire risk to a structure than exterior batteries closer than 3ft to a window.

But this tradeoff is not taken into account when seeking a permit for an ESS.

The City's website states that interior installations of ESS batteries requires an automatic fire extinguishing system, a very onerous requirement, but EVs with far larger batteries can be parked in a garage, with no such requirement.

A number of onerous Palo Alto specific permit requirements are the result of obsolete and unnecessary interconnect requirements by the Utility department. I and others have described these in detail elsewhere, please see my comments to the UAC on this topic (attached below)

The Staff report mentions the possibility of the City's adoption of the US-DOE/NREL SolarAPP+ to streamline electrification project permitting and inspections.

Unfortunately, the planning department is completely "missing the point" regarding the SolarAPP+ program, which provides a STANDARDIZED, NATIONWIDE standard/process.

Instead of eliminating extraneous, unnecessary, and onerous "Palo Alto only" requirements, as stated in the report "**Staff are continuing to work with the app creator to understand if certain planning code requirements can be incorporated into the app and it's automatic review or if the app cannot support their inclusion**", in other words, instead of eliminating and streamlining our codes/requirements/permitting, Staff is attempting to subvert the fundamental premise of the SolarAPP+ initiative, in order to continue its practice of mandating unique and onerous requirements.

I strongly agree with and "second" David Coale's comments regarding SolarAPP+ to the PTC.

I suggest/propose that PTC provide the following guidance to Staff, and to further

consider “recommending to Council” the same:

- Eliminate all Palo Alto unique/specific Electrification requirements
- Adopt and embrace SolarAPP+ **AS IS**, don’t subvert the intent of a nationwide/standard process for Electrification permitting and inspection
- Adopt electrification-supportive tradeoffs regarding PV panels, ESS batteries, setbacks, etc.

Respectfully,

Don Jackson
Palo Alto Resident
Former UAC Commissioner (6/2019-5/2021)

My (most recent) public comments to the UAC regarding permitting of electrification technologies:



From: Don Jackson dcj@clark-communications.com 
Subject: Comments re "Permit Processes for Various Energy Technologies" item #1, UAC 2021-09-01
Date: August 30, 2021 at 8:54 PM
To: uac uac@cityofpaloalto.org
Cc: city.council@cityofpaloalto.org, Shikada, Ed Ed.Shikada@CityofPaloAlto.org, Lait, Jonathan jonathan.lait@CityofPaloAlto.org, Dean Batchelor Dean.Batchelor@CityofPaloAlto.org, Blackshire, Geoffrey Geoffrey.Blackshire@CityofPaloAlto.org, Lindsey, Stephen Stephen.Lindsey@CityofPaloAlto.org
Bcc: Scott Love rsclove@gmail.com, David Coale david@evcl.com, Bruce Hodge bruce@carbonfreepaloalto.org, BRET ANDERSEN bretande@pacbell.net, Sandra Slater sandra@sandraslater.com, Don Jackson dcj@yaplee-jackson.com, Jordan Jackson jordanyjackson@gmail.com

Honorable Commissioners:

Here are my comments on agenda item #1, "Permit Processes for Various Energy Technologies"

It is not possible for me to present this information within the three minutes allowed for public comments, so I am submitting these written comments, which I urge you to review and consider.

My ESS+PV Permit Application Experience:

=====

I submitted a building permit application for a combination ESS+PV system on April 14, 2021.

My recollection is that the first round of reviews was completed and made available to me in approximately late-May/early-June

A very significant requirement (of which I/we had been previously unaware) mandated that ESS batteries be installed 3' away from any "dwelling opening" (i.e. a window) AND separated from each other by 3', this can be extremely onerous, and had/has a major/serious impact on my design. In my case, the manufacturer's specification for the minimum clearance between adjacent batteries is 10 inches, not 3 feet!

My contractor and I re-designed my system to address/incorporate the (extensive) required changes, and re-submitted on June 30th.

Director Lait subsequently facilitated a series of meetings with plan checkers from Building, Utilities, and Fire on July 13 and 20th.

By the conclusion of the second (7/20) meeting, I was provided a list of additional revisions, that if made, could be approved.

These meetings were extremely helpful in determining/defining these changes, but I feel that is both fair and accurate to characterize the overall tone/tenor of these discussions as "here is what you need to do", and there was no flexibility shown or provided, to consider alternatives/better/creative ways to achieve/satisfy the underlying requirements.

The required changes at this point included:

- Two AC-Disconnects (despite the Staff statement at the UAC 4/7 meeting that only a single AC-Disconnect is required)
I'd like to highlight that the location of the two required AC-Disconnects, when engaged by CPAU,

would prevent the ESS from powering my house, one of the primary motivations/benefits of installing it!

- Utilities continued to mandate that the main-breaker must reside in the same cabinet as the meter
(a much larger and far more expensive component, rather than allowing the Tesla backup-gateway component to provide the main-breaker, which it is designed/certified to do).

Directors Lait and Batchelor subsequently scheduled another meeting to discuss my proposals to simplify and/or minimize the impact of mandated components, on August 9th, participants included themselves, Chief Lindsey of Fire, senior members of their staffs, and me and my contractor.

The issues discussed at this meeting (and their impacts on my design) included:

1. Number and location of AC-Disconnects:
As dictated would prevent my ESS from powering my house when disconnects were used.
2. Reasoning/justification for ANY AC-Disconnect:
Adds cost, constrains component layout, with NO increase in safety
3. Consideration of allowing a meter-socket-only component in conjunction with a main-breaker-capable device:
Would save cost and space
4. Reasoning/justification for the 48" minimum meter height:
Significant constraint on component layout
5. Impact of required roof pathways/clearances on PV-panel layout:
This prevents me from installing an additional ~2kW of PV generating capacity
6. Impact of ESS battery clearances from windows and between batteries:
Forced 50% reduction in planned battery capacity

(Prior to this interdepartmental meeting, Director Batchelor met with me 1-1 to understand and discuss my ideas/proposals/requests, for which I am extremely grateful)

To summarize the results of the larger meeting:

- CPAU (finally) removed the requirement that I provide 2 AC-Disconnects, and agreed that a single disconnect between the meter and the Tesla backup-gateway would meet CPAU requirements.
Fire (finally) agreed that a small set of properly labeled circuit breakers for each energy source satisfies the fire code, and that no lockable AC-Disconnect is required for Fire code compliance.
- The reasoning behind the 48" minimum meter height was clearly explained, I now understand and appreciate how this enhances worker safety during meter installation/removal.
- The Fire department explained that the roof/pathway requirements are a direct result of the State fire code, and there is no local ability to change these "even if we wanted to"

- The ESS battery clearances are also mandated by State fire code, but that code was revised on July 1st, Fire/Building committed to reviewing these recent updates for changes that might relax requirements impacting my design (as of 8/30 this review is still in-process)
- CPAU committed to consider my request to use a meter-socket-only in combination with the Tesla backup-gateway, within two weeks (a goal they met, and this design will be allowed!)
- We had a long discussion regarding why ANY AC-Disconnect is required, I contend that that my proposed system (by design) fully protects Utility personnel by preventing backfeeding power to the grid during repairs/outages (in multiple/redundant ways), but CPAU refuses to acknowledge and accept the UL-1741 standard, or that a circuit breaker inside a cabinet they can lock are sufficient to ensure safety. During this discussion, it became clear that we fundamentally disagree, and that it is obvious (to me) that I am not going to convince CPAU staff to revise their antiquated beliefs anytime soon, therefore I am faced with accepting their single disconnect requirement, or abandoning my project. I further address this issue below....

As I write this (8/30), I am waiting for the results of the CPA-Fire/CPA-Building review of the updated CA state fire code regarding ESS batteries, at which point I will either:

- Revise my permit application for the third time, with (most likely) half the originally planned battery capacity, and a completely unnecessary, very large, and expensive AC-Disconnect switch, OR
- Abandon my project.

In either case, **my permit application process will have taken approximately five months.**

Regarding the Staff report (ID # 13530):

=====

"Plan Review Timelines for Electrification Permits Shortened"

As described above, assuming my ESS+PV permit application is finalized in the next few weeks, it will have taken approximately five months of elapsed time. My experience indicates that despite the obvious and significant efforts by Staff to shorten/streamline this process, some projects continue to have lengthy review/revision cycles.

"Revisions to Application, Plan Review and Inspection Checklists (all electrification permits)" and "Website Improvements"

Over the course of my project planning and permit application, I have encountered two significant issues with the website and application checklists:

1. Fire Sprinkler Requirement for Indoor ESS Batteries?

At the April 7 UAC meeting, I noted this requirement, based on information on the website (below), and Scott Woodfin (Fire) stated there was no such requirement

website (below), and Scott Woodfin (Fire) stated there was no such requirement. After the meeting, I followed up with Mr Woodfin for clarification, and he told me that the website was incorrect, I then informed PDS of this apparent discrepancy, which to my knowledge has not yet been clarified.

OTHER FIRE REQUIREMENTS

- Provide copies of the failure modes and effects analysis (FMEA) for review by Fire Department. (CF 608.1.3)

- Rooms containing an ESS shall be equipped with an automatic sprinkler system, smoke detection system, ventilation, and gas detection systems. Please submit adequate information for review by Fire Department. (CFC 608.5)
 - o Indoor installations of ESS that produce hydrogen or other flammable gases during charging shall be provided with ventilation in accordance with the California Mechanical Code. (CRC R327.5)

2. ESS Battery Clearance Requirements:

Given the magnitude of retrofitting a sprinkler system into my home, I pivoted to locating the ESS batteries outdoors, attached to the exterior wall of my house. During the plan review process, I was informed of the “3 ft clearance to any dwelling opening” requirement, and the “3 ft clearance between ESS batteries”. It was frustrating to learn of these requirements this far along in my design. While it is possible that these requirements are published on the current website, neither I nor my contractor were able to find them. Additionally, I am unable to find a precise definition for how the "3' from dwelling opening" requirement is measured, is it radially from any part of the window frame opening, or in some other manner?

Regardless of the source of ESS battery requirements, I don't think they are reasonable or equitable:

- o A homeowner can park 1 or 2 (even 3?) Tesla cars in their garage, each containing a 100 kWh battery, with no sprinkler required!

- o I'm going to remove my natural gas hookup, significantly lowering overall fire risk, but I can't put batteries along the exterior of my house within 3' of a window!, REALLY ???

Review of City Requirements Compared to Other Jurisdictions:

The PDS plan checker required that my PV panels be attached to my roof with somewhere between 2 to 3 times the number of fasteners/clamps the manufacturer's specification called for. This additional requirement seems unnecessary, but the overall cost and impact to my project is relatively low, so I haven't focused my energy to appeal this.

Lockable AC Disconnect:

As noted in the Staff report:

"For PDS and Fire, *the standard meter disconnect* is sufficient to satisfy state requirements."

requirements.”

To be clear "the standard meter disconnect" means "disconnecting all sources of power to the structure is accomplished by switching the circuit breakers to which power sources are connected to the off (open) position".

Dedicating circuit breakers for each power source is a standard electric code requirement, so PDS and Fire are not adding any additional requirements to PV or ESS installations.

Fire and PDS do require that these circuit breakers (and the process for disconnecting all power to the home) be clearly and distinctly labeled, using red permanent signs, which is completely reasonable and sensible.

The lockable AC-Disconnect is solely and directly a consequence of CPAU's interconnection requirements,

in other words, only CPAU is "to blame" for this requirement :-)

"Other Santa Clara County jurisdictions supported by PG&E do not have this requirement"

If we are comparing CPAU's requirements to those of other nearby jurisdictions, and PG&E serves all nearby areas,

then it is to PG&E's requirements that we should compare CPAU's.

If PG&E can ensure the safety of its workers without mandating lockable AC-Disconnects, then why can't CPAU do so also?

Can CPAU provide any evidence that non-lockable-AC-Disconnect-utility workers are being injured (or worse) by the lack of these lockable AC-Disconnects?

The motivation underlying the lockable-AC-Disconnect requirement is to prevent a residence from sourcing power to the nearby utility distribution lines, when repairs/maintenance work is performed on those lines.

This concern is valid and important, but a lockable-AC-Disconnect is needed/required in order to prevent this.

My proposed system prevents backfeeding the CPAU network during an outage/maintenance in three ways:

1. The Tesla ESS "Backup-Gateway" incorporates an automatic transfer switch, fully compliant/listed to UL-1741, which automatically disconnects ESS (and PV behind it) from utility grid, **OR:**
2. CPAU could switch my main-breaker to "off", and lock the cabinet containing the main-breaker to prevent override, **OR:**
3. CPAU could pull my electric meter, disconnecting my house from the grid, extremely visible and very difficult to override

Please refer to "Additional Discussion of Lockable AC-Disconnects" below for more details regarding why the lockable AC-Disconnect switch is unnecessary, and does nothing to add to CPAU worker safety.

The staff report states:

"Plan reviewers from each department are now looking closely at this issue.

If a design includes more than one blade disconnect, staff is coordinating on that plan review to understand if there is another design option that would reduce the number of

disconnects.

As previously noted, staff is also working on line drawings to illustrate conformance with these requirements"

My experience in late July was that CPAU plan reviewers INSISTED that my design have two AC-Disconnects.

If CPAU and the City aspire to promote and lead electrification efforts, then it must also lead in modern-technology-aware and relevant interconnection requirements, and continuing to require a separate, lockable AC-Disconnect is an unnecessary obstacle which provides no safety benefit.

Broader Concerns:

=====

Electrifying Palo Alto will be difficult, expensive, and require an enormous effort:

- Updating our code/requirements is among the EASIEST things we can do, and if we won't do that, what hope can we hold to make significant progress?
- The City and Utility are likely to ask for "sacrifice and spending" for electrification, if codes/requirements are perceived as unreasonable, that will erode support, trust, and "moral authority"
- Palo Alto is the birthplace of Silicon Valley, Tesla HQ, etc. We should be a leader in encouraging and deploying modern energy technologies, not impeding them, instead, City electrification impediments are the subject of scathing newspaper articles
- Few residents will be as enthusiastic and motivated as I am to voluntarily adopt/lead electrification, CPAU/City should be supportive, but I've been met mostly with inflexibility and intransigence, which is frustrating, discouraging and depressing, the City risks turning "friends" into a "foes".

The feeling I get during the permit application/review process is that the City/CPAU/Fire are "doing the homeowner a favor" by allowing them to install an ESS/PV system at all, and that ANY restriction or requirement they place on the system is completely justified, no matter the cost, or performance impact (decrease), and there is no process for appeal.

My Proposals:

=====

- Drop the CPAU requirement for a lockable-AC-Disconnect for ESS and/or PV systems.
- Revise and/or clarify CPAU requirements regarding meter-sockets to allow meter-socket-only components when there is a justifiable preference or reason for using them instead of combined meter-mains.

- Clarify, and document prominently on the City website, the code/requirement/restrictions regarding ESS battery placement and clearance.
Do not require anything MORE than the State code mandates.
Encourage/lobby State officials to reduce/relax these requirements.
- To the extent possible, review PV layout designs with an eye towards encouraging/approving as many panels as homeowner wants to install, showing flexibility and taking into account the unique aspects of the home (e.g. roof size, layout, materials, specific and actual firefighter access needs), the current code is inflexible, uniform, and “overly conservative”.
Encourage/lobby State officials to reduce/relax these requirements
- Eliminate all “Palo Alto only” requirements/codes.
Adopt the US DOE-NREL Solar/APP+ program for automated permit approval, for PV now, and add ESS ASAP.
- Establish a formal appeal process (similar to a zoning variance) for CPAU interconnection requirement exceptions.
- Council should review the status and progress of these topics, and potentially direct Staff to make additional efforts.

=====
Additional Discussion of Lockable AC-Disconnects
 =====

UL-1741 Automatic Disconnect:

- UL-1741 is a serious, rigorous, technically sound standard that requires and ensures that residential grid-connected energy sources automatically disconnect themselves from the grid during an outage.
The second edition of this standard was published in 2010, and it undergoes ongoing revision and updates.
This technology/standard was not created yesterday by some random Silicon Valley programmers in their 20’s,
it was developed by professional licensed engineers, with broad industry, regulatory, and safety experience.
Devices listed to this standard are certified by a Nationally Recognized Testing Laboratory (NRTL).
For the record, as part of my research, I have purchased a copy of this standard (at great expense: \$900), and I am studying it closely...
- Does CPAU have any evidence that UL-1741 listed devices fail to prevent backfeeding the grid, risking the safety of utility personnel?
- Are there any documented cases nationally (or worldwide) where UL-1741 devices have failed to prevent backfeeding and harmed linespeople?
- Does CPAU have a policy of not recognizing/accepting UL standards and/or the role of NRTLs? If not, then why doesn’t CPAU accept this standard?
- In my opinion as a technologist with 40+ years of experience, conceptually, a technical standard like UL 1741 is obviously “the right way to solve this problem”

standard like UL-1741 is obviously the right way to solve this problem, that is, devices capable of sourcing electricity to the grid should (and must) be designed to disconnect themselves when the grid is not operational. It is difficult to imagine how “manual disconnection of energy sourcing residences” is a viable, scalable solution as the number of these systems increases over time.

Main-Breaker as Disconnecting Means:

With respect to using the main-breakers at the service entrance to ensure disconnection, one objection I have repeatedly heard is that “breakers can/do fail”.

Obviously, any component can fail (including a lockable AC-Disconnect switch!).

But I'd like to challenge this objection:

- What are the failure mechanisms of circuit-breakers, specifically those used as main-breakers?
- I would imagine that the most common failure of a breaker is that it doesn't trigger (“break”) when it is intended to. That type of failure is not relevant to this scenario, as the main breakers would have already been manually switched to “off”.
- Maybe there is a failure case where a breaker that has been switched to “off” is not actually “off”?
If that were to happen, then the house might not actually be disconnected from the grid, and backfeeding could occur.
I would think that this would be detected when utility personnel test for energization prior to beginning their work.
If so, then a failure of this type might delay the start of the work, but would be most unlikely to injure the linesperson.
As far as I can tell, the real safety requirement here is that after the lines undergoing work have been established as being de-energized, that this remains the case, until the Utility takes direct action to re-energize.
- I find it difficult to imagine that there is a failure scenario where a breaker that has been switched to off, spontaneously flips back to the “on” position, without human intervention. And manual re-enablement of the breaker can be ensured by locking the door of the panel containing the main breaker, using the hasp that all such panels provide. Do you have any evidence that breakers fail by spontaneously “closing” from the “open” position?

Following the logic to this point, my proposed system has BOTH a UL-1741 listed device at the service entrance, AND includes a main-breaker.

To effect disconnection of my system, if CPAU doesn't trust UL-1741, then CPAU could also switch my main-breaker to “off”, and lock the Tesla Backup Gateway panel door (via the hasp).

At this point, backfeeding has been prevented in TWO ways, both by the UL-1741 automatic disconnect, AND by the main-breaker being switched to “off”.

BOTH the main-breaker and the UL-1741 listed automatic disconnect would need to simultaneously fail in order to endanger utility personnel, this seems to be extremely unlikely.

In my opinion and judgement, by providing both UL-1741 listed components and the required main-breaker in a cabinet capable of being locked,

the homeowner has “done enough” to ensure the safety of CPAU and its linesworkers.

Requiring a separate disconnect, rated for the full service current and voltage (e.g. 200 Amps at

240 VAC), is both expensive and very large (e.g. 19 Inch W X 8.25 Inch D X 29 Inch H) This is not reasonable or rational.

However, there is still an additional disconnect option/capability at CPAU's disposal: removal of the electric meter.

This further ensures/guarantees the disconnection (and safety), and is the primary method employed by many other utilities.

I've heard objections to the meter removal option, primarily because care must be taken when replacing/reinstalling the meter,

but presumably this is a standard operation Utility workers have training and experience performing,

and the risks (of which I am aware) are not to the safety of Utility workers...

I suggest that if CPAU is unwilling to trust both the main-breaker and UL-1741 disconnection mechanisms, then CPAU can and should "bear the burden" of the meter-removal option, if CPAU prefers additional disconnect capability.

From: [Daniel Dulitz](#)
To: [UAC](#)
Cc: [Batchelor, Dean](#)
Subject: UAC public comments regarding FTTP
Date: Monday, November 1, 2021 5:22:33 PM

Some people who received this message don't often get email from dulitz@gmail.com. [Learn why this is important](#)

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

3995 Page Mill Road
Palo Alto, CA 94304 [mailing address Los Altos, CA 94022]
1 November 2021

Dear Chair Forssell, Vice-Chair Segal, Commissioners, and Staff,

I write with comments on the Fiber-to-the-Premises presentation at UAC's October 6th meeting. It appears that Staff and consultants are moving forward as directed by Council to accelerate the work on FTTP and that design progress is being made. Good work! I am excited. A well-executed FTTP plan will continue Palo Alto's fiber leadership within the Bay Area and enhance the quality of life for Palo Alto's residents.

I echo some of Jeff Hoel's comments, in that part of what it means for a design to progress is that design decisions are being made. With each decision a design moves closer to being realized, but also with each decision certain possibilities are foreclosed. I would appreciate additional clarity on the design decisions, and in-process assumptions, that are being made -- not simply the outcomes of those decisions in terms of numbers of huts, etc. I have questions.

First, is the design of the dark fiber backbone expansion being influenced by the expected needs of FTTP? The dark fiber backbone upgrade certainly has a lot to do on its own, in terms of upgrading the old built infrastructure from 20 years ago, and increasing capacity, reliability, and penetration of the existing dark fiber network which is lucrative for the City. FTTP is a different thing built partly "on top of" the dark fiber backbone. But they are being designed at the same time so perhaps some cost savings could be realized by a more integrated design.

Second, as far as FTTP is concerned, is the dark fiber backbone expected to carry only the backhaul from each fiber hut to the datacenter? Or will the backbone also carry connections from cabinets to the hut? "Most" of those, "some" of those, or "a very few" of those? I'm trying to get an idea of how the two projects are divided and related, and how many additional strand-feet will be required for the FTTP project beyond the backbone.

Third, while I don't share Jeff Hoel's mildly sceptical view of PON, I am curious whether designs that use a very small number of fiber huts, with a very large number of subscribers per hut, effectively assume a PON architecture. If so, could staff and consultants explain the rationale for their decision?

Fourth, what types of service does Palo Alto Fiber plan to offer? I know it will offer "residential" service, which is typically bursty, asymmetrical, and overcommitted with no and often has restrictions on sharing and resale of the service. I believe it will also offer "small business" service, which is typically like residential service but less restricted. Will it offer "dedicated business" service, which is symmetrical, not overcommitted, and is usually much costlier (and higher margin)? The PON architecture is less suited for dedicated service. Perhaps Palo Alto Fiber will use the dark fiber network to provide dedicated service and PON to provide all other kinds of service? Many answers are possible but without more information we can only speculate.

In closing, I am excited about your progress towards FTTP, and I want others to share my excitement. The City's best webpage on Palo Alto Fiber is <https://fiber-palo-alto.hub.arcgis.com/> but it is two clicks away from Google when searching for [palo alto fiber]. I would strongly encourage staff to ensure that a page immediately reachable from Google communicates the core message "above the fold" (without the user having to scroll):

- Gigabit fiber
- Direct to your home or business in Palo Alto
- Unmatched reliability
- Very affordable
- To learn more, sign up for our email list

Thank you for your consideration.

Daniel Dulitz

dulitz@gmail.com

Resident 2000-2002 and 2009-present