

DOCUMENTS IN THIS PACKET INCLUDE:

LETTERS FROM CITIZENS TO THE
UTILITIES ADVISORY COMMISSION

From: [Jeff Hoel](#)
To: [UAC](#)
Cc: [Hoel, Jeff \(external\)](#); [Council, City](#); [CAC-TACC](#)
Subject: 08-28-18 UAC meeting about resiliency -- video excerpts and comments
Date: Monday, October 1, 2018 1:45:29 PM

Commissioners,

On 08-28-18, there was a workshop about resiliency.

<https://www.cityofpaloalto.org/civicax/filebank/documents/66517>

Below the "#####" line, I'd like to provide some excerpts from the video,

<https://www.cityofpaloalto.org/civicax/filebank/documents/66517>

and make some comments (paragraphs beginning with "###").

I'd also like to make some GENERAL COMMENTS.

At UAC's 09-05-18 meeting, at Commissioner Comments (between 0:14:00 and 0:21:00 on this video), commissioners commented about the 08-28-18 workshop.

<http://midpenmedia.org/utilities-advisory-commission-31-09052018/>

Commissioner Forssell thought that too much time was spent on presentations and not enough time was spent on listening to the public. Commissioner Schwartz sort of agreed with that and also thought the scope should have focused more on scenarios we can do something about. I note that the agenda for the 08-20-18 workshop didn't have a staff report to provide a framework for what the public should think about and then talk about.

If the City is interested in improving the resiliency of the telecommunications alternatives available to government and the public, it should seriously consider making progress on citywide municipal FTTP. The network should be designed with redundant paths, something that's within the City's control.

Members of the public who haven't thought hard about the problem may have the impression that wireless is more resilient than wired (fiber) because earthquakes can't break connections over the air. But that's an illusion. These days, the wireless we're used to depends on wired (fiber) backhaul for bandwidth.

From time to time, the incumbents' networks experience massive failures. For example, on 09-24-18 https://www.youtube.com/watch?v=Klg82AmC_Vc

and 09-25-18.

https://www.phonearena.com/news/Verizon-outage-affecting-much-of-U.S._id109230?mc_cid=fd6f586d63&mc_eid=99443c82f8

We wouldn't want one of these massive failures to coincide with a natural disaster.

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

EXCERPTS AND COMMENTS:

08-28-18 video:

<http://midpenmedia.org/utilities-advisory-commission-31-08-28-2018/>

0:14:10:

1st expert -- Regional Overview -- Corinne Bartshire, Urban Areas Security Initiative (UASI)
<http://www.bayareausasi.org/node/1174>

0:26:15:

2nd expert -- Economic Impacts -- Josh Schellenberg, Nexant
<http://www.nexant.com/about/leadership/josh-schellenberg>

0:26:30:

Nexant focuses on electric utilities.

0:32:14:

Clients -- for resiliency --

0:32:50:

EPB (Chattanooga)

0:41:58:

3rd expert -- Integration Issues -- Benson Joe, ABB Enterprise Software
<https://www.linkedin.com/in/bensonjoe>

0:49:14:

Benson Joe: And I don't know if this true or not. And maybe Debra can tell me. But I was told that there's only a single line that connects the City of Palo Alto to the California ISO. So, what only separates -- I mean, you could have as much power supply lined up as possible. But the truth is, if you lose that transmission line, due to some event -- a transformer blowing, a substation, a terrorist event -- you're going to be out of power for weeks, most likely.

On 02-17-10, just before 8:00 am, an airplane crash disconnected the City from the power grid. Power was restored by about 6:00 pm. But further repairs continued after that.

<https://www.paloaltoonline.com/news/2010/02/19/palo-alto-has-studied-extra-powerlines-costs>

0:49:45:

At this point, I think Debra Lloyd said, "Three lines, one corridor." (But the audio didn't pick it up.) Any consultant on whom Palo Alto relies for consulting about transmission lines has to know this.

0:49:48:

Benson Joe: Three lines. OK. OK.

0:50:19:

Benson Joe: I'm going to skip some of these slides. But the takeaway here is that when you have a lot of renewables on the system, the reliability of the system gets tougher and tougher. So -- And I think that's -- that's one of the takeaways I would like the community to understand -- is that, yes, we can do more

renewables, but it makes things tougher for reliability and grid resiliency. Because you don't have the traditional resources -- like natural gas -- that are available instantaneously.

Instantaneously? I thought that in general, electric generation sources that use heat would prefer to be baseload sources. Peakers aren't very efficient.

Short of energy storage. But, of course, there are cost considerations.

1:02:53:

Hamilton Hitchings: When I was on the Comp Plan a couple years ago, we had a single-point-of-failure coming into the City for electricity -- either one line or a set of lines -- that the entire City would lose power. You seemed to -- One of the staff members seemed to be implying it's not as bad as it sounds. But -- So, I would -- The second part of my -- The first part of my question is, is it possible to do an impact -- a fiscal impact analysis? And the second is, what is the actual state of that single point of failure? That could be subject to sabotage, or an earthquake, or an accident -- like, we had a plane fly into the power lines and had a power outage?

Mindy Craig (facilitator): Let me have you hold that, because our next panel is going to talk right about specific Palo Alto. So if it's specific Palo Alto, we're going to do that in the next thing. If it's about these guys ...

1:06:50:

Specifically-Palo-Alto Part -- 1st speaker -- Ken Dueker

1:12:56:

Ken Dueker: In February of 2010, a small plane took off from Palo Alto airport. The pilot zigged when he should have zagged. Flew into the one and only high-tension connection that we have to the grid. Whether or not there are three conductors on that tower doesn't really matter to me.

It matters to anyone who has to estimate the likelihood that the system will fail.

What mattered to me is that we were without power. Now, in that case, some really, really great work by Utilities and our supporting partners, including PG&E, allowed restoration in about 14 hours.

The article cited above (at 0:49:14) said 10 hours.

1:19:27:

Ken Dueker: After that [02-17-10 plane crash] happened, the City, quite reasonably, started thinking, well, should we spend millions of dollars to mitigate the risk? As the prior panel said, it seems like, well, that would be an easy exercise to go through, and yet, it's not. It's very nuanced. And so, where we are today, we haven't done it. We have options. Right? It could -- Some estimates are as high as \$500 million to run a second transmission line.

Technically, we already have three transmission lines, but they're in the same corridor. So I suppose the question is whether we should run a fourth transmission line, but this time in a second corridor.

This 02-19-10 article said (I think) that that would cost \$45 million, but would require permission from the Department of Energy.

<https://www.paloaltonline.com/news/2010/02/19/palo-alto-has-studied-extra-powerlines-costs>

This 01-25-16 staff report (5 pages) estimates a total cost of \$50-90 million.

<https://www.cityofpaloalto.org/civicax/filebank/documents/50608>

So does this 01-27-14 staff report (5 pages).

<https://www.cityofpaloalto.org/civicax/filebank/documents/38670>

But wouldn't it be embarrassing if the City spent all that money to connect to the same grid, and the grid fails farther upstream, for reasons we can't control, or even anticipate.

1:20:25:

Ken Dueker: Again, I'm going to harp a little bit on telecommunications. All right? It's one thing to take a cold shower. It's one thing to get dressed in the dark. It's another thing to have no communications with your loved ones. I really think, from a public safety perspective, if you want to see a quick unraveling of our current culture, take away your smart phones for a while. See how that goes.

On 05-21-18, Council approved Verizon's application to deploy eleven "small cell" nodes, with NO backup power. Council was persuaded that the backup power would make them too noisy.

<https://www.cityofpaloalto.org/civicax/filebank/blobload.aspx?t=53707.18&BlobID=65890>

Karla Dailey: In the Safety section of the Comprehensive Plan, we talk a lot about community awareness. And that certainly plays into what we're doing here today -- getting folks in the community together to talk about these issues. There are a number of specific projects outlined in that section, including:

- * the solution of adding a transmission line,
- * exploring off-grid technologies,
- * continuing to underground our utilities, which definitely makes our distribution system more resilient,

I think it's not obvious that undergrounding our utilities makes them more resilient. If it does, then maybe we should figure out how to move forward with undergrounding, even though that has the effect of making fewer utility poles available to the incumbent wireless providers for deploying their antennas.

1:27:01:

Debra Lloyd: And, also, with communications, it's not just about being able to check in with your family. It's about us -- the Utility or the City or our emergency services -- being able to communicate to everybody about what is happening, and whether we need evacuations. So, you know, the communication is also a vital part of resilience and emergency planning. On the electric side, I think Catherine will probably be very upset if most people here don't know that we are **100 percent carbon-neutral** on our electric supply.

There's an ongoing discussion at UAC about whether this is being measured correctly, given that we're still using some electricity generated from fossil fuels. Anyhow, how is this related to resiliency?

So, we have been looking at kind of diversifying on the supply side. So, there's -- you know, so, that's the one part of it. The supply side, diverse resources, and also local resources, especially, you know, as we've seen with the water utility.

1:30:06:

Debra Lloyd: But we are trying to harden -- build in redundancy. We try -- On the electric system, we try not to load all the systems up 100 percent, so that when something goes wrong in one area, we can switch, and keep things going.

In Chattanooga, the electric system has "intellirupters" that switch automatically, in milliseconds, to isolate failures, to minimize the size of electric outages. The intellirupters communicate via a citywide FTTP network (that's also used for Internet, phone, and TV services).

1:30:34:

Debra Lloyd: And then, also, has been addressed is -- We live in a world where cybersecurity is a real issue. And ever since I've been in my -- Let's see, the last five years that I've been working here at the Utility, I've have the pleasure, about once a year, about going to a conference and being scared witless about what's going on with cybersecurity. And, yes, you know, they are in our systems. And I think the saying now, it's not that you've either been hacked or you're going to be hacked. It's either you know you've hacked or you don't know yet. So, we go with the assumption that people have access to our systems.

1:31:18:

Debra Lloyd: So, PREVENTION STRATEGIES [slide title] again. Fire issues. Moving overhead to underground.

Again, it's not obvious that undergrounding utilities makes them more resilient.

1:33:31:

Debra Lloyd: And, then, SURVIVABILITY [slide title]. What do we do when everything goes out? So, we have, you know, station batteries to keep electronics up at the substations.

The presentation slide said, "SUBSTATIONS -- station batteries provide power to low voltage electronics for up to 8 hours." That doesn't sound very ambitious. RFP 152569 (07-03-14) for a "Fiber-to-the-Premise Master Plan"

<https://www.cityofpaloalto.org/civicax/filebank/documents/42930>
asked to "evaluate network resilience and survivability such as solar power and other emergency back-up power and network architecture to ensure operability for at least seven (7) days with no grid power"
I'm not saying that's the right duration either. Maybe there should be a discussion about what the right goal should be.

1:44:24:

Hamilton Hitchings: Thank you. My first request is, could the City of Palo Alto Utilities provide a rebate for Tesla wall packs, or batteries? So, when you get the solar system. I don't currently believe they have a rebate or any kind of financial assistance for that. But that would really help the resilience. If you were to make your home essentially to be able to operate offline. Because not only would it help you but it would help your neighbors after an earthquake.

Commissioner Ballantine is always pointing out that when the grid goes down, a house's solar cells, the way they're typically installed, can't power the house. Wouldn't backup batteries have the same problem? Anyhow, why would it help the neighbors?

So that's my first request. The second one is -- maybe it's a little bit more targeted at Ken -- but I know in LA, there's -- they passed an ordinance saying that they want to have longer-term power for the cell towers, so it's not just 2 hours. That would be huge. And I think that's fairly low-hanging fruit.

I think Mr. Hitchings might be referring to a 05-08-15 LA ordinance. But according to this 05-08-15 article, the ordinance is about the structural integrity of (new) cellphone towers, not about backup power.
<http://www.latimes.com/local/lanow/la-me-lquake-cellphone-20150508-story.html#>

From: [Deborah Chausow](#)
To: [UAC](#)
Subject: Green Acres 1 Utilities Project
Date: Wednesday, October 3, 2018 6:37:29 PM
Attachments: [FAQs Utilities Undergrounding & Rebuilds.pdf](#)
[Green Acres Underground Rebuild.pdf](#)
[FAQs - Utilities Underground Homeowner Service Conversions.pdf](#)
[Rule 17 effective 06-1-2010.pdf](#)
[ShikadaEmail.GA1.Sept20.2018.docx](#)

To: [The Utilities advisory Commission](#)
From: [Debbie Chausow, GAIA Secretary](#)
Subject: [CPAU GreenAcres Underground Rebuilding Documents](#)

October 2, 2018

Dear Commissioners:

We're writing regarding CPAU's service upgrading project. Essentially, we have serious concerns about CPAC documents which we've only just received (see below).

Recently, CPAU Director Ed Shikada sent one file which, via embeds, yields three more totaling four documents. Mr Shikada's cover letter adds a fifth one. They are attached as well as listed below with assigned numbers [1–5] for easier reference. The four documents' titles have many of the same, but reordered words which confuse the reader. Moreover, five such files, each embedded in a subsequent one, makes tracking content that much more difficult.

1. FAQ CPAU Undergrounding & Underground District Rebuild Projects
2. FAQ CPAU Underground District Rebuild Projects / Green Acres Neighborhood
3. FAQs - Utilities Underground Homeowner Service Conversions
4. Conversion of Electric and Communication Facilities to Underground Rule and Regulation 17
5. Cover letter from Ed Shikada, forwarded to us by Rachel Chiu on Sept. 20 2018 8:12am

After reading the four documents and Ed's cover letter, I'll explain my principal concern. I was dismayed to find that none of the content in any of these documents pertains to our neighborhood's circumstances. We have underground utility service that we want to continue and upgrade. Yet all four papers clearly reference converting overhead utilities (poles and cables) to underground service. These types of service are not remotely similar. I'll offer some salient examples demonstrating this phenomenon—i.e. this information's inapplicability to Green Acres 1.

** Please note that italicized text is directly from CPAU documents.*

Document [1]

1) What is a “utilities undergrounding” project?

*a. Utilities undergrounding involves **relocating overhead** electrical, telephone and cable TV wiring and equipment to below ground vaults and/or aboveground pad mounts to house the equipment.*

Document [3]

1) What is service conversion and what is the work involved?

*Service conversion means **replacing** the **existing overhead** electric, telephone and the cable TV service from the pole to your home from overhead to underground.*

In a similar vein, nowhere in any of the CPAU documents are cost estimates for our type of utilities service conversions—upgrading existing underground service.

And yet, CPAU presents expenses for “....undergrounding electric facilities in front of my house.”

This claim is completely incorrect. All of Green Acres 1 homes [referred to as “my house”] are already served by underground electric “facilities” and, as such, do not need conversion from poles and cables. The “my house” cannot refer to any of ours.

Document [2]

10) “What is the comparative cost estimate of above ground pad-mount equipment vs. subsurface equipment?”

The following table provides current engineering estimates based on recent quotes for equipment and labor costs. This is not the full project cost as it only compares the components that will change between the two design options.

| | | Transformers without Loadbreakers | Submersible Equipment | Special Facilities Fee* | Total Cost |
|----|--|--|------------------------------|--------------------------------|-------------------|
| #1 | Above ground Pad-mount Design (5 Transformers with Loadbreakers and 4 Transformers without Loadbreakers) | \$ 251,200 | \$ 105,000 | | \$ 356,200 |
| #2 | Below ground Submersible Equipment (9) | | | \$ 291,472 | \$ 820,780 |

Cost Differential between Padmount and Submersible Equipment \$ 464,580

** Special Facilities Fee is the present cost of ownership (maintenance, operation, replacement).*

Rule & Regulation #17 Section D (2) <https://www.cityofpaloalto.org/civicax/filebank/documents/8205>

Line item “Special Facilities Fee”: \$291,472. The reader is directed to R&R 17 Section D(2)

Rather than provide us, Green Acres 1, with cost information for updating our existing underground utilities, this regulation again pertains to converting overhead utilities to underground service. Tracking this fee to the City’s regulations documents its inapplicability

to our neighborhood.

Moreover, Document [4, states:

“Each property owner served from such overhead distribution .. shall agree to provide at his or her own expense, ...facility construction and changes on his or her Premises necessary to receive Service from the underground distribution ...”

Our neighborhood, Green Acres 1, already established, complete service from homes to the underground distribution facilities. If anything, the requirements mandated in Section D [2] were met, including homeowner payments, in the early 1970's when the first undergrounding was accomplished.

Document [1]

*And, as previously established in Question 1.a) of this document: Utilities undergrounding involves **relocating overhead** electrical, telephone and cable TV wiring and equipment to below ground vaults and/or aboveground pad mounts to house the equipment.*

12) How much does it cost to underground the electric facilities in front of my home?

A. The portion of the work performed by CPAU has averaged a cost to the City of between \$10,000 and \$15,000 per home. In most cases the underground district is determined to be of “General Public Interest and Benefit” where CPAU pays for all construction in the Public Right-of-way, but there are cases where the benefits are more local and the homeowners share some of this cost. In addition to CPAU’s cost, the homeowner can spend from \$3,000 to \$8,000, or more in some cases, to make their home ready for underground service.

Such costs are clearly not relevant to our situation.

At the August 1 UAC meeting, our neighborhood spoke first. As such, we weren't able to address CPAU staff's subsequent talking points—maintenance worker safety being the focal point. We have concerns, too—namely that we will live at risk of pad mount explosions 24/7, whether due to natural disaster, vandalism, or equipment malfunction. Pad mount transformers came to market having never been studied for safety in a prospective, methodologically-sound investigation.

Nor do the City's reported transformer incidents accurately portray actual risk. In fact, CPAU's presentation of numbers of explosions and related injuries is grossly misleading. Their numbers have a no denominators, thus are not rates. Comparing rates of these dangerous events is the only way to evaluate their safety. Calculating risk requires: A) the total number of each kind of transformer [pad mount and sub-surface] and B) the number of years-in-service for each type. The appropriate calculations would be *rates of explosion or injury* in which the denominator is transformer-years in service. Without such rates, the events [injuries and malfunction] should not be compared and their risk cannot be assessed.

Yet, CPAU presented such comparisons as evidence of greater pad mount safety.

Hopefully, this note clarifies our continued concern. Receiving CPAU documents about the cost of maintaining our utilities underground, then learning that these costs and, in fact, all of the documents' content, don't even apply to our circumstances has been very upsetting. As Mr. Shikada has informed us that our issue is on your November 7th agenda, our best-case scenario is that these comments can inform this meeting.

We have truly appreciated your time and efforts.

Thank you,

Alice Sklar, Green Acres 1 President

Deborah Chausow, Green Acres 1 Board Secretary:

Debbie

From: [Jeff Hoel](#)
To: [Council, City](#)
Cc: [Hoel, Jeff \(external\)](#); [UAC](#); [CAC-TACC](#)
Subject: AMI (smart meters) goes to Finance -- 10-16-18
Date: Tuesday, October 9, 2018 5:01:17 PM

Council members,

On 10-16-18, the Finance Committee will consider an item about smart meters.

I stand by my previous comments from 05-01-18, 05-09-18, and 09-02-18 (cited below the "###" line, in case you want to reread them).

Here are some remaining issues:

- * The plan's financial analysis "breaks even" only if it includes the predicted savings due to customers conserving more because of information they get from smart meters. But how do we know that's why customers conserved more?
- * The plan refuses to consider any way of connecting the smart meters that can't be ready by 2020. Why do we need the network by then? If the City had a citywide municipal FTTP network by the time smart meters were needed, I think it would play a role in connecting the smart meters.
- * The plan is thinking about relying on one of the incumbent wireless carriers (e.g., AT&T or Verizon) for smart meter connections. But from time to time, there are reports of major outages.
<https://www.seattletimes.com/business/regions-cell-networks-disrupted-after-presidential-text-alert/>
https://www.phonearena.com/news/Verizon-outage-affecting-much-of-U.S._id109230?mc_cid=fd6f586d63&mc_eid=99443c82f8
https://www.youtube.com/watch?v=Klg82AmC_Vc
- Shouldn't our utilities be in control of the reliability and resiliency of these connections? When the electric power goes out, some of the incumbent carriers' access points don't even have battery backup. How much would this connection service cost, both now and in the future?
- * The plan seems to say that the electric smart meters won't have battery backup either, only enough power for one "last-gasp" message when the electric power goes out. Is that what we want?
- * Staff has said that there's no point in considering the details of customers' options for opting out of smart meters until after Council approves of going ahead with smart meters. But why wouldn't Council want to know more about the opt-out options before going ahead?

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

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HISTORY:

10-16-18 Finance Committee agenda:

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=71592.98&BlobID=67079>

10-16-18 staff report about smart meters (110 pages)

<https://www.cityofpaloalto.org/civicax/filebank/documents/67112>

09-05-18 UAC agenda

<https://cityofpaloalto.org/civicax/filebank/documents/66594>

09-05-18 staff report about smart meters (23 pages)

<https://www.cityofpaloalto.org/civicax/filebank/documents/66550>

09-02-18: my message to UAC about smart meters (reported in this 10-03-18 document, PDF pages 2-3)

<https://www.cityofpaloalto.org/civicax/filebank/documents/66860>

05-09-18: my transcript-and-comments message to UAC about the 05-02-18 UAC meeting, the smart meter item (reported in this 06-06-18 document, PDF pages 27-50)

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=62465.62&BlobID=65229>

05-02-18 UAC agenda:

<https://www.cityofpaloalto.org/civicax/filebank/documents/64810>

05-02-18 staff report about smart meters (103 pages)

<https://www.cityofpaloalto.org/civicax/filebank/documents/64784>

05-01-18: my message to UAC about smart meters (reported in this 06-06-18 document, PDF pages 2-19)

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=62465.62&BlobID=65229>

From: [Jeff Hoel](#)
To: [Council City](#)
Cc: [Hoel, Jeff \(external\)](#); [UAC_CAC-TACC](#)
Subject: TRANSCRIPT & COMMENTS -- 10-16-18 Finance Committee -- smart meter (AMI) item
Date: Tuesday, October 30, 2018 2:40:17 PM

Council members,

On 10-16-18, the Finance Committee considered an item about smart meters. Here's the agenda.

https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=71592_98&BlobID=67079

And staff report (110 pages).

<https://www.cityofpaloalto.org/civicax/filebank/documents/67112>

And the video.

<http://midpenmedia.org/finance-committee-50-10162018/>

The Smart meter item is from 1:49:00 to 3:04:23.

Below the "#####" line is a transcript of the video. I have added my comments (paragraphs beginning with "###").

I'd also like to mention something that was not discussed at the meeting. Cybersecurity is an issue. The staff report assumes that the electric meters will have a remote-shutoff capability, but doesn't say how much that will save. This article warns of the risk.

10-27-18: "Hacking a Smart Meter and Killing the Grid"

<https://smartgridawareness.org/2018/10/27/killing-the-grid/>

Thanks.

Jeff

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#####

TRANSCRIPT:

1:49:00:

Chair Scharff: All right. Now we're on to the next one.

1:49:01:

Dean Batchelor: So, before I introduce this next topic, Judith Schwartz, our UAC vice chair, would like to speak to this item. So, probably after we make this presentation, first, I think. And then, is it OK if she comes to the table and speaks? Or do you want her at the podium?

1:49:20:

Chair Scharff: (unamplified) No, she -- no -- she can come speak when you're done.

1:49:22:

Dean Batchelor: OK. All right. Great. Thank you. OK. So, on to the next item -- is to look and have a discussion around our Utilities' smart grid assessment. So, Utilities staff, along with consultants, developed a strategic technology roadmap somewhere around five years ago, that we've been working on. And we identified some major critical technology investments, such as the replacement of the customer information -- the billing system. And then we also looked at what we're calling today is the development of this AMI project. And tonight we are bringing this forward to you, to have some discussion around the smart grid project portion of it. So, with that, we have a presentation that we would like to discuss. So, Shiva, is that you again? Or ...

1:50:22:

Jon Abendschein: Just a couple of the things that I'd say. One of the things that we mentioned at the last presentation, early on, was the increasing penetration of electric vehicles, solar, and storage in the community. And, you know, as levels of penetration of those resources increase, we're going to see both potential opportunities to use those resources to decrease costs, you know, through the use of AMI. Also, the -- And also the potential cost impacts, if we're not able to, you know, carefully manage the integration. And I think it's relevant to this discussion because, you know, as the commissioners know, AMI is more and more common in the utility industry, and it's a critical foundation to be able to take advantage of some of those benefits, and to avoid some of those cost impacts. So, what we're coming to you with tonight is the roadmap. It's only intended to be an early indicator that we're on the right track. Formal approval of budgets and contracts will come later, and -- as part of the annual budget process. Or once it's timely to do an RFP. So, with that, I'll turn it over to Shiva for the presentation.

1:51:48:

Shiva Swaminathan: Thanks, Jon. So, again, the commonality between this and the EIRP is, the driver for smart grid is also electric. The advent of PVs, EVs, storage systems, and flexible loads in the community. How do we take -- leverage those resources to reduce overall costs and prevent system degradation?

I won't transcribe the presentation slides. The presentation slides were not included in the "presentations" document for this meeting.
<https://cityofpaloalto.org/gov/agendas/finance/default.asp>

The presentation slides on the video have limited resolution and are hard to read.

1:52:13:

So, the driver for this -- So, the request today is to accept the staff findings, and -- as Jon mentioned -- and then set us on a path over the next five to six years, to plan for and implement this program, along with other utility technology programs. This was one of the key programs also identified in the Utilities Strategic Plan, when it was approved last year, and is a foundational technology, as Jon was mentioning.

1:52:45:

So, I'll briefly talk about smart grid -- what the history of AMI in California, and Palo Alto, in the past. We had a consultant engaged over a year, last year, to do a detailed assessment. And then we'll also, in addition to the quantitative benefits, also talk about qualitative benefits, which we're not able to quantify. And then, staffing, and next steps.

1:53:12:

So, smart grid is -- is a broader term. It's just not smart meters. But a smart meter is a foundational technology to enable smart grid. So, it is essentially communicating and control technologies to monitor utility networks. So, currently, for example, the electric network -- we don't have visibility into what is going on in our distribution system -- electric distribution system -- downstream. We know at our nine substations what's happening. But downstream, along the feeder, we have less visibility. This will assist with creating better visibility and improve reliability. It's enabling technology to do these broad six areas:

- * greater energy and water and efficiency,
- * enable faster detection and restoration of electric outages,
- * maintain service reliability. We have additional EVs and solar coming on the distribution system that can create issues for our distribution system. That will help -- This technology will help us maintain the distribution system reliability.
- * we can detect and fix water leaks, and
- * implement time-of-use [TOU] electric rates for customers, and
- * overall increase customer experience.

So, these are the kind of the broad things it will enable.

1:54:34:

So, what is smart grid? As illustrated here, to the left here, it is essentially meters, with radio capabilities, which will mesh with each other and talk to gateways, or other devices, which will talk through a public carrier, like AT&T or Verizon. And then, it will store the data in a meter data management system, which then can be used by different -- for the billing folks, the outage management, improve reliability, the GIS, and for engaging customers, to reduce -- and -- their consumption, and better utilize resources. So, that's broadly an AMI system is. So, to do that, we have to replace the entire electric meter. This electric meter typically costs about \$100 for a residential customer. And a little more expensive -- \$400 to \$500 -- for commercial customers. But on the gas meters, AMI means we just replace -- there is a radio at the back, here, which -- the meter will not be replaced, just -- only a radio dial will be replaced in the -- your gas meter. And the water meter, also, there will be another radio installed on the water meter, to communicate the usage on an hourly basis.

Previously, staff has said water and gas meters might transmit only once or twice per day, to minimize the load on the meter's battery. So, apparently, each transmission might transmit multiple data points. Will the system have the flexibility to transmit as soon as it notices that an unusual amount of water or gas has been consumed?

So that's what the technology looks like.

1:55:56:

And this has been prevalent in California -- and, if you probably know, in -- since the late 2000s. Currently, about 80 percent of California customers -- except for the LADWP,

LADWP is the Los Angeles Department of Water & Power. LADWP has about 1.5 million electric customers.

https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=up8vp0h15_21&_afrLoop=210004881416431

Currently, it does not have smart meters, although a 52,000-customer pilot program is said to be in the works.

https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-smartgrid?_adf.ctrl-state=up8vp0h15_21&_afrLoop=211338007708337

which is a large electric and water utility, all other investors -- all other -- most other utilities have -- electric customers -- on AMI. And on natural gas, pretty much 99 percent of the gas users in California have AMI.

1:56:30:

Chair Scharff: So, isn't that misleading to say that though? Because -- I mean, how many non-investor-owned utilities have natural gas?

I think Chair Scharff's point is that in California, investor-owned utilities (IOUs) -- both electric and gas -- are required by law to have smart meters. So the fact that IOUs have smart meters doesn't prove they're cost-effective.

http://www.cpuc.ca.gov/uploadedfiles/cpuc_public_website/content/about_us/organization/divisions/office_of_governmental_affairs/smart%20grid%20annual%20report%202017.pdf

1:56:42:

Shiva Swaminathan: Three.

1:56:43:

Chair Scharff: In the entire state?

1:56:44:

Shiva Swaminathan: Correct.

1:56:44:

Chair Scharff: That's what I thought. So -- I mean, the investor-owned utilities have different incentives than everyone else.

1:56:51:

Shiva Swaminathan: Correct.

1:56:52:

Chair Scharff: So, you know -- And the reason I say it's misleading is that it implies that there's some value to that information. And it implies -- I mean, what you really should -- could say is -- you know, which you did, currently, all electric and gas IOUs have AMI.

An IOU is an investor-owned utility.

And there's only three other natural gas ones. And they're small. So, that's why you're going to have 99 -- you're GOING to have 99 percent of California -- all natural gas customers. Whether or not we, you know -- I assume. Right? Whether or not people do it or not. Because there are only three of us who are natural gas utilities.

I think Chair Scharff is saying that we already know that all investor-owned utilities in California have smart meters, because government demanded it, but that doesn't tell you how cost-effective it is. If we knew what fraction of publicly-owned utilities in California had smart meters, that might tell you more about how cost-effective smart meters are.

But not all publicly-owned utilities (POUs) are in the same situation. For Palo Alto, manual meter reading is less expensive per meter than for most POUs, because Palo Alto has electric, gas, and water utilities. Once the City pays for the meter reader to get to a premises, it can amortize that cost over three meter reads (usually).

As I understand it, the cost of electricity to Palo Alto's electric utility doesn't vary as much, at different times of day and different seasons, as it does in many other communities. So, if the City's time-of-use (TOU) rates must be based on its costs, then they will be less effective at changing behavior, and there will be less reason to have TOU rates at all.

1:57:23:

Shiva Swaminathan: Right. Right. Yup. That's a fair point. Long Beach, which is the -- One, Coalinga, is minuscule. The other one is Long Beach Water & Gas.

1:57:38:

Chair Scharff: And we're minuscule. I mean, we're -- what --

1:57:40:

Shiva Swaminathan: Yup.

1:57:40:

Chair Scharff: Right? Or not. We're not one percent of California customers [laughs].

1:57:44:

Shiva Swaminathan: Right. OK. So -- And that's in terms of the -- point well taken. The 50 percent -- so this is -- the top one is the point about investor-owned utilities. And publicly-owned utilities like Palo Alto electric, gas, and water. Again, just roughly about 50 percent of those in the POU community.

A POU is a publicly-owned utility.

And then, -- And so, back in 2012, Council requested us to take a look at it. And we came back to the Council saying that it was not prudent at that time. And so, the Council recommended deferring that investment at that time. For the -- allow the technology and applications to mature. And await improved economics. Since then, the costs haven't come down too much. It's about the same. But the applications and the impetus to have it in place -- that has increased considerably, as you saw in the EIRP presentation. So, again, going back -- So, in 2013, we implemented a pilot AMI program for 300 homes. And we learned quite a bit. There were quite a few water leak detections we were able to make. About 30 percent of the customers who were on that pilot over a 3-4 year period saw some leakage detection. We implemented time-of-use rates for electric vehicle customers. Had about 300 customers on a wait list. When they heard about this pilot, they wanted to sign on, but we said we were closed for that pilot. So, there has been some interest since. And we gained a lot of operational experience through that pilot program. So, staff is knowledgeable and able to implement it at full scale.

1:59:32:

We got some good press where this -- I won't play the video, but -- you know, this customer, a resident who was out of town, was able to detect their leaks while they were out of town, and they were able to estimate -- save about \$100 on their bill.

1:59:52:

So, that's, again, history. So, we had this consultant take a look at things -- who is also an implementation consultant. And they did the assessment which you have in the report in front of you. But I'm going to focus only on item number 1, 2, and 10. So, look at:

- * [1] the financial cost benefit assessment,
- * [2] some qualitative and strategic benefits, and also
- * [10] impact of AMI on customer utility bills -- what is that going to look like. We can get into the -- more details if needed.

2:00:20:

So, this is a table of potential capital costs. As you see, the top three items are -- include electric, gas, and water meter replacement. And it also includes a \$2 million installation cost embedded in them. And then this portion is more of integration costs with our billing system. And then, there is a lot of staffing engagement required. We're estimating it at \$1.5 [million] to \$2 million over a 2-3 year period. So, this, again, internal staffing costs. Estimated [total] cost of \$18 [million] to \$19 million.

2:00:58:

In terms of benefits -- ongoing operational benefits -- we estimated the annual cost of actually operating this new system -- we need additional staff with better -- new skills, to operate and maintain the system. That is an incremental cost of \$1.9 million [annually]. But there is an offsetting savings of about \$3.3 million [annually], primarily made up of two buckets:

- * 1 is staffing-related savings. The meter-reading staff roles will no longer be needed. That's about \$1.6 million per year. And then,
- * [2] conservation and efficiency-related savings -- about \$1.7 million [annually]. About half and half of the value. So the net benefit of about \$1.4 million [annually]. Which will go towards paying of the \$19 million capital expenditure.

2:01:53:

Chair Scharff: How are we going to do the capital expenditure? Are we going to bond for it? Are we going to just use it out of ...

2:01:57:

Shiva Swaminathan: Electric's -- We'll get into that.

2:01:59:

Chair Scharff: ... Special Projects ...

2:02:00:

Shiva Swaminathan: Special Projects Reserve.

2:02:00

Chair Scharff: Calaveras Fund.

2:02:01:

Shiva Swaminathan: OK. That's for the electric. And for gas and water, it could potentially -- a loan from that fund.

If the Electric Special Projects Fund is supposed to be used to benefit electric ratepayers, how does lending money to the water and gas utilities benefit electric ratepayers? See this 11-01-11 resolution.

<https://www.cityofpaloalto.org/civicax/filebank/documents/31858>
And the 11-01-11 staff report (49 pages).

<https://www.cityofpaloalto.org/civicax/filebank/documents/42839>

2:02:07:

Chair Scharff: OK.

2:02:07:

Shiva Swaminathan: Um. What we -- What we didn't quantify is a bunch of other items which we'll talk about in more detail. So, this is a look at an MPV basis -- what you have over an 18-year period, at a 3.5 percent discount rate. As you see, the total life cycle costs of the system is about break-even. So, what you have is a capital here. Capital cost of what we just estimated. And this is ongoing operational costs. Versus the savings.

Some people think that today's smart meters will become obsolete in far fewer than 18 years.

09-25-18: "Security Risks and Technology Obsolescence Reduce Smart Meter Expected Lifetimes"
<https://smartgridawareness.org/2018/09/25/technology-obsolescence-reduces-smart-meter-lifetimes/>

In fact, this source claims, "... the smart meters deployed in the last 1-3 years are already obsolete in terms of the data communications standards, hardware and cybersecurity capabilities that exist on these meters."

01-25-18: "IoT / IIoT Device Companies Are Making The 'Smart Meter Mistake.' "

<https://hackernoon.com/iot-iiot-device-companies-are-making-the-smart-meter-mistake-2ab1471ff078>

This 09-04-18 article by the American Public Power Association reports on the rejection of some smart meter proposals.

<https://www.publicpower.org/periodical/article/regulators-reject-smart-meter-proposal-kentucky>

Among the reasons were that the proposals didn't provide enough evidence that the meters would last 20 years, and the remaining useful life of the existing analog meters was not considered.

2:02:45:

And we then looked at what is the impact on customer bills. So, the cons- -- So, the ...

2:02:51:

Council Member Tanaka: (unamplified) Wait. Hold on a second. So, **, you're saying that ...

2:02:54:

**: Microphone, please, **.

City officials often forget to turn on the microphone before speaking (and to turn off the microphone after speaking). On 03-26-18, Council considered upgrading the audio/visual system, but there was essentially no discussion of the audio. For example, could the microphone's on-off switch control whether the microphone's audio was amplified and broadcast to the meeting room (to avoid feedback issues) but NOT control whether the audio was captured on the video recording? Anyhow, a low-tech alternative would be to assign a staff person to say "microphone, please" as appropriate. (In this transcript, there were 53 "unamplified" occurrences, not including the one in this sentence, but only three "microphone, please"s, not including the ones in this sentence..)

2:02:56:

Council Member Tanaka: You're saying that -- uh -- that -- uh -- that this is -- this isn't exactly the total cost -- that it's a break-even? Is that what you're saying?

2:03:09:

Shiva Swaminathan: No, look at -- The top one is capital expenditure.

2:03:11:

Council Member Tanaka: Yeah.

2:03:12:

Shiva Swaminathan: That's the ...

2:03:17:

Council Member Tanaka: So, -- OK. And are these savings like re-occurring?

2:03:22:

Shiva Swaminathan: Yes. To the right. The bottom, the right, is recurring.

2:03:28:

Council Member Tanaka: So the op-ex is \$27 million. And then we get a recurring \$43 million?

2:03:35:

Jon Abendschein: (unamplified) This is all on a present-value basis ...

2:03:37:

Council Member Tanaka: Oh, I see.

2:03:38:

Jon Abendschein: ... so that this is the present value of the ongoing costs as well as the first.

2:03:44:

Council Member Tanaka: Yeah. And why are the numbers so close to each other?

2:03:48:

Shiva Swaminathan: (unamplified) That's analysis ** -- No, just kidding. (amplified) We made some -- assess -- assess -- assessment. It came out to be this way. We -- But we can show you the variability, too.

2:03:59:

Council Member Tanaka: OK. **.

2:03:59:

Shiva Swaminathan: So, around this variabil- --

2:04:01:

Council Member Tanaka: ** analysis.

2:04:01:

Shiva Swaminathan: Ah. No, it's not ...

2:04:01:

Council Member Tanaka: Yeah.

2:04:01:

Shiva Swaminathan: So, we looked at the same NPV on a -- for different assumptions. It can vary anywhere from negative \$15 million to positive \$8 million.

2:04:13:

Jon Abendschein: (unamplified) ** ...

2:04:15:

Chair Scharff: Could you just say that again? Just repeat that.

2:04:18:

Shiva Swaminathan: So, the -- This is on NPV. It says it's zero. But that could vary, depending on the assumptions, from negative \$14 million to positive \$8 million.

2:04:31:

Chair Scharff: So, what would cause a negative \$14 million?

2:04:33:

Shiva Swaminathan: OK, we'll -- We can go through that. So ...

2:04:37:

Vice Mayor Filseth: (unamplified) Can I ask a question before we leave this slide?

2:04:38:

Shiva Swaminathan: Yes.

2:04:39:

Vice Mayor Filseth: It looks to me like you're counting on quite a bit of savings from conservation, as a result of doing this.

2:04:46:

Shiva Swaminathan: Correct.

2:04:47:

Vice Mayor Filseth: What's the driver for the conservation?

2:04:50:

Shiva Swaminathan: OK. We can talk about that. So, there is leaka- -- So, OK. This is a good slide to go with.

2:05:02:

Jon Abendschein: (unamplified) **

2:05:03:

Dean Batchelor: (unamplified) **

2:05:04:

Shiva Swaminathan: Sure. So, the top is about half a percent reduction. This is called conservation voltage reduction. So, we have the ability to manage our voltages more -- in a narrower band, ...

2:05:17:

Vice Mayor Filseth: OK.

2:05:17:

Shiva Swaminathan: ... and that has the ability to save customers about half a percent. And then, for electric -- gas -- so, on the electric, gas, and water -- For electric, there are customer programs which -- informational programs -- we could roll out, which can inform customers, which will help them -- more aware of their usage. For example, the OPower report, which we had, increased customer awareness, providing -- Many of you probably received an OPower report, where you compare your usage with other customers.

This is an odd example, in that it speaks to what the City can do if it DOESN'T have smart meters.

2:05:56:

Chair Scharff: That's the one that says ...

2:05:57:

Shiva Swaminathan: And we estimated ...

2:05:57:

Chair Scharff: ... you're better than 90 percent of your neighbors. Or you're the same. Or you're worse.

2:06:01:

Shiva Swaminathan: And we estimated that, for electric, that -- to have saved about 1.5 percent of load -- customer load. And for natural gas, 2 percent. So this is a verified number, through M&V. Ah ...

2:06:12:

Chair Scharff: **

2:06:13:

Shiva Swaminathan: Measurement & Verification process.

Apparently sometimes called Evaluation, Measurement & Verification (EM&V).
<https://www.cityofpaloalto.org/civicax/filebank/documents/45622>
https://www.energy.gov/sites/prod/files/2014/05/f16/what_is_emv.pdf

I don't think EM&V can verify an estimate before the measured data is available. Staff may be saying that in the case of the OPower reports, electric consumption dropped 1.5 percent and gas consumption dropped 2 percent (during the time that the City was sending out OPower reports?), but I don't know how staff can claim that the OPower reports were the cause of these decreases. Is staff saying that the actual decreases observed were accurately predicted by estimates made before the OPower program started?

How should EM&V score electric consumption increases that result from switching from gas to electric appliances, or from gasoline to electric cars?

2:06:13:

Dean Batchelor: **

2:06:17:

Commissioner Schwartz: (unamplified) Can I -- Can I get to be part of this conversation?

2:06:19:

**: (unamplified) Sure.

2:06:19:

Commissioner Schwartz: (unamplified) Because this is -- this is ...

2:06:22:

Chair Scharff: No, actually.

2:06:23:

Commissioner Schwartz: (unamplified) No? OK.

2:06:24:

Dean Batchelor: No. Not yet. OK.

2:06:29:

Shiva Swaminathan: Um. And so, that's on the -- through customer programs and greater awareness. And then, on the ...

2:06:36:

Vice Mayor Filseth: (unamplified) And those -- (amplified) those are contingent on having smart meters.

2:06:40:

Shiva Swaminathan: Correct. So, over and above our -- what we're able to -- So, currently, we estimate that through our existing programs, we can save about 0.7 percent per year. That's anywhere from large commercial customer building retrofits to -- all that which we achieve ...

2:06:57:

Vice Mayor Filseth: Right.

2:06:57:

Shiva Swaminathan: So, **

2:06:58:

Vice Mayor Filseth: After AMI?

2:06:59:

Shiva Swaminathan: After AMI, incremental. So, currently, our 10-year goal is about 5 percent. And we think incrementally -- And part of that 5 percent, we have included, for example, some of these potential goals. CVR is part of the potential for 5 years.

CVR is Conservation Voltage Reduction.

How confident is staff that CVR will result in 0.5 percent energy saving? For loads like clothes dryers and TVs, wouldn't the savings be more like zero?

How much data traffic does the kind of CVR staff proposes require? This paper describes a system -- closed loop voltage reduction (CLVR) -- deployed at Morristown (TN) Utility Systems which uses their "high-speed FiberNET." It checks line voltages "several times a second."
https://www.tantalus.com/news_releases/pdf/12.18.12-REV-Tantalus-MUS-CLVR-whitepaper-FINAL.pdf

So, in summary, it's our residential and commercial electric programs, greater awareness in using this technology, um, water leakage detection. We -- that's considerable. And we don't have a good feel on how much all the gas utilities are doing -- leakage detection for natural gas. But we have -- that's more of a safety-driven program. We have not been able to quantify what that is. But that will play -- come into play as well.

2:07:48:

Vice Chair Filseth: So, in -- conservation savings avoided costs, \$15.5 million.

2:07:55:

Shiva Swaminathan: Correct.

2:07:55:

Vice Chair Filseth: I heard water leakage in there.

2:07:59:

Shiva Swaminathan: Yes.

2:07:59:

Vice Chair Filseth: And I heard the marketing campaign to get people to use less energy ...

2:08:07:

Shiva Swaminathan: Correct.

2:08:08:

Vice Chair Filseth: ... that wouldn't -- wouldn't be -- wouldn't be feasible without AMI.

2:08:12:

Jon Abendschein: Well, I don't -- I think you're bringing up the OPower as an example of ...

2:08:18:

Vice Chair Filseth: Just asking about this chart here.

2:08:20:

Jon Abendschein: ... informational programs. It wouldn't just actually be rejuvenating the OPower program. That doesn't require smart grid. It's the -- right -- It's the -- It's the actual availability of peo- -- of data to people. And the use of that, either through -- you know, either through campaigns, marketing -- either through them looking at it on our own - - on THEIR own -- or us calling attention to it, or a third-party provider that they have, calling their attention to it through their smart meter data.

How would the City know that a third party provider had the right to look at a particular customer's data?

You know, maybe through an app. I think we're raising OPower as an example of how information can be effective. Do you have the back-up slide that shows the -- the percentage savings that you were assuming?

2:09:16:

Shiva Swaminathan: (unamplified) So, this is, again, ...

2:09:17:

Jon Abendschein: I'm sorry. This is a -- you need to look -- something -- we can break this out a little bit -- but you need to look at that center square there, where you see the conservation for residential customers -- water, gas, and electric. We're assuming about two-point -- 1 to 2 percent. Which is in line -- it's a little bit higher than what we saw for the informational program we sent -- we had before. But we expect that with hourly data, you'll get a much more effective response.

The staff report (PDF page 4) says electric meters will record data every 15 minutes.

2:09:49:

Vice Mayor Filseth: So, if I understand what you just said, you're assuming that after AMI, residential customers will save 1 or 2 percent of their total -- total energy usage, because of access to better data.

How would the City know how much conservation was caused by giving their customers AMI information about their usage and how much was caused by simply raising rates? As a thought experiment, the City might try just raising rates, and put the money in another special fund, say, for undergrounding, or for a fourth transmission line. (I'm not saying, necessarily, that I believe that how much a customer should pay those projects should be determined by how much electricity the customer consumes.)

Is the City really interested in conserving electricity, per se, or only in minimizing its cost (by shifting when people use it)?

Years ago, Council Member Scharff asked whether, given that the City's electricity was carbon-neutral, that meant that conservation was not even necessary. I don't remember what he thought the answer should be. Some people think that whenever the City uses electricity generated by fossil fuels, buying offsets doesn't completely neutralize that.

2:10:06:

Shiva Swaminathan: (unamplified) Correct. Yes. So, a classic example (amplified) people talk about and I've experienced this -- I live in PG&E service territory -- is seeing how much phantom load you have at night. Middle of night.

2:10:16:

Vice Mayor Filseth: Um hum.

2:10:16:

Shiva Swaminathan: All the lights are off.

2:10:18:

Chair Scharff: (unamplified) So you start pulling things off ...

2:10:20:

Vice Mayor Filseth: OK. OK.

2:10:21:

Shiva Swaminathan: Looking at that type of stuff.

2:10:22:

Vice Mayor Filseth: OK. One or two percent doesn't seem dramatic. OK.

2:10:28:

Chair Scharff: So, I also wanted to ask a couple questions on this slide. So, when we do present-value costs and benefits, the \$43.82 million ..

2:10:36:

Shiva Swaminathan: Um hum.

2:10:36:

Chair Scharff: ... is what it's going to cost the utility.

2:10:41:

Shiva Swaminathan: Um. Yes.

2:10:44:

Chair Scharff: Right?

2:10:44:

Shiva Swaminathan: Yes.

2:10:44:

Chair Scharff: The \$43.83 million in savings has no relationship to what the utility saves. It's what customers -- It's your projection of what customers might save. So -- No? Am I wrong?

2:10:58:

Shiva Swaminathan: Yes.

2:11:00:

Chair Scharff: OK. I'm wrong. 'Cause -- I'm confused, on the conservation savings, how that saves the utility money.

2:11:05:

Shiva Swaminathan: Right.

2:11:06:

Chair Scharff: It doesn't.

2:11:07:

Shiva Swaminathan: It does. And that's why that's the key here. So, here you see at avoided costs. So, the conservation saving is -- every unit of energy or water a customer saves, we buy less units from outside.

2:11:23:

Vice Mayor Filseth: So that's -- So that's -- So that is commodity cost.

2:11:26:

Shiva Swaminathan: Correct.

2:11:26:

Vice Mayor Filseth: OK. From the 1 to 2 percent energy savings from customers.

2:11:29:

Shiva Swaminathan: Correct.

2:11:30:

Chair Scharff: OK. So, you can buy less. But I actually thought -- And, you know, correct me if I'm wrong. 'Cause this is complicated stuff. But I always thought, the more load we have, the more money your utility actually makes. That we have a number of fixed costs in running a utility ...

2:11:45:

Shiva Swaminathan: Correct.

2:11:45:

Chair Scharff: ... and so, therefore, by -- While conservation is a good thing -- and don't get me wrong -- and I would push for conservation -- we actually make less money as a utility. And that the commodity prices are not necessarily -- I mean, buying less does not mean we save money. It may actually mean that it would cost us money, because less fixed costs to spread -- to spread that sale over. In terms of what we sell -- There's a fixed cost component -- Right. Right. So, I'm getting back to my question of -- This benefits -- So, this \$43.83 million benefits is all of the savings to the utility. Are you adding back in, then, the fact that we have to raise prices, or cover our fixed costs, that we weren't covering before?

2:12:35:

Vice Mayor Filseth: No. What happens ...

2:12:37:

Chair Scharff: OK.

2:12:37:

Vice Mayor Filseth: What happens is, when you reduce the amount of commodity that you consume as a homeowner -- right? -- then the fixed costs get amortized over a smaller piece of commodity. So, as an aggregate -- OK? -- As a total, everybody's bill still goes down. OK? But if somebody else saves more -- uses less commodity than you do -- If Greg cuts his use even further, your bill goes up. Right? But the total bill, integrated over everybody, still goes down. Because you're using less commodity and you've got the same fixed costs.

2:13:16:

Jon Abendschein: That's accurate.

2:13:17:

Chair Scharff: Is that accurate?

2:13:17:

**: (unamplified) **.

2:13:18:

Chair Scharff: So, you actually have the same fixed costs. OK.

2:13:20:

Jon Abendschein: Right. It -- it's -- yeah, it's one ...

2:13:23:

Vice Mayor Filseth: What happens is, the cost of the fixed costs gets distributed unevenly, depending on who saves more energy.

2:13:28:

Dean Batchelor: And that's the key -- is, so that it gets spread unevenly -- to the commodity.

2:13:32:

Jon Abendschein: And I think it's also important -- I mean, I understand Palo Alto is largely built out. But when you have even small amounts of growth, you end up being able to accommodate more customers with the same infrastructure.

2:13:48:

Vice Mayor Filseth: Right. So ...

2:13:48:

Jon Abendschein: And that means that everybody's bill goes down even further, because you don't have to invest in additional infrastructure to add on those additional customers.

2:13:55:

Vice Mayor Filseth: Right. The fixed cost gets amortized over ...

2:13:55:

Jon Abendschein: And that's what's really important around ...

2:13:58:

Chair Scharff: But that's what's really confusing ...

2:13:58:

Jon Abendschein: ... commodity fixed costs.

2:13:58:

Chair Scharff: ... **. So, the more customers we have -- right? -- the more energy usage we have -- Everyone's bill gets lower, because we're distributing the fixed costs ...

2:14:09:

Jon Abendschein: Except that, at a certain point, you have to build additional ...

2:14:11:

Chair Scharff: Right. Assuming you don't have to build additional ...

2:14:14:

Vice Mayor Filseth: The difference in his scenario -- the one he just described -- it's not that you have more commodity usage. It's you have more CUSTOMERS. Right? So, it's actually amortized over more CUSTOMERS, as opposed to commodity.

2:14:28:

Chair Scharff: So, I will take it. So, what you're telling me is, the UTILITY is saving the \$43.83 [million]. And this is apples to apples. And we're spending \$43.83 [million] too. OK. So, it's a break-even proposition.

2:14:41:

Shiva Swaminathan: Correct.

2:14:43:

Chair Scharff: Depending upon the sensitivity of the [\$]14 [million] minus to the [\$]8 [million] plus. OK. And your best estimate load is that it breaks even, on the different risk levels.

2:14:54:

Shiva Swaminathan: And it's -- And it's highly sensitive to three things. The operational costs and operational savings we're able to get, and the conservation. Capital cost is ...

2:15:05:

Vice Mayor Filseth: Sure. Whether it's 1 or 2 percent makes a big difference there.

2:15:08:

Shiva Swaminathan: Yup. Yup. Yup.

2:15:10:

Dean Batchelor: But I think, though, that the thing is that the key is around -- you know, it's the workforce piece -- that there's savings in that workforce, and how it gains efficiencies -- which is that largest piece right there.

2:15:24:

Vice Mayor Filseth: (unamplified) But his (amplified) his 1 or 2 percent average saving on your customer saves as much as all the workforce costs.

2:15:33:

Dean Batchelor: Yes.

2:15:34:

Vice Mayor Filseth: OK?

2:15:34:

Dean Batchelor: Yup.

2:15:35:

Vice Mayor Filseth: Pretty sensitive.

2:15:36:

**: Yup.

2:15:36:

Shiva Swaminathan: Very sensitive.

2:15:39:

Council Member Tanaka: (unamplified) So, I have a question **.

2:15:40:

Shiva Swaminathan: Um hum.

2:15:41:

Council Member Tanaka: So, -- So, on that big blue part, the meter reading.

2:15:46:

Shiva Swaminathan: Um hum.

2:15:46:

Council Member Tanaka: So, the City employees are now reading that?

2:15:49:

Shiva Swaminathan: Correct.

2:15:50:

Council Member Tanaka: OK. So, what happens to them? I mean, so -- I mean -- because it's really hard to get rid of any employees. Right? So, ...

2:15:56:

Shiva Swaminathan: Right. So -- A couple of things. So, we've been talking about this for the last five years. And so there has been uncertainty around that workforce. So, we've kept them up-to-date. And we're going to brief them again after today's meeting. So, it's an entry-level position. And so, many folks find other positions within the utility. It is an entry-level position.

2:16:18:

Council Member Tanaka: Uh huh.

2:16:18:

Shiva Swaminathan: So, ...

2:16:19:

Council Member Tanaka: I just want to make sure it's like real savings. Because if you can't fire anyone, then ...

2:16:25:

Shiva Swaminathan: Correct. But ...

2:16:25:

Council Member Tanaka: ... you're not going to save any money.

2:16:26:

Shiva Swaminathan: Yes, it is real savings.

2:16:28:

Dean Batchelor: So, in this case, is -- it's real savings. So, we've -- like Shiva just mentioned, is that we've had conversations with our meter-reading group as a whole. And if this moves forward, a portion of it is that those nine positions that are there now, for the meter readers, will go away. Physically go away.

Who reads the meters of the customers who opt not to have smart meters?

2:16:44:

Council Member Tanaka: And what happens to those employees?

2:16:45:

Dean Batchelor: As Shiva mentioned, is that they can be retrained. I mean, as probably all of you know, we have MANY opportunities in utilities. We have -- right now, we have TONS of openings. So, they can be retrained, repurposed. And so, they won't -- possibly -- lose their JOBS. But -- We'll capture the savings off that salary. But they'll move into open positions. And we'll train them.

2:17:07:

Council Member Tanaka: But are people really -- Because I think we're really going to get a -- There's an opening for the head of the utilities. Right? But could a meter reader really become the head of utilities? Probably not. So I'm just wondering how transferrable ...

2:17:16:

Dean Batchelor: No, I -- I think the thing is that, you know, we do have openings on the electric side. You know, we have openings in our electric meter shop, where there are apprenticeships -- positions, where somebody that can come -- that, right now, anybody can come off the street and become one of those folks.

2:17:31:

Council Member Tanaka: I just want to make sure that's true.

2:17:32:

Dean Batchelor: You know, that's -- that's definitely true.

2:17:33:

Council Member Tanaka: OK. OK. And then, the second thing is, for the -- for all the operational expense that is \$27 million, ...

2:17:43:

Dean Batchelor: Um hum.

2:17:43:

Council Member Tanaka: ... does that -- or, I guess, really, the staff -- why wouldn't it say staff on there ...

2:17:45:

Dean Batchelor: Correct.

2:17:46:

Council Member Tanaka: ... does that really have to be -- Is that City employees, or is this contractors?

2:17:50:

Shiva Swaminathan: So, the current thought is, on meter-reading side, we have ...

2:17:54:

Council Member Tanaka: No, no. I'm talking about ...

2:17:55:

Shiva Swaminathan: No, I'm trying to compare numbers. So, on the meter-reading side, about 7-8 staff reduction. And about 4 additional -- staff increase, on the right-hand side, what you said. Of which 4 are -- Four additional positions, of which one could potentially be outsourced with a central service provider. But we'll need a minimum of about three internal. So, current assumption is -- to the left side -- four additional positions, one of which could be a contracted position. For a central service provider -- to the right. We have about 6-7 meter-reading positions eliminated.

2:18:33:

Council Member Tanaka: OK. So, you know -- I'm just looking at the size of the bar. I mean, those three staff ones are bigger than the big blue one.

2:18:40:

Shiva Swaminathan: Yes.

2:18:40:

Council Member Tanaka: And so, it's like four really expensive people replacing nine cheap people. Is that what's happening?

2:18:46:

Shiva Swaminathan: That's part of it. But part -- the bottom of the bucket is -- these two are not people. Just these three are people.

2:18:52:

Council Member Tanaka: Oh, I know. I'm talking about that ...

2:18:53:

Shiva Swaminathan: Yeah. So the -- \$19 million versus \$16 million. Correct.

2:18:56:

Council Member Tanaka: Well, um, you would think that this would like eliminate the need for people. But ...

2:19:06:

Shiva Swaminathan: It does people, but not the cost. People's cost. Because it -- entry-level position versus more trained and skilled positions.

2:19:14:

Council Member Tanaka: And so, why did you need like -- I'm just trying to understand this, because right now, we don't have those people on that side, right? I mean, we just have people going out there reading the meter.

2:19:22:

Shiva Swaminathan: Um hum.

2:19:22:

Council Member Tanaka: Theoretically, this should all be automatic now, right? All the numbers should just go into the SAP, and generate the bills, right? So, why, suddenly, do we need to have \$19 million on the other side? Because we didn't have them before. So, like ...

2:19:36:

Shiva Swaminathan: Right. Yeah. Well, that's a good question. So, the four positions we think about are kind of in the following areas. One is, kind of -- there's a network. Which -- we have to maintain the health of the network. So, that position is called AMI administrator ...

2:19:50:

Council Member Tanaka: Oh, I see.

2:19:51:

Shiva Swaminathan: ... so, looking at the network. That is a position that we can potentially outsource. That function has to take place. But there are vendors who provide that. So, the cost-wise, we are talking to some ** which potentially could do that. So that's first. The other is, all this data which comes in, there's a data analyst position.

2:20:10:

Council Member Tanaka: Why do you need that? We don't have it now. We have all this data coming in, too. But ...

2:20:13:

Shiva Swaminathan: No, but not in the granular ** ...

2:20 15:

Council Member Tanaka: But what I was saying -- I was -- I mean, that's kind of like -- you know, that's -- Personally, I'd love to see this happen. But, I mean, right now, the economics are marginal, right? But because you want -- I mean, it looks like the extra data person is more of a nice-to-have. Because if we don't have -- We don't -- Just because -- We don't necessarily have to have -- I mean, why do we have to have this?

2:20:34:

Shiva Swaminathan: To get the value of customer engagement.

2:20:38:

Council Member Tanaka: Oh, I see. So, you couldn't do the other ones if you don't have this person.

2:20:40:

Shiva Swaminathan: Exactly.

2:20:40:

Council Member Tanaka: OK. OK.

2:20:41:

Shiva Swaminathan: Exactly right. And ...

2:20:41:

Jon Abendschein: (unamplified) All systems need tending. I mean, this is a whole extra system.

2:20:45:

Council Member Tanaka: And we can't outsource this? We can't outsource those four people. So, instead of having to have like expensive union City employees, we can't have like vendors taking care of this for us?

2:20:54:

Shiva Swaminathan: Certain functions, yes. But, as I said, one function we've identified as a potential ...

2:21:00:

Council Member Tanaka: And the other three, no way?

2:21:01:

Shiva Swaminathan: And other -- others are harder to do. We have to still maintain -- For example, that outage -- we still have to go and replace the radio. So, we -- still requires maintenance.

2:21:10:

Council Member Tanaka: OK. And the last question, which is, on the right-hand side, what if we do dynamic pricing? How does that change the -- dynamic pricing?

"Dynamic pricing" sometimes means that the price can change from moment to moment in response to the market.

https://en.wikipedia.org/wiki/Dynamic_pricing

I think Council Member Tanaka wants to ask about time-of-use pricing, where the rates are known well in advance of when the electricity is consumed, but could be different for different times of day, or different times of year.

2:21:18:

Shiva Swaminathan: How would that change?

2:21:19:

Council Member Tanaka: Yeah. How would that -- would that make the right side bigger. I mean, like, if we -- if we were to ...

2:21:25:

Shiva Swaminathan: ** right side bigger. Yes. And that's something that we have not quantified.

2:21:29:

Council Member Tanaka: OK.

2:21:30:

Shiva Swaminathan: And that's -- so, that's the time-of-use pricing?

2:21:33:

Council Member Tanaka: Yeah. Time-of-use pricing.

2:21:34:

Shiva Swaminathan: Correct. So, that's expected to save, for two reasons. One, it will reduce our costs, to extend customer changes behavior, ...

2:21:40:

Council Member Tanaka: Um hum.

2:21:40:

Shiva Swaminathan: ... and the other is, we can use the customer's electric vehicle and storage system to better maximize ...

2:21:46:

Council Member Tanaka: Yup.

2:21:

Shiva Swaminathan: Those two customer streams are harder to quantify. It is there. It is big.

2:21:52:

Council Member Tanaka: Well, I guess I'm just trying to see -- because I ...

2:21:54:

Shiva Swaminathan: Grow the pies.

2:21:55:

Council Member Tanaka: Well, how can I -- how to make this pencil out? Because right now, it's ...

2:21:59:

Shiva Swaminathan: Good question.

2:22:00:

Council Member Tanaka: ... it's marginal. Right?

2:22:02:

Shiva Swaminathan: Right now, it's -- So, we are going to go through slides which we have not quantified. And that's one of those. And perhaps comes in a short ...

2:22:08:

Vice Mayor Filseth: Can I ask a question on that, that sort of is -- that Greg has just brought up? Which is, if I charge my electric car in the middle of the afternoon, as opposed to at night, does it save the City money?

2:22:18:

Shiva Swaminathan: Yes.

2:22:19:

Council Member Tanaka: (unamplified) That's what I was trying to get to, right? ...

2:22:20:

Vice Mayor Filseth: OK. So, time-of-use helps. OK.

2:22:22:

Council Member Tanaka: (unamplified) So it should pencil out, right? ...

2:22:22:

Shiva Swaminathan: Yup. And that was not true five years ago.

2:22:25:

Vice Mayor Filseth: (unamplified) Sure. It's 'cause of the solar.

2:22:30:

Shiva Swaminathan: Yup. Exactly the point. So, that saving, of sending the price signal and the customer changing, is not here. And -- because that's not a conservation saving. That's a time-of-use pricing -- the ability to send that pricing signal.

2:22:42:

Chair Scharff: (unamplified) So, the ...

2:22:43:

Shiva Swaminathan: And that's huge.

2:22:44:

**: (unamplified) **

2:22:45:

[laughter]

2:22:46:

Shiva Swaminathan: Yup. Yup.

Chair Scharff: (unamplified) So, the other question is -- is that -- as we implement this, this shows other -- so, is this going to -- how's this going to impact rates? I mean, are we going to have to basically say, a lot of the savings come in the back end, so now we have to raise rates -- You know, if it's \$18 million, do we have to raise rates, you know, 15 percent?

2:23:09:

Shiva Swaminathan: OK. So, two things, in answer to that. If you're going to finance that over the 18-year term of the project, there is no front end. So, we have -- The Calaveras Fund can be used only for electric. So we can use that. And that would -- if we use it -- and then there would no -- not impact on rates on electric. On the gas one, it has to be an arms-length loan -- at -- and then that will be spread over 18 years.

2:23:34:

Chair Scharff: (unamplified) We don't need to loan it from the Calaveras Fund to the electric. We could just spend it. And then there's no effects on the electric.

2:23:40:

Shiva Swaminathan: Correct. Correct. But this assumes that that money is still real money, and -- So, this kind of ...

2:23:48:

Chair Scharff: (unamplified) **.

2:23:49:

Shiva Swaminathan: So, this assumes -- doesn't assume the fin- -- it just assumes both are financed over an 18 year period.

2:23:57:

Chair Scharff: (unamplified) So, the reality ...

2:23:57:

Jon Abendschein: ** financing, it will be better than what you're seeing there.

2:24:01:

Shiva Swaminathan: Correct.

2:24:02:

Chair Scharff: (unamplified) So, the reality, though, is that if we just spend the money out of the Calaveras Fund for the electric, the electric rates should actually go down, because ...

2:24:10:

Shiva Swaminathan: Correct.

2:24:10:

Chair Scharff: (unamplified) ... **. That's actually an important thing. So, the customer will see we got better service and rates went down.

2:24:16:

Shiva Swaminathan: Yup.

No. Bills might go down for the customers who conserve, but rates won't go down (as Shiva explains next).

2:24:21:

So, this is what shows. So, assuming that it's going to be financed -- not using reserves -- over 18-year term, what you see in green is the expected impact on customer BILLS, not rates. Bills. As -- Because consumption is going to go down, rates are likely to go up, because -- spread over a smaller unit of -- So, rates are likely to go up. But the consumption is down, so the bill impact is what you see in green. And then we ran ...

2:24:50:

Chair Scharff: (unamplified) So, when you do your billing -- doing your crazy -- the average customer bill in Palo Alto is \$49.

Just for electric?

Is that the -- Is that the ...

2:24:58:

Shiva Swaminathan: No. We looked at cash flows for the -- for the -- so, that is a residential customer -- this is not a cash flow for the utility. So, the same, utility-wide. And so, we ran two scenarios. What if -- Adverse outcome. Forty percent higher operating costs. For whatever reason. We have more staff having to do this. And then, ten percent on capital costs. The capital costs are known with relative certainty. And then the savings. Fifty percent lower operating savings. And 100 percent of the conservation is not there. The rate impact is in the 1 to 2 percent range. And then, on the other side, it's about half a percent. Negative half a percent. And if you include -- we had another chart with the Calaveras Reserve, it's even lower. If we use the Calaveras Reserve.

2:24:56:

Vice Mayor Filseth: (unamplified) So, if (amplified) I understand what you just said on the previous one, -- I mean, ...

2:26:01:

Shiva Swaminathan: Previous one?

2:26:02:

Vice Mayor Filseth: Yeah. Well, no, no, that one. That one.

2:26:03:

Shiva Swaminathan: OK.

2:26:03:

Vice Mayor Filseth: Yeah. So, your 50 percent lower operating costs is 100 percent of the conservation savings. That seems like a pretty worse case to me. OK? It means you're not going to save that much on the operating costs, and you get no savings at all on the conservation, which is, you know, a big chunk of -- ...

2:26:16:

Shiva Swaminathan: Yup.

2:26:16:

Vice Mayor Filseth: ... big chunk **. And even in that case, you're looking at a two percent increase in bills.

2:26:21:

Shiva Swaminathan: Yup.

2:26:22:

Vice Mayor Filseth: Not that much. OK.

2:26:25:

Chair Scharff: (unamplified) And if you don't finance out of the Calaveras for the electric utility, do you remember what it looks like? If you just pay ...

2:26:33:

**: Microphone, Greg.

2:26:33:

Chair Scharff: Sorry. If you just use the Fund?

2:26:35:

Shiva Swaminathan: Um. We looked at it last year. Initialed -- again, depending on how we spread the cash flow. So, if you say, over five years. So, it will be an increase in the initial term and then less pressure in the outer years. We haven't run that numbers in detail.

2:26:51:

Chair Scharff: Why -- why -- We have -- what -- \$40 million in the Calaveras Fund? Or ...

2:26:54:

Shiva Swaminathan: We have \$50 million ...

Would it be a good idea to report what's in the Electric Special Projects reserve in each Utilities Quarterly Update? The 3Q18 Utilities Quarterly Update mentions the Electric Special Projects reserve (as a source of borrowed funds), but doesn't say how much is in it.
<https://www.cityofpaloalto.org/civicax/filebank/documents/66196>

This 05-15-18 staff report (PDF page 52) says the Electric Special Projects reserve had \$51,837,855 at the start of FY 2018 but only \$45,837,855 at the start of FY 2019.
<https://www.cityofpaloalto.org/civicax/filebank/documents/64921>

2:26:55:

Chair Scharff: We have \$50 million? And this is cost [\$]18 [million]?

2:26:57:

Shiva Swaminathan: Correct.

2:26:58:

Chair Scharff: So, if you just spent \$18 million out of it, ...

2:27:02:

Shiva Swaminathan: Out of the Calaveras Reserve?

2:27:03:

Chair Scharff: Yeah. For the -- Just for the electric utility.

2:27:06:

Shiva Swaminathan: Right.

2:27:06:

Chair Scharff: Because you can't do it -- I mean ...

2:27:07:

Shiva Swaminathan: Right.

2:27:07:

Chair Scharff: And you're not borrowing the money. So there's no borrowing costs.

2:27:10:

Shiva Swaminathan: Right.

2:27:10:

Chair Scharff: You're just spending it.

2:27:12:

Shiva Swaminathan: Correct.

2:27:12:

Chair Scharff: So, is -- does that assume borrowing costs or not?

2:27:16:

Shiva Swaminathan: Yes. Oh. This assume borrowing costs.

2:27:17:

Chair Scharff: Even for the electric.

2:27:18:

Shiva Swaminathan: Yes.

2:27:18:

Chair Scharff: What I'm asking is, if you ran the electric fund with no borrowing costs.

2:27:22:

Shiva Swaminathan: Oh. Got it.

2:27:22:

Chair Scharff: Because I don't understand why we would pay the Calaveras Fund back. That makes no sense.

2:27:25:

Shiva Swaminathan: No. No.

2:27:25:

Chair Scharff: We just spend the money. So, there will be no borrowing costs for the electric.

2:27:29:

Shiva Swaminathan: Correct.

2:27:29:

Chair Scharff: There would be for water. And there would be for gas.

2:27:31:

Shiva Swaminathan: Correct.

2:27:31:

Chair Scharff: So, what does it look like ...

2:27:33:

Shiva Swaminathan: Correct.

2:27:33:

Chair Scharff: I'm trying to get a sense of what actually happens.

2:27:35:

Shiva Swaminathan: Ah. It's about a 1.5 percent decrease. Here, on the electric.

2:27:40:

Chair Scharff: A 1.5 percent increase.

2:27:41:

Vice Mayor Filseth: On the electric.

2:27:42:

Shiva Swaminathan: On the electric ...

2:27:42:

[multiple speakers]

2:27:43:

Dean Batchelor: (unamplified) On the Calaveras. That's correct.

2:27:47:

Chair Scharff: So, I'm confused. It can't be that way. 'Cause that would be higher than your worst case. If you borrowed.

2:27:54:

Shiva Swaminathan: I need to think. It's somewhere in the 1 percent range -- 1 to 1.5 percent range. We did do some numbers. I ...

2:28:01:

Chair Scharff: But how can that be? Because, right now, if you borrow the money, from what I understood, you're at a half percent on the good case, which is the green. Right? And on the bad case, you're at 1 percent.

2:28:10:

Shiva Swaminathan: I'm talking about this number only. So, this is break-even.

2:28:13:

Chair Scharff: All right. I thought it was -- Yeah. OK. So, that's break-even.

1:28:15:

Shiva Swaminathan: Right.

2:28:16:

Chair Scharff: So -- So, it's got -- So, it should be less.

2:28:19:

Shiva Swaminathan: Correct.

2:28:19:

Vice Mayor Filseth: Right.

2:28:20:

Shiva Swaminathan: Correct.

2:28:21:

Vice Mayor Filseth: (unamplified) So, when you said -- (amplified) When you say 1 percent, (unamplified again, because he steps away from the microphone to point to the screen) is that ...

2:28:26:

Shiva Swaminathan. Going down. Going down. Going down.

2:28:26:

[multiple speakers]

2:28:27:

Shiva Swaminathan: Yeah, yeah, yeah.

2:28:28:

Vice Mayor Filseth: When you say it goes down, does it go down that much (small gesture pointing to the screen) or that much (large gesture pointing to the screen)?

2:28:34:

Shiva Swaminathan: No. 1 percent down ...

2:28:36:

Jon Abendschein: The second one. **

[Hard to transcribe]

2:28:40:

Vice Mayor Filseth: ... as opposed to 1 percent of whatever that is.

2:28:41:

Shiva Swaminathan: Oh, no, no, no, no. Yeah, yeah, yeah.

2:28:42:

Chair Scharff: So, we can have -- People can see a 1 percent savings on their electric bill. Which is ...

2:28:49:

Vice Mayor Filseth: It wouldn't suck.

2:28:50:

Chair Scharff: No. That's what I mean. That's not bad at all.

2:28:54:

Council Member Kou: (unamplified) I'm sorry.

2:28:55:

Chair Scharff: Yes.

2:28:55:

Council Member Kou: Can you explain again to me that green dot? You said that the green dot is not the rate.

2:29:00:

Shiva Swaminathan: Correct.

2:29:00:

Council Member Kou: It's the ...

2:29:01:

Shiva Swaminathan: Bill.

2:29:03:

Council Member Kou: The bill.

2:29:03:

Shiva Swaminathan: Right. So, the bill ...

2:29:04:

Council Member Kou: So, the bill actually goes down.

2:29:07

Shiva Swaminathan: Correct. So, this assumes that the capital has to be repaid. The green assumes that the capital of electric has to be repaid over the life of the project -- the \$10 million. And -- But if you have to pay it off with your -- pay it off up-front, without having to repay, then the bill impact is -- it reduces your bill.

2:29:33:

Council Member Kou: And this is ...

2:29:34:

Shiva Swaminathan: I think I answered that question.

2:29:35:

Council Member Kou: Yeah. I kind of get it now. But this is on both commercial and residential, right?

2:29:40:

Shiva Swaminathan: Correct. Correct. OK?

Um. So, these were the benefits quantified, which we just talked about:

* Meter-reading cost reduction.

* Meter reader injuries. Quantified that.

This particular item wasn't specifically talked about.

* Better customer service.

* Energy / water conservation.

* Reduce water leaks. And

* Conservation voltage reduction.

2:30:06:

These are the benefits which were harder to quantify. We could have taken a stab at it, but we didn't want to. We wanted to just lay it out there.

* Improved customer experience. We have 300 customers on a wait list wanting this. And commercial customers wanting this information.
* Maintain reliability. So, it's both better restoration if there's outage. We can know ahead of time -- as soon as it happened, without a call coming through. We can detect it and respond to it sooner. And also, preventive maintenance. We have visibility into our distribution system. That's number two.

2:30:43:

Vice Mayor Filseth: (unamplified) How about visibility into EVs?

2:30:45:

Shiva Swaminathan: On the EVs. That's coming down.

2:30:48:

Vice Mayor Filseth: (unamplified) Gotcha.

2:30:49:

Shiva Swaminathan:

* Enhanced safety. So, water / gas leak detection. We have all the information if there is a continuous flow of gas. There are certain threshold industry uses to alert customers. That's safety.

* Time-of-use retail rates. That's what we talked about. The ability to shift. And, as a result, the utility also saves.

* Improved ...

2:31:12:

Vice Mayor Filseth: Hey, quick question on that. Sorry. Keep interrupting here. Time-of-use retail rates.

2:31:15:

Shiva Swaminathan: Um hum.

2:31:15:

Vice Mayor Filseth: How much different are they? Is it like 5 percent difference? Or 50 percent difference?

2:31:20:

Shiva Swaminathan: So ...

2:31:22:

Vice Mayor Filseth: Do you anticipate ...

2:31:22:

Shiva Swaminathan: So, the current time-of-use is about 20 percent reduction ...

2:31:27:

Vice Mayor Filseth: OK.

2:31:27:

Shiva Swaminathan: ... night versus daytime.

2:31:28:

Vice Mayor Filseth: OK. Yeah.

2:31:29:

Shiva Swaminathan: Um. But that was implemented as part of the pilot five years ago.

This City web page (last updated 11-25-13) gives the time-of-use (TOU) rates for the smart meter pilot.

<https://www.cityofpaloalto.org/news/displaynews.asp?NewsID=2466&TargetID=224,257>

It refers to this updated (01-01-15) E1-TOU rate schedule.

<https://www.cityofpaloalto.org/civicax/filebank/documents/32678>

Note that these rates charge MORE for electricity during the day than at night. I seem to recall that, years ago, staff was saying that TOU rates had to be based on the City's actual costs. Well, if electricity today costs more at night than during the day, and costs most between 5:00 pm and 10:00 pm (see 2:32:06), shouldn't the pilot's TOU rates reflect that?

If the City decides to change the pilot's TOU rates, I hope someone will pay attention to how that alters customer behavior. The pilot's customers will have some bad habits to break.

If electricity still costs the City more during the day than at night, but there's reason to believe that in the future it would cost more at night than during the day, could the City decide to charge TOU rates to pilot customers based on what it expects its costs to be in the future, to find out what customers would do in the future?

This 12-11-17 article say San Diego Gas & Electric has changed its TOU rates, so that the peak rate occurs later in the day, but electricity still costs less at night than during the day.

<https://www.greentechmedia.com/articles/read/california-time-of-use-commercial-customers-solar-pv#gs.UlqYg1g>

Now, you can see the energy prices -- the last year, on average -- during the solar hours, versus ...

2:31:42:

Vice Mayor Filseth: Right. Right.

2:31:42:

Shiva Swaminathan: ... the evening is -- the early evening is double that of solar hours. The market price.

For what fraction of the electricity consumed during the "early evening" is the City paying the "market price," rather than a price based on long-term contracts? (Or is that even a good question to ask, given that energy conserved will be at the marginal -- market -- price?)

This 07-25-18 article reports the California Independent System Operator average hourly day-ahead price for electricity -- a January-through-June average -- for 2015, 2016, and 2017.
<https://www.greentechmedia.com/articles/read/eia-charts-californias-real-and-growing-duck-curve#gs.ZiDDutQ>

2:31:49:

Vice Mayor Filseth: OK. How about the middle of the night?

2:31:51:

Shiva Swaminathan: Middle of the night, it's back down.

2:31:52:

Vice Mayor Filseth: OK. So, the difference between solar hours and middle of the night is 20 percent, or something like that?

2:31:58:

Council Member Tanaka: (unamplified) He said double.

2:32:00:

Vice Mayor Filseth: He said ...

2:32:00:

Shiva Swaminathan: It's about the same ...

2:32:03:

Vice Mayor Filseth: Oh. It's about the SAME.

2:32:04:

Shiva Swaminathan: Or slightly -- maybe 10 percent higher.

2:32:05:

Vice Mayor Filseth: OK.

Could Council ask staff to write a staff report documenting where electricity comes from (hydro, solar, wind, market), as a function of time of day, for summer and winter, and weekday versus weekend, and also what the City pays for it?

In principle, the cost to the provider of hydroelectric power should be independent of time of day. (Right?) Is that how our hydro contracts are priced? Are we choosing to take our hydro power in the "early evening"?

2:32:06:

Shiva Swaminathan: But the key is between ...

2:32:09:

Vice Mayor Filseth: OK.

2:32:09:

Shiva Swaminathan: ... five and ...

2:32:10:

Vice Mayor Filseth: OK. Right.

2:32:10:

Shiva Swaminathan: ... ten o'clock.

2:32:11:

Vice Mayor Filseth: OK.

2:32:11:

Shiva Swaminathan: It's double then -- that of solar hours. And that savings we can pass on. Can achieve it, and pass it on to customers.

2:32:20:

OK.

Shiva gets back to itemizing non-quantified benefits (started at 2:30:06).

* Reduced workman's compensation.

Is the workman's compensation for meter readers unusually high?

* Cost sharing. So, the water district is actively -- wants custom- -- us to do this. Santa Clara Valley Water District is thinking of a program to incentivize custom- -- utilities to do this for their customers. And then,

* Solar PV adoption.

* And so on.

2:32:40:

Chair Sharff: Any -- Are they going to pay for any of this -- Santa Clara Valley Water District?

2:32:42:

Shiva Swaminathan: Potentially, yes. They are going to pay for something. We don't exactly know what. But they want their customers to do this.

2:32:51:

Um. So, sources of funding. So, our recommended one is number two and three.
* Electric Special Project Reserve [ESP].

A.k.a. Calaveras Fund.

And then,

* a loan from the Electric Special Project Reserve to the gas and water fund, over an 18-year term, at an arms-length interest rate.
And then, that will be recovered through retail rates.

2:33:17:

We also are cognizant that there are a number of other technology projects going on. Jonathan Reichental's group.

* SAP -- a financial system.

* ERP -- our customer billing system.

are in the process of being upgraded. And this is related to the

* CIS system. To actually get the time-of-use rates going, it has to tie to the customer information system. So, it is sequenced. So even if Council just approve it today, conceptually, the actual implementation is not likely to happen -- COMPLETION is not going to happen for five years from now. So, we just need to be cognizant of that.

Generally, how flexible will this software be? After it's written, what if someone thinks of a new application that wants the functionality to be a bit different?

2:33:54:

And there is -- it's a big staffing commitment. CIS requires implement over 2-3 years. We need temporary staff, back-fills, consultants, and so on. It's a large effort, and it has to be sequenced and planned, to make sure that we are successful.

2:34:10:

So, in terms of next steps, after the Finance Committee consideration, if the recommendation is to go forward, we go to the Council in December. And then we'll wait 'til the CIS and ERP timelines are finalized in the summer. That's coordination with Jonathan Reichental on the -- on that system. Based on that outcome. We'll come back to the Finan- -- UAC and Finance in the fall of 2019, of a detailed implementation plan. And full deployment, if everything goes well, is in the 2022-2023 timeline. Five years away. But it's a long-lead project. So, the request today is to recommend Council to accept the plan.

2:35:00:

Chair Scharff: And, Commissioner Schwartz, would you like to come and speak to us about what the UAC's take on this was?

2:35:12:

Commissioner Schwartz: I had hoped for a more collegial exchange, rather than just sort of a short little presentation. Because -- two things. One, because the UAC has spent a lot of time talking about this. And it's not something that can just be shared in a couple of minutes. And the other thing is that this is the area that I work in for my day job.

Why isn't it a conflict of interest -- or at least the appearance of a conflict of interest? Recall that Commissioners Amari and Hall recused themselves on water-related items, because their day jobs were working for other water utilities.

And I'm one of the nationally-recognized experts on customer engagement and help and adoption of smart grid. And how people -- So, I know an awful lot about best practices, and where are things that we can either do this as a giant mess, or we can have people be really happy. And I think that unless we have an open opportunity to really talk to the City Council about what works and what doesn't work, you can very easily give direction to staff, or to do things that are -- could be really problematic. And so, what is the right process for this? I don't know. We'll have to come back to that ...

2:36:12:

Chair Scharff: So, the appropriate process ...

2:36:13:

Commissioner Schwartz: Pardon?

2:36:14:

Chair Scharff: The appropriate process for this is for you to tell us what the UAC thought. And if you wish to speak as an individual, on your own PRIVATE view of things, then you'd be happy to have three minutes. But you're actually here as the UAC ...

2:36:27:

Commissioner Schwartz: I understand that. But we've been talking about this at the UAC.

2:36:30:

Chair Scharff: So, a summary of what the UAC ...

2:36:33:

Commissioner Schwartz: Well, ...

2:36:33:

Chair Scharff: ... has to say on this. I mean, that's the purpose ...

2:36:36:

Commissioner Schwartz: OK, ...

2:36:36:

Chair Scharff: ... of coming tonight is to hear the UAC representative ...

2:36:40:

Commissioner Schwartz: Right.

2:36:40:

Chair Scharff: ... of the UAC. What was their thoughts, recommendations?

2:36:43:

Commissioner Schwartz: So, what we have been talking about is, one of the benefits of doing AMI and other smart grid kinds of activities are the variability that you're allowed to give to different people in the community. So, what is the trigger for someone to change their behavior, because they're going to either -- you have an incentive as a utility to want to have more usage at a certain time of day, versus less usage at a different time of day. So, one of the issues that got brought up is, some people are going to be motivated by -- is it the right thing to do for carbon? So, when you plug in your electric vehicle at noon, you're using up solar electrons. And so, they may be motivated to do it then, whether the price is more or less. That's a different thing. Other people are completely motivated by price. And so, you want to give them a price trigger, to get them to do what you want. OK? And I think that what we're not -- what didn't come up today in the conversation is that these -- these -- taking advantage of what people have cared about, and what has proven in jurisdiction after jurisdiction. 'Cause we are late to the party on that. And this is one of the things that I think the UAC has come to realize, is that Palo Alto is not on the leading edge of this. We are a late adopter. OK? And so, there are a lot of lessons that we can take from other communities. OK?

2:38:19:

So, one of the things that has come up is the idea of proactive maintenance. So, one of the things that utilities have found they learned, from the data that they get, and being able to analyze all the usages available -- that they understand that if they fix a transformer, oh, it looks like it's about to fail over there, they can get it out, and they can get it fixed, so that people don't go down, and don't have a loss of service. So, one of the reasons why you have happier customers is because you have better outage detection, you can communicate effectively with people when it's going to be back up. Right now, our system is very antiquated. And we can't do a good job at all. You can look at things on a house-by-house basis. So you can understand exactly, and pinpoint where the outages are. So the crews can go more specifically to where they need to be. So, one of the cost savings that happens operationally is because you are -- you are going to precisely the right point. And, again, sometimes you can even catch it before. And, again, we have a lot of lessons learned, throughout the state, because -- you know, we're one of the last few utilities to do this. It's like having -- wanting to have Internet and not wanting to put a router in.

I don't get this analogy. In an Ethernet network, a router is a thing that figures out where switches should forward the packets they receive, based on the packets' IP addresses. The functionality of a router has to exist somewhere in the network, but it doesn't have to exist in the equipment at every home that wants to have Internet service. Perhaps Commissioner Schwartz is talking about the thing in a home that uses Wi-Fi to connect the home's wired network port to one or more portable computers in the home. If so, I don't think that thing is "foundational." There's no reason a portable computer can't use a wire to connect to the wired network.

You know. We're -- You -- When you have -- this is technology, that, as Shiva talked about, it's now really foundational technology.

2:39:34:

Another thing we talked about at the UAC is the concept of rate design, and rates as incentives. So, right now, it doesn't matter, in Palo Alto, when you use your electricity. It's the same thing -- OK, there's some minor tiers. But one of the things you can do with rate design is, you can help push the system to be what you want it to be. OK? And so, we can't -- So, right now, everybody has to be on the same rate.

Businesses and residences aren't on the same rate.

Another thing that we've talked about has to do with the idea of conservation. So the average -- Right now, everybody who conserves has to do it completely voluntarily. They have no information. They have no feedback. They have no idea whether they've done a good job 'til the end of the month.

The monthly bill IS feedback.

There's nothing that's anything close to current or real time. So, one of the things that has come up in a lot of places is, they've done something like prepay, which is really good for places that have a lot of students and people who are in rental housing. That if they know that they've put money into an account, and they're -- it's basically, they're working off their own money, then you get -- you get conservation rates that are in the 14 to 17 percent area.

I don't understand. Why isn't it the customer's own money whether it's prepaid or billed?

So you can really do things that are a lot more nuanced. OK? Because you can give people choices of the kinds of programs that are of greatest interest to them. And so that's been one of the points that the UAC has been discussing over the last year, not just in one session.

2:41:23:

But we've been -- we've been talking a lot about the idea of coincident versus non-coincident demand. So, when the generation hits and when you're using it -- OK -- is not necessarily the same thing. So, you guys talked about storage earlier. You know, the way storage works, the scale that you do storage with, the way you give people incentives. Are you asking people to invest in their own business, to -- to do storage, versus you do something on a utility scale? So, these are complicated issues that take more than just a couple of seconds to discuss.

2:42:04:

Another thing that we've talked about is the idea of estimates -- estimating your bill versus really more accurately knowing. So, one of the things that AMI has done a lot of is that, instead of just guessing how much somebody used, you actually know. And so, they found out that in a lot of -- particularly -- places with older meters, you have meters that were running slow. OK? And, all of a sudden, you have -- more accurate, and you found somebody's been using more electricity than you thought they were. Now, what do you do with that?

How do you know which meter is more accurate?

Do you just give somebody a higher bill? OR, do you do something like San Diego Gas & Electric did, where you -- you write a report, find out who's way out of whack, you proactively go talk to them, and you -- And you say, you know, we have not been charging you for all the electricity that you have been using, and -- because you had a slow meter. But now it's going to be accurate. So, somebody's bill might go up. But if you handle this in the right way, they're not going to be mad, because you're not going to back-charge them for all the stuff they didn't pay for.

2:43:07:

So, that's just one example of something that we've discussed. Another thing has to do with opting out. OK? So, that has come up several times. And one of the best practices is that -- starting the project right at the beginning. Know that you're going to have an opt-out policy, that if somebody doesn't want a smart meter, it's OK. Just tell them what it's going to cost to still have a meter reader come and check their place. OK?

I agree that the City should have an opt-out policy. I don't agree that there should be just one opt-out option.

In this TEDx talk, Jeremy Johnson describes (at 3:00) how he found out that smart meters can cause health effects.

<https://www.emfanalysis.com/tedx-wireless-wake-up-call/>

He speculates (at 12:48) that if smart meters were connected via fiber, or were designed to transmit just once or twice per day, they'd be safe.

That is another example of something we've discussed, that is a practice that they've dealt with in other jurisdictions, that if we have an open dialogue about how this stuff works, then we'll have a positive experience for the community. OK?

2:43:59:

And -- I'm just trying to think if there's something -- You know, there's -- There's just a lot of material that's out there, that's already been developed that we can learn from. And I just think that it will be really useful for us to know what is the way that we, as the UAC, need to share the information with you, to be able to do it? Do we have to write a colleagues' memo? So that we can get at more of the detail of this?

Recall that Commissioner Schwartz hijacked the Commissioner Comments portion of the 11-04-15 UAC meeting to deliver a 20-minute tirade in opposition to municipal FTTP. It was allegedly based on a draft a colleagues memo, but no actual colleagues memo ever materialized. Chair Foster said he received guidance from the "City Council's office and Ms. Mullan" (from the City Attorney's office) before allowing this hijacking. UAC Liaison Scharff was absent. (See a transcript and my comments here, pages 24-35.) <https://www.cityofpaloalto.org/civicax/filebank/documents/49931>
As far as I know, Council never censured anyone for it. But it should be obvious that, in a meeting of a deliberative body like UAC, it should not be OK to just give a commissioner 20 minutes to advocate a point of view on a topic that hasn't been agendaized and then forbid the other commissioners to weigh in.

We had hoped that there would be more of an opportunity to discuss things at the joint meeting that we had earlier year. But it really -- we really didn't cover -- you know, didn't have time to cover that much.

I think the joint meeting between Council and UAC should be an opportunity to discuss things like whether the UAC has the resources to do its job. For example, UAC used to have verbatim minutes, but now they have sense minutes written by staff. So UAC's advice is filtered through staff. UAC doesn't get to decide what the agenda items of its meetings are, or whether they're "action" items.

So, these are complicated issues. And so, you know, I think you need to tell us what you're willing to do, to be able to be educated on these things. Because we don't have the statutory authority. You do. And so, we can do -- have all the discussions in the world, and have a great conversation, and know what the issues are. And if it doesn't get passed over to you in some meaningful way, then you can make a decision that can just shoot staff in the foot, and -- or shoot the community in the foot. So, you know, I think that's the question that I'd like to ask you -- is, what's the way that we can have the exchange, so we can get at some of these subtleties?

2:49:29:

Chair Scharff: (unamplified) Well, I think that the typical way is that staff listens to what the UAC says (amplified) and then goes ahead and puts those -- and distills it, and puts it in a staff report, and says, "The UAC thought this."

It would be folly to rely only on these distillations.

That's typically the staff reports I get. Or, the UAC voted to do this, but staff doesn't recommend it. Or, the UAC made a motion to do this, but staff fully supports that. So, normally, what happens is, your conduit is through staff.

That's a bad idea. Part of UAC's job is to watch what staff is doing and to let Council know when what staff is doing is a problem. It makes no sense to give staff the power to censor UAC's observations.

And, frankly, to be able to come here and give us your take on it, as the UAC.

In my opinion, Commissioner Schwartz has been presenting Commissioner Schwartz's take on it.

That is typically the way it works. And what I'm hearing you say is, you believe this to be different than all other UAC issues that you deal with.

2:46:11:

Commissioner Schwartz: I think the -- the -- Based on what I have seen in other places in the country, I think if -- that it is not a five-minute conversation. OK? And that this is a - It's complicated, with a lot of interdependencies. Because it is where everything that the staff does in the background meets the public.

2:46:40:

Chair Scharff: So, ** ...

2:46:40:

Commissioner Schwartz: OK? It's the interface point.

2:46:42:

Chair Scharff: So, today, we're being asked to recommend that Council accept the smart grid assessment and technology implementation plan.

2:46:48:

Commissioner Schwartz: Right. And I would encourage you to do that.

2:46:50:

Chair Scharff: So, I think that would be the first question I would ask the UAC. Did the UAC recommend that we accept the smart grid assessment and technology plan?

2:46:59:

Commissioner Schwartz: Yes.

2:47:00:

Chair Scharff: OK. Was there anything in the staff report that the UAC thought should be different? Was there any motions that said, you know, we don't like THIS part of it? I mean, that's really what we look to the UAC to do. We look to the UAC to read the stuff -- go through it -- it's fairly long, the stuff you get -- and say, yes, we've discussed all of this. We support this. But we don't support X. Or we think that Y should be added. That's really what we look for.

UAC is severely out of practice in the area of expressing itself with motions. Is Chair Scharff saying that whenever UAC considers an item that is not an action item, Council is going to ignore the result?

UAC's current rules of order don't permit amendments, just motions and substitute motions (nested to any level). I think it's not a best practice.

We look for a crisp and clear -- what staff is recommending. 'Cause, for the most part, we rely on staff. And it's this discussion that the UAC has with staff. The UAC can make separate recommendations to Council -- which staff should pass on, frankly.

Whatever staff chooses to pass on can be distorted.

And then they come to us. It's not a discussion at Finance, or at Council, with the UAC. That's not the way it works. ** ...

2:47:53:

Commissioner Schwartz: OK. Well, when they give -- OK. So, they're pushing a lot of information at you. So, obviously, things are put in bullet points in a short phrase. OK?

2:48:03:

Chair Scharff: And that's why it's important to have someone from the UAC come and say -- well, it's in a bullet point phrase, but when we discussed it at the UAC, there's this nuance that I think -- or that ** ...

2:48:13:

Commissioner Schwartz: Well, that's what I was hoping to do when I wanted to speak up earlier -- was, I wanted to say, OK, in the context of this bullet point, here's what the conversation was. And to have to keep it 'til the end is a little trickier.

2:48:24:

Chair Scharff: Actually, that's not the role of the UAC. The UAC does NOT sit there and comment on the staff report as we go through the staff report. That's ...

2:48:30:

Commissioner Schwartz: Well, I'm talking about when you were having a con- -- So, I've been to other Finance Committee meetings before, where we had a chance to have a conversation. So -- They weren't necessarily ones that you were chairing.

2:48:44:

Chair Scharff: OK, ...

2:48:44:

Commissioner Schwartz: So, in other circumstances -- um -- I sat at the table with everybody, and we had a conversation about it. And so that's why I came tonight, thinking that that's what was going to happen. And if I knew I was going to do something else, I would have prepared something differently.

2:48:59:

Chair Scharff: OK.

2:48:59:

Commissioner Schwartz: Um. But -- ah -- you know, I think there are expansions. And, here, again, you know, I think we can't ask this staff -- who has not been through an AMI installation before -- to be able to have at their fingertips every single thing that has come up at -- in every jurisdiction. I mean, I think that's not a realistic -- You know, I -- I'm certainly going to do everything I can to be supportive, and to do what I can to help them do it as well as possible. But, you know, I -- it's not -- it's not -- it's not reasonable to think that they can have every single thing in their head for something they have yet to experience. And, you know, I just don't know how to get around that, in terms of -- But yet -- and when they give you a summary, it's reasonable to me that they're going to give you a summary with bullet points. That can't have all the depth that you might need to know. Because it would be, then, such a huge document, you probably wouldn't read it.

2:50:11:

Chair Scharff: Fair enough. All right. Thank you very much.

2:50:15:

Council Member Tanaka: (unamplified) Can I ask a question?

2:50:15:

Chair Scharff: Sure.

2:50:16:

Council Member Tanaka: OK. Well, first of all, thank you to UAC. And thank you for coming out here to speak with us. So, actually, I had -- my questions for you are around -- they -- staff's talked about how the data analysis cannot be outsourced. And I guess, given your experience, what have you seen in other municipalities, in terms of -- does -- Because the project would actually look pretty good if we didn't have to have, you know, four expensive staff members on this side of the chart. Right? And I guess my question to you is -- is, do we really need to have four unionized staff members to do this? Or can this be outsourced? What have you seen in other cities?

2:50:58:

Commissioner Schwartz: So, there's a -- you see a combination of things. So, there are certain functions that you really want to have people on staff for. There are other functions -- like when you're doing the meter installation, most -- most utilities use a combination of their own staff and, depending on how fast they're deploying, they'll use contractors. To help get everything done, if they're trying to do a rapid installation. A deployment. OK? To have people on staff -- We already are so short-staffed, as a utility, that the idea that they'd want to have some people who are available and around and are on staff who can do it, makes a lot of sense to me. Again, the detail from that chart doesn't give me exactly which jobs are going to be ...

2:51:44:

Council Member Tanaka: No. I think -- I don't know if you were here, but ...

2:51:46:

Commissioner Schwartz: I couldn't hear everything.

2:51:46:

Council Member Tanaka: Oh. Can you tell me, what were the four jobs you said again?

2:51:49:

Shiva Swaminathan: Yeah. So, the one is AMI administrator. To administrate the network and the health. Data Analyst. And then two field staff, to fix problems as they arise in the field.

2:51:58:

Commissioner Schwartz: Yeah. So, those are kind of roles that people typically have in-house. You know. It's not a ...

2:52:04:

Council Member Tanaka: ** You can't have outside vendors take care of it?

2:52:07:

Commissioner Schwartz: Well, I mean, you can have some of the things done outside. But part of -- You know, I think part of the way utilities function is -- there's got to be people inside who know what's going on. And if everybody's a contractor, you don't necessarily have that consistency. OK? And that ability to ...

2:52:28:

Council Member Tanaka: I get it. I mean, ...

2:52:29:

Commissioner Schwartz: Yeah.

2:52:29:

Council Member Tanaka: ... I'm more -- I'm pushing on this just because I'd like -- Personally, I'd love to see this pencil out. But it's just -- it's so on the edge right now. And so, if this could -- if this could be outsourced, and make the project positive, that would be a great thing. That's why I'm trying to -- It sounds like the answer's no. So, it is what it is.

2:52:49:

Commissioner Schwartz: So, there's an economic analysis that I worked on with the Brattle Group, that looked at sort of different utility models.

This analysis? "The Costs and Benefits of Smart Meters for Residential Customers" (July 2011)

<http://www.brattle.com/news-and-knowledge/publications/archive/2011>

I don't know if it's available online. Have the costs and benefits changed much since 2011?

And how do the benefits -- what are the -- sort of the economics of doing -- of doing AMI or not, and what are the benefits. And -- pretty much in most -- in all cases, it works out to be of value. And what utilities have found -- So, there's a project going on now called the Voices of Experience. And -- but that's part of a DoE initiative.

This initiative?

https://www.smartgrid.gov/featured_initiatives/voice_experience_insights_smart_grid_customer_engagement.html

And what they're doing, they're looking -- they're talking to all these utilities about what have been the benefits. So, even things that were not necessarily quantified in the initial business cases -- the benefits they're getting are proving to be so valuable -- OK? -- that they're like -- we just wish we had known about this beforehand, so we could have put something in the rate case to say this was going to be useful. Because they didn't -- they didn't even know how much they were going to get from it until they actually got in the middle. And that's been a very consistent message that's come back, both from municipal utilities, as well as investor-owned utilities.

2:54:06:

Council Member Tanaka: OK. Well, my second question is -- um, is -- and I'm not sure if this is just for you or for staff, or maybe for both -- Given that we are late adopters -- And I kind of believe that, because I see -- I see smart meters on a bunch of other cities, so I kind of think that's probably true -- You know, if we do embark on this, are we -- is it likely that we're going to get like one bid on this project? Or would there -- You would think there'd be a ton of contractors who have just finished a PG&E rollout. And so we would have a very competitive bidding environment. I would assume.

2:54:42:

Commissioner Schwartz: Well -- But PG&E rollout has been years ago. But there certainly are plenty of active participants in the market. So ...

2:54:49:

Council Member Tanaka: So we should get some active bidding on this project. And so, the numbers here should not totally out of whack. We shouldn't be like -- kind of like -- oh, sorry, it's double what we need -- you know, 20 percent contingency, or something like that. OK.

2:55:02:

Chair Schwartz: (unamplified) All right. Any other questions? Thank you very much. Um ...

2:55:07:

**: Microphone, please, Greg.

2:55:08:

Chair Schwartz: (unamplified) Oh, sorry. (amplified) All right. So, now we return to Council. And, any comments, questions, motions?

2:55:17:

Council Member Kou: (unamplified) Question.

2:55:17:

Chair Schwartz: Go ahead.

2:55:18:

Council Member Kou: So, you know, this grid system that you have -- So, this is all going to be the -- using what -- wireless?

2:55:29:

Shiva Swaminathan: Correct. So, the electric meter has a radio. The gas and water will talk to the electric meter.

As I understand it, gas and water meters will talk with some electric meter, but not necessarily with "the" electric meter that serves the same premises.

Send their consumption information. To the electric meter. And the electric meter will talk to each other. And we'll have about 30-50 take-out points, which will have a Verizon or AT&T cell card in it. It will take the data out.

2:55:54:

Council Member Kou: Well, I'm glad to hear you say, "Verizon or AT&T." So you're not just kind of -- only on Verizon. You're going to explore the other carriers, right?

2:56:04:

Shiva Swaminathan: Yeah. Yes.

2:56:05:

Council Member Kou: But also, I -- kind of my question is -- you know, we're using the Wi-Fi system and, you know, this kind of thing. Why are we not leveraging -- I think mostly, you know, with Jeff -- we have this question here -- why are we not leveraging our fiber network -- you know, FTTP / FTTN -- whichever one it is?

2:56:26:

Shiva Swaminathan: We could -- we have no -- We have made a decision on that.

Is staff saying that staff has decided not to give Council the opportunity to think about it?

So, the 50 take-out points -- they're called the ...

2:56:37:

Dean Batchelor: Gate-keeper.

2:56:37:

Shiva Swaminathan: Gate-keeper. Thank you. They're called the gate-keeper. Which is a take-out point. If there is a suitable point -- has fiber in it -- we can use fiber to take the project out. But I think what Jeff is probably also talking about is, for each of the 30,000 electric meters, which are at homes -- so, fiber-to-the-home -- we have no intention of using fiber-to-the-home -- fiber at home -- to send the data from each electric meter at the home. So ...

2:57:09:

Council Member Kou: So, right now, we're -- So, there was the node. Right? There was the ...

2:57:14:

Shiva Swaminathan: Gate-keeper. The gate-keeper is at ...

2:57:14:

Council Member Kou: That's the Gate-keeper.

2:57:15:

Shiva Swaminathan: Correct. So, what you have here are the gate-keepers. That -- We expect about twenty -- 30 to 50 around town. Which will gather all this information and -- through the cellular network. OR using the fiber. To send it out to the cloud. OK. But these are -- the electric meters are about 30,000 electric meters. And about 20,000 gas and 20,000 water. So, the network is -- between these electric meters here -- this is a network. They talk to each other. And send it over through the ...

2:57:55:

Council Member Kou: But through the network -- it's not -- it's through the Wi-Fi again.

2:58:01:

Shiva Swaminathan: No. It is ...

2:58:01:

Council Member Kou: No? It's through the radio signals ...

2:58:02:

Shiva Swaminathan: ... through its own mesh -- it's own wireless mesh.

2:58:05:

Council Member Kou: Radio signal.

2:58:05:

Dean Batchelor: Radio signal.

2:58:05:

Shiva Swaminathan: Correct. Right.

2:58:06:

Council Member Kou: OK.

2:58:07:

Dean Batchelor: So, the meters talk to each other. So, as your meter jumps to your neighbors. Then it jumps again to the next neighbor. And so on, and so on. And then it'll get to a collector.

2:58:16:

Council Member Kou: I see. And then, at the gate ...

2:58:18:

Dean Batchelor: It's a mesh. It's a mesh network.

2:58:19:

Council Member Kou: I see. And then, at the gateway, that's when it uses the ...

2:58:23:

Dean Batchelor: So then, that way, it could -- we could use cellular. Which would then send it to the cloud. And then send it back to us. For the billing and purposes. Or, we could use our existing fiber, if it's close ...

2:58:36:

Council Member Kou: Um hum.

2:58:36:

Dean Batchelor: ... and then we could use our fiber network. So, we wouldn't have to have -- If the number comes out to be that we need to have 50 of these gateways, maybe we do only 25 through cellular, and maybe 25 through our fiber. Maybe. Depending on how the network would run. So there is a combination.

2:58:55:

Council Member Kou: OK. Um. So, what is the -- I mean, it's a great plan. And all. I mean, I think it's -- it's going to be really effective and productive in reducing carbon. And also, the pricing and everything. But is this going to be discussed at Council? Or this -- Is the intention for us to be -- putting this onto Consent if we all say -- I mean, I think this is valuable to be discussed.

2:59:25:

Vice Mayor Filseth: (unamplified) There's no way this is a Consent item.

2:59:27:

Chair Scharff: Yeah. I didn't think it was either.

2:59:29:

Dean Batchelor: No. I think the idea was -- is that we would put it on Action.

2:59:31:

Council Member Kou: OK.

2:59:31:

Dean Batchelor: And then we would have a full conversation at the Council level.

2:59:34:

Chair Scharff: Well, what you're asking for, at THIS point -- right? -- is really the preliminary steps. I mean, you're basically looking at -- we're not going to start this until after we finish with -- I forget the acronym -- CS --

2:59:48:

Jon Abendschein: CIS.

2:59:49:

Chair Scharff: The CIS. Right. Which is two years away? Three years away? Right? So, ...

2:59:56:

Shiva Swaminathan: We'll know by middle of next year what the timeline of that is going to be.

2:59:58:

Chair Scharff: Right. So, I mean what this says is, let's go ahead and move forward in having a plan that we're going to do this. That's how I read this. I read this as, really, no commitment to do this. This is, let's have a plan to do this. You know. And is Council interested, at this point? And I agree with Council Member Tanaka. I mean, it's a -- it's hopefully a break-even proposition. I mean, there's a lot of reasons why you probably want to do this. And I'm going to support this. But this isn't exactly 100 percent, from a financial perspective. If there weren't other issues involved, I wouldn't say this is a great -- like, oh, from a financial perspective, let's do this. [laughs] You know. So, ...

3:00:45:

Vice Mayor Filseth: Well, it's sort of the opposite. I mean, I think -- I mean, what you want from us tonight -- right? -- is to validate that it pencils out reasonably, and ...

3:00:55:

Chair Scharff: Right.

3:00:55:

Vice Mayor Filseth: ... you know, it shouldn't be cancelled because the numbers don't work. I mean, that's basically what you're asking the Finance Committee to do tonight.

3:01:00:

Chair Scharff: Right.

3:01:00:

Dean Batchelor: That's correct.

3:01:00:

Chair Scharff: If you came with a \$5 million loss, for instance, I would say no. I mean, I -- Right? But you're basically saying, ...

3:01:08:

Vice Mayor Filseth: (unamplified) It breaks even.

3:01:08:

Chair Scharff: ... it probably breaks even.

3:01:09:

Vice Mayor Filseth: (unamplified) It probably breaks even, so that's not a reason it shouldn't go forward.

3:01:12:

Chair Scharff: Right. Given all the other benefits. That's how I look at it.

3:01:15:

Dean Batchelor: Right.

3:01:17:

Chair Scharff: So, I think you're probably right about it going to Council. But, on the other hand, I think -- how time-sensitive is this? I mean, was it your plan to bring this to Council, and -- I mean, I'm just looking at our meetings before the end of the year.

3:01:33:

Dean Batchelor: So, right now, we -- the plan was to come here tonight, and hopefully get an approval. And we're going to -- we're on the docket for December.

3:01:40:

Chair Scharff: Oh, you are.

3:01:41:

Dean Batchelor: Yes.

3:01:41:

Chair Scharff: OK. Good.

3:01:42:

Dean Batchelor: It's already on the docket.

3:01:43:

Chair Scharff: OK. Great.

3:01:44:

Vice Mayor Filseth: Well, I mean, if for no other reason, it has to go to Council, because -- I mean, deploying it to the community ...

3:01:52:

Council Member Kou: (unamplified) Yeah.

3:01:52

Vice Mayor Filseth: ... is not going to be a -- hey, let's go do it. [laughs] Right?

3:01:57:

Chair Sharff: OK.

3:01:57:

Vice Mayor Filseth: (unamplified) I mean, you could have (amplified) people going, "WHY DO I NEED ONE OF THESE IN FRONT OF MY HOUSE?" And so forth. And so, all that has to be ...

3:02:04:

Dean Batchelor: Yes.

3:02:04:

Chair Scharff: No, I ...

3:02:04:

Vice Mayor Filseth ... system- -- very systematic. And it's a big deal. And it's a big rollout., And it's a huge deal for the community.

3:02:10:

Chair Sharff: Yeah. And, I mean, that's actually probably the reason why you want to have a discussion at Council. Not because it's going to change the outcome. Because it's going to give ...

3:02:16:

Council Member Kou: (unamplified) ** communications ...

3:02:16:

Chair Scharff: ... it's going to give -- You know. And I don't usually go that way, but it's going to be "visibility" for the community that's important.

3:02:26:

Jon Abendschein: Just -- Also, ...

3:01:26:

Vice Mayor Filseth: (unamplified) So, the adoption is going to be (amplified) one of the factors.

3:02:30:

Jon Abendschein: I'll just also note that we're getting a lot of emphasis on that aspect of the rollout from the UAC as well. That they're emphasizing the community communications and outreach. So we'll get a lot of good feedback on both fronts.

3:02:41:

Chair Scharff: OK. All right. So, I'll move the staff recommendation. Any further comments? All right. All in favor.

3:02:51:

[All four Council members raise their hands.]

3:02:51:

Chair Scharff: OK. And we'll look forward to your presentation to Council in December.

3:02:56:

[Various speakers]: Thank you. Thank you very much.

From: [Eugene Lee](#)
To: [Lloyd, Debra](#); [McKernan, Gregory](#)
Cc: [Nguyen, Henry](#); ["NTB"](#); a2sklar@aol.com; [UAC](#)
Subject: RE: New utilities proposal for GreenAcres 1
Date: Friday, November 16, 2018 1:38:16 PM

Debra,

Thanks for your response and guidance, and as an affected Green Acres homeowner, I appreciate the efforts of you and your team on this project. The opinions I express below are those of my own. Alice Sklar, the Chair of our Green Acres One Association (GAIA), is the one to contact for community meetings. As to working with individual owners to potentially install models of pad-mount transformers on their properties, it is the prerogative of CPAU to contact owners on your own and to do so at your pleasure.

Perhaps I am oversimplifying things, but are you essentially asking us to support all of CPAU's plans before you provide us with the details? Also, while a construction-ready plan may require more effort, information on where the transformers and switches will be located (and the final number of each as well as their size) shouldn't be too much to ask especially since we need to obtain feedback from affected homeowners. When we went to the community with the latest CPAU proposal, I had thought that there were only 6 transformers and that the switches were perhaps to be placed in subsurface vaults. When the community asked for confirmation and were told that the switches were not included and that CPAU was only looking for support for pad-mounts from the community and would provide details later, that didn't make any of us look good.

Is there an actual plan associated with the replacement of our existing underground equipment which is tied to the cost estimates that CPAU has provided us with (\$360K in March, \$460K in October, ?? in December)? I had assumed that CPAU had a plan already that was used to generate the costs provided to our community, but if there isn't a detailed plan then that explains why the numbers keep changing. That also leads me to question whether those estimates are accurate.

Does CPAU have a detailed plan for any proposal made to-date to Green Acres 1? A detailed plan is vital for both CPAU and communities like ours to make informed decisions. How can we be expected to make a decision that we have to live with for 40 years or more when the word "possibly" appears so many times in your statements?

We are the first of many districts that are fully underground whom CPAU will need to replace equipment for in the coming years, so it is definitely worth the effort to determine the most efficient underground solution possible as I am sure the questions we have posed will be asked again and again. From a safety perspective, there is much to be said about the superiority of underground transformers. Below is a link to a video of a family that probably wishes their transformers were underground:

<https://www.youtube.com/watch?v=F76fOau98q4&feature=youtu.be>

While I am sure the transformers and switches which CPAU plans to install near our homes in Green Acres will be better secured, the only things I am certain of are that they will be much, much larger

than the one shown in the video and that we can never, ever underestimate the ability of children to find a way to do the unexpected.

If the goal is to pursue the solution that the community would like, then I personally do not understand why Staff is still spending precious time on iterations of pad-mounted solutions when our community survey's results clearly indicated we would like our current underground solution replaced with an efficient and cost-effective underground solution.

I look forward to guidance from you and your team with respect to the most innovative and cost-effective underground transformer solution possible. Given the ingenuity and creativity that the CPAU team has exhibited in reducing the number of pad-mounted transformers needed in the latest iteration presented to Alice, Stuart, and I have no doubt that the same energies devoted toward an underground solution can yield a great solution that the community can all get behind!!

Eugene

Eugene Lee
(415) 308-2647

From: Lloyd, Debra [mailto:debra.lloyd@cityofpaloalto.org]
Sent: Wednesday, November 14, 2018 6:32 PM
To: Eugene Lee; McKernan, Gregory
Cc: Nguyen, Henry; NTB; a2sklar@aol.com
Subject: RE: New utilities proposal for GreenAcres 1

Hello Eugene,
I'm responding here for our engineering group and copying Alice as she has also been trying to coordinate a possible community meeting.

Greg and the engineering team tried to come up with a design, following CPAU's current pad mount design requirements, for pad-mount transformers in the most discrete locations that they could find in order to try and work with the Green Acres community. They have not only worked on location but also reduced the total number of transformers. Our goal is to reduce the number of pad-mounted equipment to a minimum, possibly even limiting the above ground equipment to only these six transformers and possibly one switch box. But final design will be contingent on the final size and location of the six transformers. Our engineers have put in a lot of thought and proposed this transformer design in the hopes we could work together on finding agreeable locations and take this design step by step. Producing a full "construction ready" design is not something that comes at insignificant work and we do not have the resources to dedicate days of engineering staff time to keep redoing the design as elements are changed in response to community input. If we can agree on transformer location, we can move forward on the full design. However, the community's initial buy in on transformer location obviously does not preclude their subsequent disagreement on final design if that includes further pad-mount equipment.

At last month's meeting between CPAU staff and three of your Board members we offered to bring out cabinets and place them in the proposed locations so that the community can get a better idea

of visual impact, we also agreed that we would work with property owners on landscaping for further concealment. We would still like to come out to do this and work further with property owners.

As we also explained in last month's meeting, our engineering group recommends the pad mount design based on safety, cost, and industry standards. Notwithstanding engineering recommendations, staff has already created their best price for a non-standard subsurface rebuild cost in response to community requests for more details on the additional cost of such subsurface equipment.

Following both the direction from the UAC and our engineering group's commitment to maintain reliable service to your community, we would like to continue working with you on this rebuild. We will participate in another community meeting if you think this will be productive and, as stated above, remain ready to work more closely with property owners regarding the proposed transformer locations.

Regards,
Debbie

Debbie Lloyd
Acting AD Utilities Engineering
Utilities Compliance Manager
City of Palo Alto Utilities
debra.lloyd@cityofpaloalto.org
v 650.329.2369

From: Eugene Lee [mailto:ujeanlee@gmail.com]
Sent: Thursday, November 08, 2018 4:21 PM
To: McKernan, Gregory
Cc: Lloyd, Debra; Nguyen, Henry; NTB
Subject: RE: New utilities proposal for GreenAcres 1

Greg,

I just have a few comments:

1. I am very surprised that we do not yet have proposed locations for the switches. Depending on where they are located, that could mean more properties are affected.
2. I do not see how CPAU can expect Green Acres homeowners who have been fully underground for more than 40 years to "support" pad mounts. Communities with pole mounts will support pad mounts just about 100% of the time, but those that are fully underground will oppose them 100% of the time. That's just common sense. On our last survey, out of more than 100 homeowners, only 2 expressed **any** willingness to consider the pad mounted solution, and that was because they probably owned a Tesla, the pad-mounts are not on their property, or they didn't read the question correctly. Even a majority of

Tesla owners in our community do not support pad-mounts!! We can run surveys all day and the results will be the same.

Frankly, I do not understand how CPAU can provide us with an “alternative” plan that is incomplete. Thank you Nina for pointing out the glaring omissions. I believe switches were included in the plan proposed in March, so since they were not included on this plan, then we’ve been wasting our time considering it!!

Please let me know when we can take a look at a complete plan. However, if you are truly looking for Green Acres support, I would suggest that CPAU focus its time on the most cost-effective underground solution possible since that is the **only** plan that has received support thus far.

Eugene

From: McKernan, Gregory [<mailto:Gregory.McKernan@CityofPaloAlto.org>]

Sent: Thursday, November 08, 2018 1:11 PM

To: NTB

Cc: Lloyd, Debra; Nguyen, Henry; Eugene

Subject: RE: New utilities proposal for GreenAcres 1

Nina,

1. CPAU has not determined the locations of the switches yet, we would like to get support for the pad mount transformer before we continue on with the design.
2. We do not have exact location for the transformers because we are just trying to get support for pad mount transformers at this time.
3. It would be on the side of 611 Arastradero but between those two properties, again exact locations are not defined.
4. There are some locations where it would be beneficial to install the transformers so they open parallel to the sidewalk, there is only one location, 4285 Los Palos Ave, that has been identified as a possible location for this style of installation.
5. All existing substructure vaults will remain to be used as pulling locations for replacement wire.
6. I have not address those two existing padmount transformers until I have clear understanding how any changes that we need to make of the greater design will impact that area.

Underground district 25 on Orme St was converted in the same way that Greenacres I was converted, I was not able to find any more that fit the exact situation.

Since CPAU hasn't dimensioned out exact locations for the proposed pad mount transformers we are holding back completing a design. This was a drawing sent out to see if we could gather support for pad mount transformer and not a document considered for construction.

Gregory McKernan PE
City of Palo Alto Utilities
Power Engineer
650-566-4575

From: NTB [<mailto:aarmatt@gmail.com>]
Sent: Monday, October 29, 2018 8:33 AM
To: McKernan, Gregory
Cc: Lloyd, Debra; Nguyen, Henry; Eugene
Subject: New utilities proposal for GreenAcres 1

Dear Greg,

This past Friday, the residents of GreenAcres 1 were notified of the new CPAU utilities proposal for our neighborhood. Regrettably not enough information was provided.

In order for the residents to make an informed decision on this new proposal, you need to provide us with more details.

1. You say there are 6 transformer boxes but you have not mentioned the switch boxes.

> *Where would the switches be installed?*

2. You indicate that the boxes will be placed on the side of corner lots but the plan that was sent to us does not make clear where.

> *Exactly where, in each location, are you proposing a box to be placed?*

3. One location is particularly confusing. You supplied a photo of [4210 Los Palos Ave](#) but the plot plan seems to indicate the side yard of [611 Arastradero](#).

> *Which is it, 4210 Los Palos Ave or 611 Arastradero?*

4. You said that the boxes will be put sideways so the shorter end faces out. The hazard warning label on transformer boxes says there is to be an 8 foot clearance from the front of the box and a 3 foot clearance on each of the other three sides. With the box sideways, that means the front will be perpendicular to the sidewalk. Unless the box can hinge a different way, that means that, for those residents who have established planting, 11 feet of shrubs (and perhaps more) will have to be removed to meet the required distance from the front and back of the box.

> *Kindly make clear how the installations will be implemented.*

5. No mention was made of what will happen to the existing 11 substructure vaults.

> *What is being proposed for the substructure vaults?*

6. There are two padmount transformers in the newer section of Glenbrook. At one point you said they would be changed out with larger boxes.

> *What is now being proposed for these two pre-existing padmount transformers on Glenbrook?*

In addition, when we spoke on the phone, I asked that you provide us with *examples of other utility districts in the City that were just like ours....those which were installed fully underground when they were first converted from poles.* You said you had to research that. Looking forward to receiving that information soon.

I also requested a PDF of the plot plan for the new proposal. *Please produce one that is clearer and more precise than the one the neighbors received.*

Finally, at the August 1 UAC meeting, the CPAU was given the directive by the UAC Commissioners to work *WITH* us to come up with a solution and to answer our questions. While we appreciate that you have come up with a new proposal, you never once engaged with us as per the UAC directive. *We were to take part in the process. We have not been given that opportunity.* Plus, we still have questions that require clear answers.

The residents want to participate in this process and we need more information. Thank you in advance for working *with* us.

Sincerely,

Nina Bell
Los Palos Ave

From: [Jeff Hoel](#)
To: [Council, City](#)
Cc: [Hoel, Jeff \(external\)](#); [UAC](#); [CAC-TACC](#)
Subject: Smart meter comments
Date: Tuesday, November 20, 2018 2:16:04 PM

Council members,

Last evening (at 10:45 pm), Council considered a smart meter item and voted 8-0 (Fine absent) to accept staff's plan.

Agenda:

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=40667.1&BlobID=67628>

Staff report:

<https://www.cityofpaloalto.org/civicax/filebank/documents/67639>

I didn't notice that this item was coming until about 3:30 pm yesterday. So my comments at the meeting were sort of disorganized. Sorry about that. The latest 12-month rolling calendar

<https://www.cityofpaloalto.org/civicax/filebank/documents/66868>

predicted it would be in December. So did staff at UAC's 10-16-18 meeting (See my transcript & comments of this meeting, pages 123-170 -- specifically, page 156, at 2:34:10.)

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=40248.17&BlobID=67624>

I agreed with Council Member DuBois' suggestion to continue the item to a different date, preferably earlier in the evening, when it could receive the discussion it deserved. But Mayor Kniss did not agree.

Here's what I was trying to say.

COST

Staff says the smart meter plan should break even, more or less, over 18 years. That's one way to look at it. I think the plan commits the City to raising electric, water, and gas utility rates in order to pay for a lot of smart meter equipment, software, etc. But staff thinks that if a customer is diligent about using the information his/her smart meters provide, he/she can conserve enough electricity, water, and gas that his/her monthly bill doesn't go up, even though the rates went up. Note that when people conserve, the rates have to go up even more, to cover the City's fixed costs for these utilities.

CVR

The plan proposes to implement conservation voltage reduction (CVR), which will result in some conservation of electricity. Yesterday evening (during Council's closed session) I asked Shiva Swaminathan whether CVR required smart meters, and I think the answer was no. CVR requires feedback from some kinds of equipment, but that equipment is different from smart meters. This equipment is networked via fiber by the City's SCADA network. If CVR can be implemented independently from smart meters, shouldn't the resulting electric conservation be attributed to CVR, not to smart meters? That would change the cost-benefit analysis for smart meters.

TOU

The City's smart meter pilot implemented time-of-use (TOU) pricing, but it charged more for electricity during the day than at night. But going forward, we think that electricity will cost the City more at night than during the day, and will be most expensive from, say, 4 pm to 10 pm. So a lot of what the City learned from the pilot about how well TOU can work was with an inappropriate schedule.

OPT-OUT

The City's plan says there must be a way for people who don't want smart meters to opt out. I think it would be good to consider multiple ways of opting out.

- * If a customer doesn't get smart meters, then can he/she be credited what it would have cost to install them?
- * Could a customer read his/her own analog meters, to avoid paying a fee to have the City come to read them?
- * Could analog meters be read, say, only every other month, to halve the cost of having the City come to read them?
- * Could a customer opt for the electric smart meter not to try to talk with home appliances? (Shiva says this would be the default, but a customer could opt in if he/she wanted this feature.)

TRANSMISSION FREQUENCY

Last evening, Shiva said that the plan (not documented in the staff report) was to record electric consumption every 15 minutes but to transmit only 4 times per day. Previously, I had learned that the plan was to record water and gas use every hour but to transmit only twice per day. So, I suppose that amounts to 8 transmissions per day per premises, counting all three meters, and not counting a particular electric meter's transmissions that are just forwarding data from other meters. That's fewer transmissions per day per premises than I was expecting. I don't know whether it would allay the concerns of people who are worried about RF radiation.

LATENCY

Last evening, Shiva said the plan was for smart meters to transmit only when polled to do so. I asked whether a meter might ever initiate a transmission, for example, to report a leak. Shiva thought not. I think we might be missing an opportunity.

The staff report says that consumption information will be available to customers the day after it's measured. I don't understand why it should take that long.

CYBERSECURITY

If the system is attacked, how bad could things be? Should remote disconnect be a feature for electric meters? (The staff report says remote disconnect is not a feature for water and gas meters.)

OBSOLESCENCE

The plan assumes the smart meters would last 18 years. Lots of sources question whether that's realistic.

RELIABILITY

The plan seems to be depending on an incumbent's wireless phone network to connect clusters of meters to the central office. There have been reports in the news recently of some spectacular outages of incumbents' wireless phone networks. If the City had a citywide municipal FTTP network, that would be much more reliable. Broadband Communities' interactive database says 19 munis use their FTTP networks for smart grid.

<http://www.bbpmag.com/search.php?s0=1&cols=-co-me-st-ve-gr-te-se-ty-in&st=&ve=&gr=&te=&se=-uti&ty=-mun&qco=&qme=&qan=&qus=0&qmu=&qsu=&qpa=&qin=0>

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

From: [Jeff Hoel](#)
To: [Council, City](#)
Cc: [Hoel, Jeff \(external\)](#); [UAC](#); [CAC-TACC](#)
Subject: TRANSCRIPT & COMMENTS -- 11-19-18 Council meeting -- Item 5 -- Smart Meters
Date: Wednesday, November 21, 2018 7:12:20 PM

Council members,

Here (below the "#####" line) is a transcript of Council's 11-19-18 meeting, Item 5 -- the smart meter item. I have made some comments (paragraphs beginning with "###").

This is the video of the meeting.

<http://midpenmedia.org/city-council-152-11192018/>

Thanks.

Jeff

Jeff Hoel
731 Colorado Avenue
Palo Alto, CA 94303

#####

AGENDA CHANGES

2:46:58:

Mayor Kniss: So, as we go on to the next item, I'm going to make a change on this one, tonight. This is number 4. This is an application that deals with a rooftop access, among other things. And because we are now at a quarter to eleven, I'm going to suggest that we take public comment on this, if there is any, and that we defer this for another meeting. So, while the water board is getting up, are there any -- is there anyone here that wants to speak to number 4? Which is the rooftop item.

2:47:41:

Council Member Wolbach: (unamplified) We still need to do -- um ...

2:47:44:

Mayor Kniss: Right. I haven't started the meeting yet. Right? [laughs] I do need to go back. Right? Um. Nobody? Oh. Well, that makes it somewhat easy, then.

2:47:56:

Council Member DuBois: What about -- What about -- Liz, what about ...

2:47:56:

Mayor Kniss: Could I have a motion to put off 285 Hamilton, etc., which is our public hearing tonight? And to put this on at a date not yet certain?

2:48:11:

Council Member Scharff: (unamplified) So moved.

2:48:12:

Mayor Kniss: Second.

2:48:13:

City Manager Keene: So, technically, you have opened the meeting -- the public hearing -- and continued it to a date uncertain, by the -- recommendation ...

Technically, that intent was moved and seconded but not voted on yet. So, no, the public hearing hadn't been opened.

2:48:20:

Mayor Kniss: Well, if there's no one to speak to us, do I need to do that?

2:48:24:

[multiple speakers, unamplified]

2:48:26:

City Manager Keene: I mean, that's technically your practice.

2:48:28:

City Attorney Stump: We'll have to re-notice it anyway, since we don't have a date. So, it's not important to open a hearing. You'll have a new hearing.

2:48:34:

City Manager Keene: You don't have to do it, since we're going to have to re-notice it.

2:48:38:

Mayor Kniss: Good. So, I'm hearing we don't have to do that. We can simply postpone this ...

2:48:42:

Council Member Holman: So, ...

2:48:42:

Mayor Kniss: ... to a date uncertain. I have a motion and a second. Could ...

2:48:43:

Council Member Holman: So, ...

2:48:43:

Mayor Kniss: ... you vote on the board?

2:48:43:

Council Member Holman: Well, ...

2:48:45:

[multiple speakers, unamplified]

What -- How --

2:48:49:

Mayor Kniss: Sorry. Sorry, Karen.

2:48:49:

Council Member Holman: How long do we think this would really take? How long do we think this would really take? Because we've got staff and a planning commissioner, who have been waiting all this time.

2:48:57:

Mayor Kniss: I think, then, that ** next item.

2:48:58:

City Manager Keene: ... quite some ...

2:49:00:

Council Member Holman: And then, what about Item 5?

2:49:01:

Mayor Kniss: Yeah. They're waiting for Item 5. We're not -- We're -- We're taking up Item 5, Karen. We're just postponing Item 4.

2:49:08:

City Manager Keene: Yeah.

2:49:10:

Council Member Holman: [sigh] I'd rather postpone Item 5 and do Item 4.

2:49:13:

City Manager Keene: Well, in any case, you are already past your -- um -- your procedures are -- I would just remind you -- to have a check-in at 10 am -- 10 pm, excuse me -- and take up no new items, technically, after 10:30. So, ...

2:49:30:

Mayor Kniss: However, in this case -- Because these nice people have been waiting to talk to us, I think we should hear it.

It's virtually always the case that some "nice people" have been waiting to talk to Council. The

reason for Council's policy is so that Council members won't be too tired to think clearly about items they'll vote on. If Council has to disappoint some "nice people," that can't be helped.

And we can see if we can make this brief.

2:49:37:

Council Member DuBois: So, Liz ...

2:49:38:

City Manager Keene: OK.

2:49:39:

Council Member DuBois Liz, I think ...

2:49:39:

Council Member Scharff: (unamplified) **

2:49:40:

Mayor Kniss: Number 5.

2:49:41:

Vice Mayor Filseth: (unamplified) Right now, we're voting on 5.

2:49:44:

City Manager Keene: Item number 4 has been moved to be -- number 4. Thank you.

2:49:45:

Mayor Kniss: I'm sorry. Please vote on number 4. I was distracted.

2:49:54:

Mayor Kniss: OK. That passes unanimously -- and now takes us on to number 5.

2:49:58:

Council Member DuBois: So, Liz,

2:49:59:

Council Member Wolbach: We still have Changes, Additions, Deletions, City Manager Comments, and Minutes ...

2:50:02:

Mayor Kniss: Cory wants me to go back to the beginning. OK.

2:50:05:

[multiple speakers, unamplified]

2:50:08:

Council Member DuBois: So, Liz, if I could ...

2:50:10:

Mayor Kniss: So, we have Agenda Changes, Additions, Deletions ...

2:50:13:

Council Member DuBois: Liz, I'd like to move that we also postpone Item 5.

Council Member DuBois has been waiting to say this (or something like it) since 2:47:56.

I mean, it's 10:45. And I think it's actually a pretty substantial item.

2:50:22:

Mayor Kniss: Well, actually, I don't think this is going to take more than about 15 minutes. And we have Utilities staff here, who have been waiting for three hours.

2:50:29:

Council Member DuBois: Well, I mean, we just had -- Amy French just walked out. She's been here for Item 4. And [PTC Commissioner] Michael Alcheck. That's the point that Karen was making.

2:50:35:

Mayor Kniss: I didn't know she was here for Item 4. Because I asked if anyone was here for Item 4.

When Mayor Kniss asked (2:46:58), I assumed she was asking whether any members of the public wanted to speak to Item 4, NOT whether any staff members or commissioners were present for the item.

2:50:39:

Council Member Holman: That's what I mentioned. We'd had the planning ...

2:50:41:

City Manager Keene: Why don't we get through everything, and get to 5, and you decide what you're going to do on 5?

2:50:47:

Mayor Kniss: OK.

2:50:47:

City Manager Keene: Do Agenda Changes, Additions, Deletions, ...

2:50:49:

Mayor Kniss: I don't feel strongly about it. But I feel sorry for staff that's been waiting. OK. So, we had no agenda changes, additions, deletions. We went through -- Pardon?

2:51:00:

Council Member Wolbach: (unamplified) We just made one.

2:51:01:

City Manager Keene: Yeah.

2:51:02:

Mayor Kniss: Ah -- Yes. That's over and done with. But -- I have to pretend this is seven o'clock.

Why?

So, City Manager Comment?

2:51:10:

City Manager Keene: It is six hours since we started the meeting. I will pass on City Manager Comments.

2:51:17:

Mayor Kniss: What a good idea.

2:51:18:

Council Member Scharff: (unamplified) I'll move approval of the minutes.

2:51:20:

Vice Mayor Filseth: Second.

2:51:21:

Mayor Kniss: Vote on the board for approval of minutes, please. OK. [The vote is 8-0, Fine absent.] I think that takes us back to our action items. Am I correct.

2:51:37:

City Manager Keene: Yup. You have only one item before you. Right? Item number 5?

2:51:41:

Mayor Kniss: We have one item, which is number 5. And I'm going to suggest we plow through it, because we have so many other things that have come on the agenda for the end of the year.

2:51:51:

City Manger Keene. OK.

ITEM 5 -- SMART METERS

2:51:51:

Mayor Kniss: So, this is Finance Committee Recommending to Council Accept the Utilities Smart Grid Assessment and Utilities Technology Implementation Plan. And we do have a presentation by staff. And,

thank you, staff, for waiting for so long.

2:52:05:

City Manager Keene: Madam Mayor, if I could just add one thing here. I appreciate the effort. I'm sure it's a mixed blessing for our staff, who have been sitting here for hours, waiting. To stay. Hopefully, you can keep it short. This is a little unusual, in that this is just a recommendation to accept a plan. You have a unanimous recommendation from the Utilities Advisory Commission. You have a unanimous recommendation from the Finance Committee. And I guess the Finance Committee felt it was complex or interesting enough for the Council to watch this.

For more about why the Finance Committee wanted Council to consider this item, please see my transcript of the Finance Committee's 10-16-18 meeting, for this item -- PDF page 169 here.

<https://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?t=40248.17&BlobID=67624>

I just might suggest, if you can, really keep it short. All the Council has to do is accept this. And we could also send you the link to the Finance Committee meeting. And the Council members could also watch that much more involved discussion.

Council members who wanted to know what the Finance Committee thought about this item would have done well to find out BEFORE voting, not after. Still, finding out now might affect future votes.

2:52:52:

Mayor Kniss: Those are great options. So, for the staff who is here, I think you've been encouraged to give us a brief presentation. And we've also been directed to the website. And I'm also interested in whether or not Council Member Scharff has any comments to make BEFORE we even hear from staff. As to why it's on.

2:53:18:

Council Member Scharff: Well, I think it's on because it seemed like a big enough number, and a big enough thing that it should come to Council. And it's a fairly large policy choice. So, that's why we decided it should come to Council. We did vet it. We had long discussions about it. We basically decided that -- if you look at the staff report, where it talks about the cost and the break-even, on page 2, which is packet page 54 -- that, yes, given that it's probably likely to break even -- possibly a slight benefit from a -- cost-wise -- or just a minor cost negative, that it's unlikely to raise rates,

ABSOLUTELY FALSE. The smart meter plan is certain to raise the RATES of the electric, water, and gas utilities. But staff is saying that if it gives customers the information they need to figure out how to conserve enough, then their monthly BILLS might not go up. Since Council Member Scharff was part of the Finance Committee's extensive discussion on this point, I'm sure he understands it. He just misspoke.

that, given all the other qualitative benefits, that it's time to move forward on this. So that was the -- that was basically the summary of the discussion. And I would urge us to accept the report and move forward. And, actually, I'll make that motion. Since we don't have any members of the public to speak, do we?

2:54:10:

Mayor Kniss. No.

2:54:10:

Vice Mayor Filseth: One.

2:54:11:

Mayor Kniss: Oh, wait. Jeff Hoel.

2:54:12:

Council Member Scharff: All right. Then I'll make it after Jeff.

2:54:18:

Mayor Kniss: Were you suggesting Jeff come forward now?

2:54:20:

Council Member Scharff: I'm happy to have him come forward if he wants to.

2:54:22:

City Manager Keene: We have ONE slide.

2:54:23:

Assistant City Manager Shikada: Yes. Council members, I would note that ...

2:54:28:

Mayor Kniss: Hang on a minute, Jeff.

2:54:28:

Assistant City Manager Shikada: ... in the spirit of adaptation, staff has boiled everything down to ONE SLIDE. And if you have the patience, I think we'll do a quick, brisk walk through it.

2:54:37:

Mayor Kniss: OK.

2:54:38:

Assistant City Manager Shikada: Very good. All right.

2:54:38:

Mayor Kniss: And, Jeff, we'll call on you as soon as they're done.

2:54:42:

Assistand City Manager Shikada: Should I hand it off to Shiva Swaminathan.

2:54:45:

Shiva Swaminathan: As Council Member Scharff said, we have done an extensive discussion at the UAC and then, later on, at the Finance Committee. So -- So, if the Council provides approval, we'll start beginning work on this. But the actual contracts related to the work would come later on. And the budgets will come later on, with Council approval. But this is start. It's a -- probably a 5+-year process, where we have to implement the City's CIS system and the ERP system before we can implement. So, this won't be implemented until about 2023. In terms of highlights, on the customer bill, it's a break-even

proposition. A \$19 million investment, but break-even over 18 years. If the costs are higher -- and we ran some sensitivities -- if the cost were higher and the value less, there's a potential for a 1 or 2 percent higher bill for our customers. But if we reserves, which we currently have, the electric bill is likely to be a half a percent less.

2:55:54:

We could use our fiber-to-the-node infrastructure for part of this traffic for the data from the smart grid. And we'll explore that down the road.

2:56:10:

So, the decision in front of you is -- And this is the timeline.

The timeline is on another slide.

Looking at the different implementation of the different software systems we need to implement before the AMI could come into place. And this is our recommendation.

The recommendation is on another slide.

2:56:31:

**: (unamplified) ** one slide **

2:56:32:

[laughter]

2:56:36:

City Manger Keene: (unamplified) Well, that's what it looks like.

2:56:37:

[laughter]

2:56:39:

Assistant City Manager Shikada: I can't trust anyone anymore.

2:56:40:

[laughter]

2:56:45:

Assistant City Manager Shikada: (unamplified) All right. I think we're ready for questions. Thank you.

2:56:48:

[laughter]

2:56:53:

Mayor Kniss: (unamplified) All set?

2:56:54:

Assistant City Manager Shikada: We are all set. Thank you.

2:56:56:

Mayor Kniss: (unamplified) OK. Jeff. (amplified) I think you're our only speaker on this item. Thanks for being so patient.

2:57:02:

Jeff Hoel: No problem. So, I just wanted mention a couple of things. The claim is that this thing breaks even in 18 years. But in order to think that that's true, you have to squint your eyes and look at it in a very peculiar way. What I think is going on is, we're going to buy a bunch of new meters and stuff, and it's going to cost a lot of money. And staff, in order to pay for it, is just going to raise rates. You have to understand that first. They're just going to raise rates. But then, they're going to tell the public, oh no, you can still end up not paying any more money, if you just figure out, how do you use the information you get from these meters to conserve your use of resources. And we're going to say that everything you conserve was BECAUSE of these meters. I -- I think that's kind of screwy.

2:58:11:

Next point. The pilot project, so far, has a certain amount of data about what people are willing to do. But the rates that -- the time-of-use [TOU] rates that they use for that said electricity was more expensive in the day than during the night. And we're heading towards an era where exactly the opposite is true. So we have no data on what people are likely to do if that's what the TOU rates are.

2:58:50:

Oh, yes. I'd also like to put in a good word for opt-out. Some people don't like these meters -- would never have one. Staff says we've got to have A plan for these people. My claim is, you should probably think of multiple plans. Like, if somebody doesn't want to get a smart meter, can you have the person read his own meters, and not charge him any more money? Or, could you have staff read the meters every other month, so that the extra amount you charge for people like that is half of what it would otherwise be? And so forth. And then, in the case that somebody doesn't really mind the fact of the meter, except that he'd like to cut down on the amount of transmissions that the meter uses. I have an impression now that what staff intends for the amount of transmission that the meter -- ah -- uses is pretty small. But that's not published anywhere. And so, as -- one next step would be to write down, here's -- here's how safe -- how -- you know, how few transmissions they use. OK. That's all.

3:00:11:

Mayor Kniss: Council Member DuBois, did you have on your light?

3:00:14:

Council Member DuBois: No, but I can talk.

3:00:15:

Mayor Kniss: [laughs] Go right ahead.

3:00:18:

Council Member DuBois: Um -- So, overall, thank you for the plan. It looks good. I really just wanted to make one point. And if it's all right with people, I'll go ahead and move the staff motion. To accept this report.

3:00:37:

Council Member Scharff: I'll second.

3:00:37:

Council Member DuBois: So I guess the slide, you know, said, you know, we should evaluate whether we can leverage our dark fiber optic backbone.

The slide said, "Evaluate whether the City can leverage existing dark fiber optic backbone or future Fiber-to-the-Node (FTTN) network (pending approval of business case)." I don't know what this means. For example, does it mean that staff wouldn't even consider using FTTN infrastructure for smart meters until after a business case for FTTN had been approved? Since the City's dark fiber network (a.k.a., the existing dark fiber optic backbone) already exists, why hasn't staff already evaluated whether it could be used for smart meters?

I would just like to make that a little stronger. And just, you know, strongly encourage that we look into that. And it seems to be a really unique opportunity. We can multiply use of our enterprise fund, along with our fiber fund, and really benefit residents in Palo Alto. So, I think as we move to smart grid and to smart city, we really should consider, like, how we can leverage that money. And if a portion of this project can be used to fund the fiber-to-the-node project, I think it's a win-win.

In other words, whether smart meters will use FTTN might affect whether FTTN's business case can be approved.

So, you know, I guess, you know, it was in one of the slides. I don't know if we need to add that to the motion, as part of the plan. I mean, that -- I see staff nodding their heads. So, maybe, Ed, you could just comment. Like, you know, what is the intention, in terms of trying to leverage the dark fiber network?

I assume that Council Member DuBois is talking about leveraging FTTN, not the City's existing dark fiber network. But I'm not 100 percent sure.

3:01:49:

Assistant City Manager Shikada: So, I'll let staff weigh in on this. Personally, I think my two cents would be that, as part of moving forward with the business case on the fiber-to-the-node next step, that we would need to drill down some on the design that would maximize the benefit for the utility purposes. And, hopefully -- and I think this is a matter beyond my knowledge -- that the design associated with that purpose will complement what we are looking to, in terms of the citywide deployment. And, assuming that that's the case, green light. We'll go.

3:02:30:

Council Member DuBois: I mean, I'd hate to have this project be six months ahead and not use it. So, if we can align those things, like I said, I think it's a win-win.

3:02:38:

Assistant City Manager Shikada: Agreed. Agreed.

3:02:40:

Council Member Dubois: OK. Thanks.

3:02:45:

Mayor Kniss: OK. Council Member Holman, did you have your light on? OK. Are there any other comments?

3:02:53:

Council Member Holman: (unamplified) Does Greg want to speak to his second?

3:02:55:

Mayor Kniss: Pardon?

3:02:56:

Council Member Holman: (unamplified) Does Greg want to speak to his second?

3:02:58:

Council Member Scharff: (unamplified) I don't need to speak to my second.

3:03:02:

Mayor Kniss: OK. In that case, then, is there anyone else who wants to speak before we -- before we vote? Not much interest after this -- high-level one. OK. In that case, let's vote on the board. Passes unanimously. [8-0, Fine absent] Thank you, Finance Committee, for bringing this forward.

From: n.stein@juno.com
To: [UAC](#)
Subject: Underground Utilities for Green Acres I
Date: Friday, November 30, 2018 7:34:23 PM

Dear Commissioners,

Utilities' second proposal is not a good compromise. It is still not clear to us why it is so important to bring the pad mounts up above ground. My understanding is that is has been a priority of the city since the seventies to underground our utilities. Not bring them back up. There are good reasons for safety and appearances to keep them underground.

Utilities' strongest argument to bring them back up is that is safer for the utility workers. Why then are transformer boxes all along Arastradero (which runs along our neighborhood) currently being kept underground? There is quite a lot of work being done on Arastradero and most of the boxes are being kept underground. Furthermore, at the very large Bowman school annex site, new boxes were put underground. This is at a commercial site where there is less concern about aesthetics and where these boxes are less likely to be intrusive. In addition to Arastradero, further down the road there is a large project going on right now taking down overhead wires and putting wires and transformers in large vaults underground all along Charleston.

If Utilities can put the boxes underground on nearby streets, why not keep them underground in our neighborhood? Utilities has admitted that they can put them underground but they want us to pay for them. Their cost analysis does not apply -- the info they gave us was for neighborhoods where the utilities are still on the poles and all the wiring has to be put below, including digging up the streets. Not applicable to our neighborhood. And, our Utilities Department has had surpluses for decades. Those surpluses should be more than enough to cover maintenance and upgrading our equipment.

Clearly, the boxes CAN be put underground as is the case on many streets in Palo Alto.

Clearly these boxes CAN be serviced safely when the workers are well trained and well equipped.

We would very much like to keep our boxes underground. The city should not renege on the promise made 45 years ago to underground our utilities.

Sincerely,

Nancy and Gunter Steinbach
4267 Pomona Avenue

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visionrx20.com

<http://thirdpartyoffers.juno.com/TGL3132/5c020121917d71217934st03vuc>



From: [NTB](#)
To: [UAC](#)
Cc: [Lloyd, Debra](#); [Eugene](#); [Nina Bell](#)
Subject: UAC December 5 meeting, agenda item: Greenacres 1 - utility upgrade
Date: Monday, December 3, 2018 11:15:32 AM

Dear Commissioners,

At the end of October, Greenacres One homeowners received a rough outline of a new proposal to upgrade our fully underground utilities. This is the first real outreach from the CPAU that we have had since your August 1 meeting at which you directed the CPAU to work with us on finding a solution.

Their new proposal is basically to once again install pad mounted equipment, this time on corner properties that have lengthy sides exposed to the street rather than installing them directly in a homeowner's front yard behind an existing substructure as was done in their first proposal.

We believe that this new proposal shows the beginnings of flexibility on the part of the CPAU and indicates that the CPAU is finally paying some attention to our situation and position. However, we have been waiting in good faith to 'work with' the CPAU to find a solution to our utility upgrade that will leave the equipment as it currently is....entirely underground. From the very outset, we have endeavored to make it clear to the CPAU that the homeowners are interested in receiving serious proposals that will allow our high voltage equipment to remain, as it now is — entirely underground.

In his March 12 letter to our neighbors, Ed Shikada, in referring to the upgrade, stated that: ".....the utility will not dictate the approach" and yet, the CPAU continues to force a pad mount solution on our unique, fully undergrounded neighborhoodwhich the residents paid for when it was originally installed.

The first proposed group of utility box "recipients," along with the new proposed group of "recipients," as well as other concerned parties from the neighborhood met to discuss the situation.

Virtually all of them responded in common that:

- they do not find the CPAUs rationale for such pad mount equipment compelling
- they object to the CPAUs forcing on us a pad mount solution
- they are emphatically not in favor of such pad mounted equipment in our neighborhood

We remain willing to actually work with the CPAU, as per the UAC directive, to produce a detailed proposal/proposals from the CPAU that results in an underground solution.

We ask that, if the CPAU wishes to pursue this course, to please contact and work through our spokespersons: Eugene Lee and Nina Bell

Thank you.
Sincerely,

Eugene Lee

Nina Bell
Michael Maurier
Diane Baldwin
Ning Mosberger-Tang
Arjun Saxena
Beth Whittenbury
Winston & Garbo Lee
Jean Heselden
Nancy & Gunter Steinbach
Weidong (Steve) Chen
Howard Belfer
Joon Lee
Lea Bowmer
Lin Liu
Yu Fong
Ann Vogel
Carol Tannenwald
Olaf & Johanna Kaestner
Galina Ermolin
Theo Colbert
Stella Hearn
Frankie Farhat
Debbie Chausow
Jonathan Sue
Jenning Chee
Alex Liu
Ruth Kaufman
Lynn Hori
Deedee Shute
Joan Sakaldasis
Deb & Fred Kurland

From: [ForestLight](#)
To: [UAC](#)
Subject: For Inclusion in the UAC December 5, 2018 Meeting Packet Agenda Item IX-Greenacres
Date: Tuesday, December 4, 2018 1:35:46 PM
Attachments: [Letter to UAC - December 5 2018 Meeting.doc](#)

Agenda item IX-3
Greenacres Rebuild
Thank you,

MMaurier
Greenacres One Resident

December 3, 2018

To the Palo Alto Utilities Advisory Commission:

As you may recall, at the UAC's August 1, 2018 meeting which included representatives of the CPAU and many Greenacres One neighborhood residents, the CPAU presented a "report" on their plan to pad-mount above ground our neighborhood's existing high voltage transformers and switches— which are not overhead pole -mounted but all already completely underground.

At the August 1 meeting, the UAC apparently was apparently hearing a lot of brand new information on the issue and was trying hard to come up to speed it — much as we all have been forced to by this sudden attempt by the CPAU to impose a major project on the neighborhood, and a thereafter a directly related, major project on the city.

One of the most interesting aspects of this CPAU 'project' is that no one but the CPAU seems to have had any really substantive advance notice about it. There had been some retrofitting in the early the 70s but nothing much since save some far more recent ongoing undergrounding of such equipment in retail areas and alongside crowded, transit corridors — locations which were undergoing other reconfigurations.

In fact, this whole project suddenly undertaken in in Greenacres One seems to be an unheralded, unplanned, ad-hoc afterthought of some sort. As far as anyone here can tell it is last minute add-on an equally ad hoc sudden decision to '...capitalize on the presence of an available work crew from Texas' (and presumably corresponding available budget) to run an underground connection to a high voltage line on El Camino from Glenbrook Court. The two projects were apparently not pre-researched and planned. There did seem to have been much or any preliminary attempt to seriously evaluate the supposedly 'aging' Greenacres underground high voltage installations. Nor was any attempt made in advance to contact or engage with the Greenacres One residents in planning this project. Our residents simply received two days notice on the Saturday that construction on the El Camino connection work was to commence in two days time on the Monday, and that the above-ground pad mounting of the rest of the supposedly aging Greenacres One high voltage equipment would commence in August.

This whole CPAU pad mounting initiative has had at best an ad hoc, unplanned, amateur quality to it from the outset. This quality was compounded by the CPAUs later various attempts to 'sell' the project to our neighborhood residents without adequate communication, justification, response to residents questions, etc. And this has been even further compounded by the CPAUs attempts to stretch existing inapplicable policies and legal foundations to cover our neighborhood's entirely different, resident-purchased already under ground configuration.

The August 1 UAC Meeting

At the August 1 UAC meeting I was not impressed with Department's attempts to package and gloss over the problems they have created, the answers they were unable to provide justifying their insistence on retrofitted pad-mounting in Greenacres One. Nor was I impressed with the few inadequate responses the CPAU has been willing or able to provide to the many questions that should have been and answered regarding this project, the CPAU's apparent lack of willingness to respond candidly and in good faith to our resident's concerns, and the general consternation this CPAU plan caused in our neighborhood.

The Not-So-Grand CPAU Plan

At the August 1 UAC meeting, it became apparent (perhaps for the first time?) that the CPAU now plans to undertake similar “rebuilding” of a number of other utilities districts around town — which, we have been told, could total as many as 11 other districts of unknown configurations. This may have been the first time anyone has heard of the CPAU's plans to undertake this sort of work on the scale that has now come to light.

Perhaps the UAC is thinking over this bit of news with no little concern ... and justifiable alarm. An updating and retrofitting project of this magnitude would certainly seem to necessitate careful attention, pre-research, community engagement and planning in order to avoid unequal in treatment of said districts over time, to avoid setting poor, destructive precedents, and to avoid unnecessary community consternation and controversy.

Rather than launch off on ill-conceived and unplanned ad hoc individual projects, at the very least the CPAU should clearly identify the targeted districts and provide an analysis of their equipment ages and configurations, together with a tentative plan and implementation schedule for each.

Begging The Question

Since the obvious intention of the existing applicable Council resolutions/priorities listings and CPAU rules is clearly aimed at removing unsightly and unsafe overhead, pole-mounted transformers and switches and undergrounding/pad-mounting them, it begs the question: why start now with Greenacres One —whose high voltage equipment is already completely underground in subsurface vaults?

Why the CPAU chose to select Greenacres One with its already completely underground installations — which have had no failures or incidents thus far — remains a mystery.

Why Pad-Mounting?

In reading the CPAU's August 1 report references, it appears that the CPAU's so-called pad mounted 'industry standard' appears to be based on a single one-page (unsubstantiated) statement by the controversial Sempra Energy of Southern California

that Sempra's "standard" favors such pad mounting. Perhaps because it is cheap and more convenient to maintain...thus adding to this publically held corporations bottom line?

"PG&E is one of three regulated, investor-owned utilities (IOU)s in California—the other two being [Southern California Edison](#) and [Sempra Energy's San Diego Gas & Electric](#)."

-Wikipedia

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

Looking At The Safety Rationale

It appeared to most of us in August that the CPAU had chosen to base its entire case on possible questions of "worker safety. It is also clear that the Department had not much considered or included an analysis of residents'/public safety in their "safety" concerns and considerations.

Safety is not something we could or should ignore, and it seemed prudent and proper that the UAC give it the attention it deserves. Even though the CPAU has noted that it was unable to substantiate its safety rationale with any facts or statistics, the UAC offered the CPAU what we hoped is a final opportunity to back their safety rationale up with data.

But even the Department's "worker safety" rationale still apparently lacks demonstrable grounds. By their own admission at the meeting, and later in their Memorandum prepared for the December 5 UAC meeting they were unable to provide any data to support for this rationale.

In my view, if the Department was at all serious about the issue of safety as the main priority, they would prioritize getting the existing transformers and switches off the telephone poles around town and at least down on if not completely under the ground.

It now appears far more likely that falling and/or exploding overhead transformers, switches and wires provide an undeniable hazard, especially since a fire, a good sized storm or especially a sizable earthquake would provide the usual scenario of whiplashing poles, falling, high voltage transformers and switches, falling trees/buildings, exposed live wiring in the streets and on buildings and vehicles, etc. Search the YouTube videos on exploding electrical equipment/transformers of all sorts (including pad mounted) for examples.

It has been estimated that approximately 17 of the last 21 major fires in California have been caused by various utility installations, most of them involving overhead high voltage equipment. And it is also noteworthy that several of these fires have developed into major, wind-fanned urban conflagrations (Berkeley, Santa Rosa, Redding, and most recently the horrific fire in Paradise, CA.

While the causes of such fires has generally been attributed to dry, overgrown woodland conditions and high winds, a trend towards adjacent urban conflagrations rapidly spreading due aging, closely packed residential construction is also a factor. Downed transformers and overhead lines are increasingly common and pose a major safety hazard to residents and firefighters. This to such an extent that PG&E has been rapidly moving towards shutting off power to avoid more such falling/exploding high voltage equipment creating safety hazards and to avoid starting more wildfires in California.

See October 15, 2008 New York Times article: To Avoid More California Wildfires, a Utility Tries Shutting Off the Power

<http://www.nytimes.com/2018/10/15/us/pge-power-outages-california.html?action=click&module=Latest&pgtype=Homepage>

Any deniers, anyone who doubts this as a possible scenario for Palo Alto and other urban communities is welcome to argue the point with the residents and business owners of Berkeley, Santa Rosa, Redding and especially Paradiseat their own peril.

I have been pretty startled and alarmed to find the following figures on the remaining proportion of phone-pole-mounted electrical equipment in the city. One really good-sized earthquake, one major urban conflagration fire as in Santa Rosa, Redding, Paradise, etc. and a lot of that above ground equipment seems highly likely to suddenly come down to earth in very, very grim ways. A fallen power line or exploding transformer is an immediate safety hazard ...and given the right conditions and locations are quite capable of threatening lives and creating urban conflagrations of the type that are fast-becoming the new normal in California.

<https://www.cityofpaloalto.org/civicax/filebank/documents/64445>

Attachment – B Table

B.2. Distribution transformers count by their location: padmount, poletop, or underground

| Distribution Transformer Type. | Count |
|--------------------------------|-------|
| Padmount single phase. | 244 |
| Padmount 3 phase. | 690 |
| Pole top. | 1782 |
| Underground Commercial. | 109 |
| Underground Residential. | 325 |
| Total. | 3,150 |

Safety and Palo Alto's Stated Electrical Utility Priorities

Several of us have been impressed to discover that at least someone in the city/city bureaucracy has in the past, shared this concern to the extent that the CPAU's own Rule and Regulation 17: Conversion of Electric and Communications Facilities to Underground clearly states in all 6 of priority list points that its central priority is indeed to remove and underground pole-mounted electrical equipment underground. It is particularly noteworthy that the available lists of Palo Alto priorities in this regard do NOT include bringing existing underground equipment (as in Green Acres One) above ground. And that the CPAU's corresponding and directly related cost sharing formulas described in Rule 17 are applicable only to such pole-mounted undergrounding efforts.

**CONVERSION OF ELECTRIC AND
COMMUNICATION FACILITIES TO UNDERGROUND
RULE AND REGULATION 17
CITY OF PALO ALTO
UTILITIES RULES AND REGULATIONS**
Issued by the City Council
Effective 6-1-2010

Sheet No. 1

A. POLICY AND PRIORITIES

CPAU will replace existing overhead Electric distribution facilities and communication facilities with underground facilities due to system operational considerations, or upon Application of an individual or group of individuals, and/or at the direction of the City Council, subject to budgetary considerations, the order of priorities listed below, and minimum project size specified in the applicable section of this Rule.

The extent of CPAU's financial participation in a conversion project will depend on whether the locale of the project is designated by the City Council as an area of general public interest and benefit, or an area of primary local public benefit, or whether the area fails to qualify for either of the foregoing designations.

Underground conversion in areas of general and local public benefit will be considered in accordance with the following order of priorities.

1. First priority will be given to overhead CPAU lines along streets, roads, or rights-of-way on which major new roadway construction, realignment or on roadways designated as high priority for re-pavement/overlay by the City's Public Works Department.
2. Second priority will be given to overhead CPAU lines along rights-of-way through the interior of blocks which have heavy tree foliage where poles have deteriorated to the point where replacement is necessary and undergrounding is an economic alternative to pole replacement.
3. Third priority will be given to overhead CPAU lines along streets, roads, or rights-of-way in areas zoned commercial, light industrial, and limited manufacturing where Load growth requires major overhead reconstruction and undergrounding is an economical alternative.
4. Fourth priority will be given to overhead CPAU lines which are hidden or partially hidden by surrounding tree foliage along streets, roads, or rights-of-way where poles have deteriorated to the point where replacement is necessary and under-grounding is an economic alternative to pole replacement.

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Effective 6-1-2010
Sheet No. 2**

5. Fifth priority will be given to overhead utility lines which are constructed along a major arterial where poles have deteriorated to the point where replacement is necessary and undergrounding is an economic alternative to pole replacement.
6. Sixth priority will be given to overhead utility lines which are constructed along streets, roads, or rights-of-way in areas zoned Residential.

The intent of the six priority schedule is to provide guidance when establishing or selecting areas for undergrounding overhead utility lines. However, any area where overhead utility

lines are located in streets, roads, or rights-of-way may be included in an Underground Utility District for engineering, operating, or economic reasons.

After the August 1, 2018 UAC Meeting — The View From Here

At the conclusion of the related agenda item on this issue at the UAC August 1 meeting, the UAC asked the CPAU to substantiate their safety rationale (including reference to Cal-OSHA requirements) and asked CPAU to address the issues that we raised and to work with our community to find a mutually agreeable solution. They asked CPAU to come up with ideas to shield the boxes, to consider the use of smaller boxes, and to perhaps consider relocating the units to less obtrusive locations.

Our residents accordingly went home, and awaited and to listen in good faith to the CPAU's response to this UAC charge. We expected to be contacted by the CPAU to jointly develop a revised proposal or proposals...that might include such reduced, less intrusive, enclosure sizes. But would at the very least include a clearly defined and carefully costed alternative for updating our high voltage equipment while allowing it to remain underground.

As regards the economic implications of this... the CPAU has chosen to thus far simply ignore our insistence that our equipment remain underground and that we jointly come up with an acceptable, detailed plan. And I suspect that they will continue to ignore this so unless instructed otherwise.

Despite threatening our neighborhood with some sort of special assessment to cover whatever additional upcharges might be required of our residents if the equipment they wish to install were to remain underground, it has become my opinion that their costing formulas (in Rule & Regulation 17, Sections C and D) for such work simply do not take into account the fact that our residents have already paid once for the complete undergrounding of our equipment, and that the ever-changing (steadily rising) "estimates" we have been given for such work by the CPAU have not been based on any verifiable facts, any detailed plan, or existing policies what take into account our high voltage systems configuration and circumstances. Given this circumstance, some of us have worked out our own set of valuation estimates for our appreciated bought-and-paid for undergrounding (including our recurring payments into the CPAUs maintenance reserve funds) and expect our valuation to be met in any proposal we may receive from the CPAU.

In the interim, the following email was sent by Rachel Chiu of the CPAU on behalf of Ed Shikada and received by our neighborhood resident, Nina Bell on September 20, 2018.

"I am sending this message on behalf of Ed Shikada, Utilities General Manager and Assistant City Manager.

Green Acres Residents,

Since our last conversation around the time of the August Utilities Advisory Commission (UAC) meeting, Utilities staff have been investigating solutions for the utilities underground equipment rebuild project that is scheduled to occur in the Green Acres neighborhood. We've answered some Frequently Asked Questions online about utilities underground rebuild projects. Also attached to this message are some specific details related to the rebuild project in your neighborhood.

Our next discussion with the UAC on this topic was scheduled for November 7, with a staff report released about a week in advance. While the UAC discussion may extend over more than one meeting, we expect the UAC to provide a recommendation to Council as to how Utilities should proceed with requirements for installing aboveground versus below ground electrical equipment when rebuilding an underground district. This may include a policy change and/or recommendation on how to fund work beyond the scope of current Utilities standards for these types of projects. You are welcome to attend the meeting and participate in this discussion, or send your comments to us in advance.

Sincerely,
Ed"

[In addition, a FAQ addendum was provided to this email that basically reiterated the CPAU's plan and their 'rationale' for it.]

It seemed clear from Mr. Shikada's email that — as has thus far always been our experience with them — the CPAU was continuing to ignore our circumstances and preferences, and inexplicably, obdurately, inflexibly adhering to its original plan to pad-mount their equipment. It also was becoming clear that the CPAU seemed unwilling or unable to come up with a detailed or properly costed plan to allow the equipment to remain underground that we have repeatedly requested.

The November 7 UAC meeting was later cancelled and rescheduled for December 5, 2018.

A Concept Probe

Despite the clear charge given the CPAU by the UAC to 'work with' our neighborhood in this issue, apparently no such attempt was made to contact us or our targeted stakeholder representatives until late October. Eventually we heard from one of our group of targeted stakeholders that the CPAU had unilaterally come up with an alternative 'proposal' to locate their pad mounted boxes on a different set of our resident's 'sideage' ROWs.

This ‘proposal’ eventually turned out not to be a detailed plan but a tentative probe on the part of the CPAU see if it could elicit any sort of agreement in principle for its cherished pad mounted equipment if the installations could were to be located on the sides of certain of our residents corner lots, rather than directly in front of our residents homes. And it was tentatively suggested that the number of transformer installations **might** be reduced to 6.

A vague map was provided...but it lacked sufficient precision to allow us to be exactly sure which properties would be affected and precisely sure where along their lengthy sideages the pad mounts would be placed.

It did, however include the news that the heretofore-estimated cost per GA1 household of keeping our high-voltage equipment underground had raised significantly.

When asked if there was any sort of feasibility assessment or plan behind this probe, the CPAU apparently communicated that it did not have the resources for such. This reinforced our impression that this was an attempt to achieve some sort of agreement in principle on the pad mount concept and to procure what amounted to a blank check for the CPAU to pursue the pad mount scheme. And made us further doubt that there has been any sort of hands-on, on-site assessment or a detailed plan for any of the proposed pad mounting in Greenacres One.

The CPAU also offered to come into the neighborhood and install ‘mock-ups’ of the boxes on their specific location. But our residents were convinced that the CPAU had not been paying any attention to their repeated requests that the equipment remain underground, and were concerned that the mockups would give the CPAU the mistaken impression that they had achieved the kind of agreement in principle to pad mount. So this CPAU ‘mock-up offer’ has not been pursued.

Moreover, this concept probe by CPAU has served to further spread our community’s conviction that any of our residents could yet be targeted for pad mounts in in their frontage or sideage. And that the CPAU, despite their escalating cost estimates, once again has done no real analysis or careful planning.

We would have liked to believe that this latest concept probe shows the beginnings of flexibility on the part of the CPAU and indicates that the CPAU is finally paying some attention to our situation and position. But it appears that all that was thus unilaterally presented to three of our residents was yet another version of their pad mount concept. Not a detailed plan that offered precise locations, or accurate, believable costing. Not a plan with sufficient detail to be evaluated and responded to.

Guidance and Looking Ahead

With their latest, vague concept probe it looked like the CPAU simply seeks approval in principle for their pad mounting fixation and a blank check to pursue such—and to such ends continue to threaten our neighborhood residents with escalating costs.

Thus far, the CPAU has not responded to the UAC's charge to support their preeminent safety rationale and it made no meaningful attempt to "work with" our neighborhood—particularly with those of our residents who are targeted to receive pad-mounted installations on their property frontages.

Instead the CPAU appears to be persisting in prolonging and escalating this issue in an effort to wear down our residents, to cause internal divisions among them over escalating (but unsubstantiated) cost 'estimates' and forcing our Greenacres One neighborhood to accept their pad-mounted equipment scheme.

,
With this latest apparent attempt to seek UAC/Council "guidance" (perhaps leading to a special assessment) the CPAU apparently hopes to provide themselves legal grounds and mechanisms to raise their unsubstantiated cost figures to levels that cannot possibly be expected to be afforded or paid by our residents—and thereby secure their cherished pad mounted installations.

At this point some sort of "guidance" certainly seems on order. Pursuant to a careful analysis of the various Resolutions and CPAU "Rules" cited in their August 1 Report, together with other related references that have been discovered and analyzed, the CPAU's agenda for the December 5 UAC meeting comes as no surprise. We have carefully researched the available city documents and believe that the CPAU does not have sufficient policy or legal grounds to force our District 15 Greenacres One neighborhood...or any other similar district neighborhood that has already undergrounded installations—to accept their pad-mounting scheme. (It was finally, reluctantly communicated to us by the CPAU that there is only one other District that is configured like ours, District 25,—Orme Avenue.—which features only a single such underground electrical box.)

Although we have as yet been unable to obtain CPAU a description of the other targeted (11?) districts in Palo Alto that are targeted for such pad-mounted updating, it appears unwise in the extreme for the UAC/City to allow the CPAU to proceed with their pad-mounting without revisiting the city's stated priorities on undergrounding overhead installations, a thorough, case-by-case assessment of the the ages and configurations of the targeted the existing installations districts, efforts to notify and engage their resident/customers accordingly, and a careful, detailed plan for a ***flexible, acceptable*** program to provide for associated electrical service infrastructure upgrading.

If the city chooses to proceed without such careful analysis and planning prior to this major retrofit/upgrade program, it is, in my view possible that whatever ad hoc individual below ground or pad mounted installations are undertaken cannot help but prove

inequitable to the various utility districts and residents affected, and that a substantial amount of such work as has been undertaken will have to be somehow “walked back”.

Conclusion

I believe that this sudden, CPAU pad-mounting initiative to have been launched unilaterally and without sufficient forethought, planning and community outreach. It should not have been applied to the unique situation of the already-completely underground Greenacres One installations.

In addition, I believe the CPAU to have acted in what I regard as an insensitive, poor faith manner towards our neighborhood and our residents. Their lack of adequate response to the August 1 charge of the UAC to ‘work WITH us’ on this issue is simply more evidence of the continuing failure of the CPAU to be sensitive to or respond **flexibly** to the expressed wishes of its Greenacres One customers —or the UAC.

To insist on bringing what is apparently the only significantly sized completely undergrounded high voltage equipment above ground in a residential neighborhood in Palo Alto at this point in time strikes me as bureaucratic myopia. And seems particularly inexplicable and ill-considered considering the overwhelming amount of such equipment still remaining on unsafe pole mounted installations throughout the city — despite the long-standing and still existing stated priorities of the city to bring such equipment to or below the ground as soon as possible.

I sincerely hope the UAC and/or the City Council will be able to assist us — and the larger City of Palo Alto — to secure more rational, well-planned, and detailed information, responsiveness, and a coherent integrated plan from the CPAU on this electrical infrastructure updating than our neighborhood has been subjected to far.

If the city is not able to secure such, it augurs poorly for the future of our utilities services in Palo Alto,

Sincerely,

Michael Maurier
Greenacres One Property Owner and Resident