

DOCUMENTS IN THIS PACKET INCLUDE:

LETTERS FROM CITIZENS TO THE
UTILITIES ADVISORY COMMISSION

From: [Hoyt, George](#)
To: [David Coale](#)
Cc: [Shikada, Ed](#); [Lait, Jonathan](#); [Batchelor, Dean](#); [Abendschein, Jonathan](#); [Parkhurst, Rhonda](#); [Gennady Sheyner](#); [Sandra Slater](#); [Hodge, Bruce](#); [Bret Andersen](#); [Tam, Christine](#); [Peck, Korwyn](#); [Donald Clark Jackson](#); [Kelty, Hiromi](#); [rscolove@gmail.com](#); [Indra Ghosh](#); [UAC](#); [Council, City](#); [Planning Commission](#)
Subject: RE: SolarApp+ webinar this Thursday @ 10 am
Date: Wednesday, July 14, 2021 9:13:22 AM

Mr. Coale,

We have been in contact with SolarApp+ and are exploring this as an option.

George Hoyt,
Chief Building Official

The City of Palo Alto is doing its part to reduce the spread of COVID-19. We have successfully transitioned most of our employees to a remote work environment. We remain available to you via email, phone, and virtual meetings during our normal business hours.

-----Original Message-----

From: David Coale <david@evcl.com>
Sent: Tuesday, July 13, 2021 9:41 PM
To: UAC <UAC@cityofpaloalto.org>; Council, City <city.council@cityofpaloalto.org>; Planning Commission <Planning.Commission@cityofpaloalto.org>
Cc: Shikada, Ed <Ed.Shikada@CityofPaloAlto.org>; Lait, Jonathan <Jonathan.Lait@CityofPaloAlto.org>; Hoyt, George <George.Hoyt@CityofPaloAlto.org>; Batchelor, Dean <Dean.Batchelor@CityofPaloAlto.org>; Abendschein, Jonathan <Jon.Abendschein@CityofPaloAlto.org>; Parkhurst, Rhonda <Rhonda.Parkhurst@CityofPaloAlto.org>; Gennady Sheyner <gsheyner@paweeekly.com>; Sandra Slater <sandra@sandraslater.com>; Hodge, Bruce <hodge@tenaya.com>; Bret Andersen <bretande@pacbell.net>; Tam, Christine <Christine.Tam@CityofPaloAlto.org>; Peck, Korwyn <Korwyn.Peck@CityofPaloAlto.org>; Donald Clark Jackson <dcj@clark-communications.com>; Kelty, Hiromi <Hiromi.Kelty@CityofPaloAlto.org>; rscolove@gmail.com; Indra Ghosh <indraghosh@hotmail.com>
Subject: SolarApp+ webinar this Thursday @ 10 am

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Hi All,

The roll out of NREL's new SolarApp+, a web based application for solar permitting, with Jennifer Granholm, the U. S. Department of Energy Secretary, will be this Thursday at 10 AM pacific time. See: <https://solarapp.nrel.gov/> to sign up and for more info on SolarApp+

This app, based on the National Electrical Code, is designed to speed up permitting and inspection of residential solar PV systems. Once the contractor enters in the design, the SolarApp+ ensures the design is code compliant, thereby negating the review process for solar PV permitting. At the end of the process the SolarApp+ will produce a checklist to be used by the inspector for the inspection of the PV system. This app is free to all jurisdictions.

I believe Palo Alto's adoption of the SolarApp+ would allow the city to jump from last place, to being a leader in efficient and timely permitting, at a lower cost than the present system, which leaves much to be desired.

In the future, SolarApp+ will also include solar plus storage and then will be expanded to cover electrification projects as well. To reach our 80 by 30 goal of GHG reduction, we will have to replace all gas appliances with electric ones at the end of life of the gas appliances. Palo Alto will need to

revamp their current process to meet this goal.

Please take a look at the SolarApp+ web page and attend the webinar if you are able: <https://solarapp.nrel.gov/>

Thanks,

David

Please send this info to other interested parties.

PS Here is a two minute video of the process: <https://www.youtube.com/watch?v=s-zKmtgVPDs>

From: [Bob Wenzlau](#)
To: [UAC](#)
Cc: [Batchelor, Dean](#); [Reinert, John](#); [Cordova, David](#); [Marshall, Tomm](#)
Subject: Re: Sediments in Drinking Water Topic
Date: Thursday, July 15, 2021 3:44:22 PM

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Utility Advisory Commission Members,

The Staff's response by Tomm Marshall was omitted from the forwarded email, I hope the UAC can agendize this in the not too distant future. Sorry for the omission.

Bob

The email from Tomm Marshall of Palo Alto Utilities.

I did some checking on equipment for measuring solids in drinking water. There does not seem to be an easy way to test for sediments. The accurate process involves taking samples and drying them out and measuring the weight of the solids. Obviously this is not a practical process to take ongoing measurements. I think that is why water systems rely on turbidity measurements which are a good indicator of suspended solids.

To get an idea on the suspended solids in water delivered to the City, I had my staff download the turbidity readings for the last year. These are readings recorded every 5 minutes on our SCADA system. The average turbidity reading is 0.21 NTU, the first quartile for the readings was 0.18, the second quartile was 0.21, the third quartile was 0.23, the maximum reading was 3.32, and 99.6% of the readings were below 0.5 NTU. The EPA standard for filtered water is 5 NTU maximum and less than 0.5 NTU for 95% of the readings.

The unfiltered water we are getting from Hetch Hetchy is meeting the requirements for filtered water set by the EPA. This is likely why they have a filtration exemption.

Adding system filtration could remove more of the solids from the water. However, the majority of the water used in Palo Alto is used for irrigation, washing, toilets and bathing. Filtering all the incoming water will add cost to providing water to our customers without a lot of benefits. If there is concern over the quality of the water we would advise customers to purchase a water filter for their drinking water. These filters have the added advantage of removing disinfection chemicals and other chemicals that would not be removed by system filtration.

We currently have a long list of priority infrastructure replacements that need to be completed on the system and our efforts are directed toward completing these projects. At this time we do not plan on pursuing additional filtration.

On Thu, Jul 15, 2021 at 12:34 PM Bob Wenzlau <bob@wenzlau.net> wrote:

Tomm,

Thank you for your response regarding excessive sediment load in Palo Alto drinking water. It is great to know where Staff stands on this topic. As you would likely anticipate, and based on my own experience and professional judgement, I respectfully disagree with the staff's conclusion that this requires no further attention. We are fortunate to have the UAC and Council to develop and issue and as such work the prioritization of the issue. I understand the topic was requested to be considered at the UAC, and I await the date for that. Please let me know when the UAC will address the topic, and hopefully I can obtain more status in the discussion than merely the 3 minutes allocated to the public.

As the UAC discusses this, I will highlight the relative importance of high quality drinking water relative to other uses. I will also discuss the impact of sediments on our high technology appliances as well as irrigation systems. I also will invite building the capacity of staff to evaluate and judge drinking water impact as I judged over reliance on SFPUC. I can show demonstrable concern across Palo Alto on this topic, albeit drinking water quality issues is not the core competence of our community.

Thank you all for your service, even when I am on the other side of an issue.

Bob

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Bob Wenzlau
bob@wenzlau.net
650-248-4467

From: [RS Love](#)
To: [UAC](#)
Cc: [Don Jackson](#); [David Coale](#); [Bruce Hodge](#); [Batchelor, Dean](#); rscolove@gmail.com; gsheyner@gmail.com; [Swaminathan, Shiva](#); [Perkins, Lena](#)
Subject: Just ask Saul
Date: Tuesday, July 20, 2021 12:21:20 PM

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Hi,

If you haven't read anything by Saul Griffith yet, start here.

[One Billion Machines. Decarbonization, demystified | by Saul Griffith | Jul, 2021 | Medium](#)
[Rewiring America](#)

It's an energy manifesto that Palo Alto, as a community, knows is achievable. We're a highly educated group and we know we can get it done.

Many of you on the cc: list are already working towards electrification in your homes and businesses. It's up to us to add motivation and inspiration.

Palo Alto is heading in the right direction, just not fast enough. More solar generation from our buildings and homes with energy storage is always welcome. Electrification of city vehicles should also be a high priority.

Share your knowledge, help educate others and use your position to help guide city policies and programs towards electrification. We know how to do it.

Thank you for your attention.

All the best,

Scott Love

From: [RS Love](#)
To: [UAC](#)
Cc: [David Coale](#); [Don Jackson](#); [Batchelor, Dean](#); [Council, City](#)
Subject: FYI only - Pleasant Hill first in California to adopt SolarAPP+ online permitting
Date: Friday, July 23, 2021 11:44:16 AM

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

Just a data point for your consideration.

Scott Love
650-224-7252

[New major breakthrough in lowering cost of going solar | Environment California](#)



[New major breakthrough in lowering cost of going solar \(/news/cae/new-major-breakthrough-lowering-cost-going-solar\)](#) Contact [Laura Deehan \(/staff/cae/laura-deehan\)](#),

Pleasant Hill to become first CA city to launch new expedited solar permitting application

For Immediate Release
Wednesday, May 12, 2021

Pleasant Hill, Calif. – The City of Pleasant Hill on Wednesday became the first municipality in California, and one of the first cities in the nation, to formally launch SolarAPP+, an automated application to speed up and error-proof the process for permitting new residential rooftop solar and storage systems. This plan will not only expedite but also lower costs for solar installation.

To date, installing rooftop solar is about [twice as expensive in the United States as it is in such country as Australia or Germany](#) (<https://www.greentechmedia.com/articles/read/how-to-halve-the-cost-of-residential-solar-in-the-us>) -- despite similar wages and equipment costs. This difference is caused by the "soft costs" associated with residential solar installations, which includes paying for a local building department permit. For a solar customer, [these added expenses can amount to as much as \\$1 per watt of the installation, or \\$5,000 for a typical residential solar system](#) (<https://www.nrel.gov/docs/fy21osti/77324.pdf>).

The SolarAPP+ program offers an integral way to cut permitting costs. Developed by the National Renewable Energy Laboratory (NREL), a project within the U.S. Department of Energy, SolarAPP+ provides a web-based portal that streamlines and automates permit reviews, which makes it easy to integrated into existing local government permitting software.

NREL introduced SolarAPP+ in late 2020 and, since then, has rapidly expanded the program's capabilities. Pleasant Hill is the first California city to adopt SolarAPP+.

"Making the permitting process easier for these projects is a win/win for Pleasant Hill," said Pleasant Hill Mayor Sue Noack. "It will allow our residents to go solar more efficiently, and will free up staff to focus on other permitting areas."

SolarAPP+'s launch in Pleasant Hill serves as a key proof of concept for the ability of cities to adopt automated solar permitting, The Solar Access Act (SB 617), which overwhelmingly passed through two Senate policy committees in April, would require automated solar permitting in cities and counties over a certain size. This will allow for on-the-spot approvals of residential solar and solar-plus-storage systems. It would also greatly decrease wait times, cut permitting costs for local governments and homeowners, and help California meet its greenhouse gas emission reduction goals.

"SB 617 streamlines the permitting process for residential rooftop solar and energy storage, allowing more Californians to access clean energy," said state Sen. Scott Wiener, the bill's author. "This legislation will help California achieve our climate goals more quickly and cost-effectively and allow more homeowners to participate in our clean energy future. I applaud Pleasant Hill for being ahead of the curve."

Other legislators, like Assemblymember Phil Ting, agree.

"With a \$20 million investment in automated solar permitting, the state could save California homeowners up to \$3 billion in permit-related costs over the coming decade. SB 617 is not only a win for our climate, but also our residents' pocketbooks," he said. "It's a model that more cities should follow,"

Widespread installation of residential solar systems has helped push California toward its goal of carbon neutrality by 2045. However, while the cost of solar technology has

decreased in recent years, the high price associated with installation — including local permitting — have remained prohibitive for many. Delays due to long permit processing times are also hurting solar implementation across the state. Automated permitting solves both of these issues; the passage of the Solar Access Act in the state legislature and the local implementation of SolarAPP+, headlined by cities like Pleasant Hill, will allow California to deliver a timely and comprehensive solution.

“By implementing SolarAPP+, Pleasant Hill is at the forefront of a movement to reduce the barriers homeowners face installing solar and solar plus storage systems,” said Nick Josefowitz, chief of policy at SPUR, a policy research organization based in the Bay Area, and co-sponsor of SB 617. “This will help reduce emissions, save homeowners thousands of dollars, and generate significant new revenue for the city.”

Pleasant Hill’s leadership is also being celebrated by the environmental community.

“As California faces a worsening drought, more heatwaves and the prospect of catastrophic wildfires for yet another year, the need for cities and the state to take action on climate couldn’t be clearer,” said Laura Deehan, state director for Environment California. “We hope that Pleasant Hill is the first of many cities to help their residents go solar by automating the permitting process with SolarApp+.”

For installers across the state, this streamlining will be a game changer.

“Using SolarApp should also help rein in the ‘soft costs’ of going solar, which could have a big impact on solar deployment. “Cost is one of the biggest barriers to going solar,” said Igor Tregub, senior policy advisor at the California Solar and Storage Association, an organization representing hundreds of contractors who build more than 430 rooftop solar systems every day in California. “Already, rooftop solar is growing fastest in low- and working-class communities and by lowering costs further, we can put solar in the hands of more people.”

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Through research, education and advocacy, SPUR works to create an equitable, sustainable and prosperous Bay Area. For over 100 years, SPUR has brought people together from across the political spectrum to develop solutions to the big problems cities and the region face. Learn more at www.spur.org (<http://www.spur.org/>).

Environment California is dedicated to protecting our air, water and open spaces. We work to protect the places we love, advance the environmental values we share, and win real results for our environment. For more information, visit [www.environmentcalifornia](http://www.environmentcalifornia.org/) (<http://www.environmentstatecenter.org/>).org

The California Solar & Storage Association (CALSSA) has advanced the common interest of the solar and storage industry for over 40 years, making California the most robust market in the U.S. The association is the state’s largest clean energy business group with over 600 member companies, primarily small businesses based in communities throughout the state, that manufacture, design, install, finance and provide other resources to the growing local solar and storage market in California. Learn more at www.calssa.org (<http://www.calssa.org/>).

Environment California is part of The Public Interest Network, which operates and supports organizations committed to a shared vision of a better world and a strategic approach to social change.

From: [E. Nigenda](#)
To: [UAC; Batchelor, Dean](#)
Cc: [Keith Bennett](#); [Sustainability Team](#); [Dailey, Karla](#)
Subject: Water Supply
Date: Monday, August 9, 2021 10:29:11 AM

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

Dear Utilities' Director and UAC Commissioners,

Palo Alto Online recently (7/16/21) reported "Palo Alto has recently improved its water capacity through its Emergency Water Supply and Storage Project, which rehabilitated five existing wells, constructed three new wells and built a new 2.5-million-gallon emergency water-storage reservoir. **The eight emergency wells can pump up to 15.5 million gallons per day if needed** [emphasis ours]. The city's seven storage reservoirs — Mayfield, Boronda, Corte Madera, Dahl, El Camino, Montebello and Park — have a total capacity of 13 million gallons. The city now has adequate storage and pumping capacity to provide back-up should there be an interruption of San Francisco water service."

We appreciate the steps the City has taken to ensure our emergency water supply. However, in our opinion, this picture is correct but incomplete.

1. Palo Alto's daily water consumption is about 10.5 million gallons/day (MGD) so our storage capacity of 13 million gallons covers a little more than a day of business as usual.
2. Palo Alto has 8 wells, but the City's 2018 [Groundwater Assessment, and Indirect Potable Reuse Feasibility Evaluation and Implementation Strategy](#) report, p. 2, points out that "Two City emergency supply wells (Fernando and Matadero) are located in close proximity to a significant solvent contamination plume with low level contamination detected to a depth of about 100 ft bgs [below ground surface]." Pumping water from these wells would likely mobilize the contaminant plume.
3. Additionally, assuming that there are enough resources (pumps, fuel, electrical generators, workers, cybersecurity) to pump 15.5 million gallons of groundwater/day, the same report cited above, p. 2 and with more detail, Section 3.6, state that the City can **sustainably** pump 2,900 - 3,000 acre feet/year (~2.7 million gallons/day). "This amounts to about 24% of the City's projected 2020 demand." Pumping beyond this yield would deplete the aquifer and lead to subsidence, saltwater intrusion, infrastructure failure, etc.
4. Thinking of short-term water outages vs. long term drought, for how long can the City pump ~2.7 millions of gallons per day? The report does not directly address this

question but says, page 84, "A third estimate of groundwater yield available to the City of Palo Alto was developed by Carollo Engineers (2003) using a completely different approach. They documented that 1,500 AF [acre-feet] of pumping by City wells over 5 months in 1988 produced an average of 24 feet of water level decline at the pumping wells, and that water levels fully recovered within 18 months after pumping stopped. No adverse effects related to the temporary water-level declines were reported, and Carollo concluded that the amount of pumping in 1988 was therefore a reasonable estimate of yield for an isolated year of pumping (reduced to 500 AFY for consecutive pumping years)."

Having an incomplete picture of the actual amount of water the City could access in a crisis could lead us to the erroneous conclusion that we are more prepared for a disaster than we really are.

Thank you for considering our comments,

Esther Nigenda, Ph.D.

Keith Bennett, Ph.D.

www.SavePaloAltosGroundwater.org

From: [Donald Clark Jackson](#)
To: [UAC](#)
Subject: Decarbonization Will Require Pricing Reform – Energy Institute Blog
Date: Monday, August 16, 2021 9:00:13 AM

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Background reading, FYI only...

<https://energyathaas.wordpress.com/2021/08/16/decarbonization-will-require-pricing-reform/>

From: [matt sorgenfrei](#)
To: [UAC](#)
Cc: [Council, City](#)
Subject: Maintenance of Residential Solar Systems
Date: Monday, August 23, 2021 10:19:28 AM

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

Hello:

I wanted to notify the commission and council of something I have encountered with my residential solar system. My system was permitted and installed in 2009 by Solar City. Tesla now owns Solar City.

My inverter stopped working and I navigated my way through the automated support system at Tesla. My inverter failed on July 28 and I finally had a response from a person on August 6. The disconcerting issue was that I was told there is only one service person for this area. The earliest appointment I could have for a service person just to come to my home was September 29th.

I have escalated this issue through Tesla. I spoke with one of their management team members, but they only provide platitudes. I reminded the Tesla representative that in Palo Alto, my solar production does flow to the city. Further, given the approach of warmer weather and all the global issues with clean energy, I felt Tesla should provide more support to keep available resources operating. They disagreed.

This is just a notification. I don't expect any action from the city. I would like to comment that more resources for residential solar owners either on the web site or in the periodic mailings would be appreciated. Specifically, it would be nice to know if there are support/repair alternatives, who the city approved as solar vendors through the permit process, and which solar providers offer education or awareness resources.

Thank you for your time and also thank you for your willingness to provide leadership and guidance for Palo Alto.

Matt Sorgenfrei

From: [Don Jackson](#)
To: [UAC](#)
Subject: Two requests regarding "Quarterly Permit Processes for Various Energy Technologies (D)" agenda item for September meeting
Date: Wednesday, August 25, 2021 11:58:06 AM

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

Chair Forssell, Vice-Chair Segal, and Commissioners:

I have two requests pertaining to the "Quarterly Permit Processes for Various Energy Technologies (D)" agenda item, which I currently understand to be scheduled for the September meeting:

1. I request that you categorize this agenda item as an "action", not a "discussion", in order to enable the Commission to make a recommendation to Council, if you so chose, after you hear from the public and Staff regarding the status/progress on these issues since April.
Of course, the Commission may also elect not to make any recommendation, but as you well know, you are precluded from taking actions of recommendation on agenda topics noticed as "discussion".
2. I further request that the Commission consider granting me more than three minutes for my public comments on this item.
Many of you will recall the extensive research and work I did on this matter in preparation for the April 7 2021 agenda discussion of this topic (at that time I served as a Commissioner), and since that meeting, I have applied for a building permit for a combined ESS+PV system for my house, and I have additional and extensive experience and perspective to report.

Best regards,

Don Jackson

From: [Don Jackson](#)
To: [UAC](#)
Cc: [Council City](#); [Shikada, Ed](#); [Lait, Jonathan](#); [Batchelor, Dean](#); [Blackshire, Geoffrey](#); [Lindsey, Stephen](#)
Subject: Comments re "Permit Processes for Various Energy Technologies" Item #1, UAC 2021-09-01
Date: Monday, August 30, 2021 8:54:49 PM
Attachments: [page14image62701776.png](#)

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

Honorable Commissioners:

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

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

My ESS+PV Permit Application Experience:

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

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

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

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

Director Lait subsequently facilitated a series of meetings with plan checkers from Building, Utilities, and Fire on July 13 and 20th. By the conclusion of the second (7/20) meeting, I was provided a list of additional revisions, that if made, could be approved. These meetings were extremely helpful in determining/defining these changes, but I feel that is both fair and accurate to characterize the overall tone/tenor of these discussions as "here is what you need to do", and there was no flexibility shown or provided, to consider alternatives/better/creative ways to achieve/satisfy the underlying requirements.

The required changes at this point included:

- Two AC-Disconnects (despite the Staff statement at the UAC 4/7 meeting that only a single AC-Disconnect is required)
I'd like to highlight that the location of the two required AC-Disconnects, when engaged by CPAU, would prevent the ESS from powering my house, one of the primary motivations/benefits of installing it!
- Utilities continued to mandate that the main-breaker must reside in the same cabinet as the meter (a much larger and far more expensive component, rather than allowing the Tesla backup-gateway component to provide the main-breaker, which it is designed/certified to do).

Directors Lait and Batchelor subsequently scheduled another meeting to discuss my proposals to simplify and/or minimize the impact of mandated components, on August 9th, participants included themselves, Chief Lindsey of Fire, senior members of their staffs, and me and my contractor. The issues discussed at this meeting (and their impacts on my design) included:

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

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

To summarize the results of the larger meeting:

- CPAU (finally) removed the requirement that I provide 2 AC-Disconnects, and agreed that a single disconnect between the meter and the Tesla backup-gateway would meet CPAU requirements. Fire (finally) agreed that a small set of properly labeled circuit breakers for each energy source satisfies the fire code, and that no lockable AC-Disconnect is required for Fire code compliance.
- The reasoning behind the 48" minimum meter height was clearly explained, I now understand and appreciate how this enhances worker safety during meter installation/removal.
- The Fire department explained that the roof/pathway requirements are a direct result of the State fire code, and there is no local ability to change these "even if we wanted to"
- The ESS battery clearances are also mandated by State fire code, but that code was revised on July 1st, Fire/Building committed to reviewing these recent updates for changes that might relax requirements impacting my design (as of 8/30 this review is still in-process)
- CPAU committed to consider my request to use a meter-socket-only in combination with the Tesla backup-gateway, within two weeks (a goal they met, and this design will be allowed!)
- We had a long discussion regarding why ANY AC-Disconnect is required, I contend that that my proposed system (by design) fully protects Utility personnel by preventing backfeeding power to the grid during repairs/outages (in multiple/redundant ways), but CPAU refuses to acknowledge and accept the UL-1741 standard, or that a circuit breaker inside a cabinet they can lock are sufficient to ensure safety. During this discussion, it became clear that we fundamentally disagree, and that it is obvious (to me) that I am not going to convince CPAU staff to revise their antiquated beliefs anytime soon, therefore I am faced with accepting their single disconnect requirement, or abandoning my project. I further address this issue below....

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

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

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

Regarding the Staff report (ID # 13530):

"Plan Review Timelines for Electrification Permits Shortened"

As described above, assuming my ESS+PV permit application is finalized in the next few weeks, it will have taken approximately five months of elapsed time.

My experience indicates that despite the obvious and significant efforts by Staff to shorten/streamline this process, some projects continue to have lengthy review/revision cycles.

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

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

1. Fire Sprinkler Requirement for Indoor ESS Batteries?

At the April 7 UAC meeting, I noted this requirement, based on information on the website (below), and Scott Woodfin (Fire) stated there was no such requirement. After the meeting, I followed up with Mr Woodfin for clarification, and he told me that the website was incorrect, I then informed PDS of this apparent discrepancy, which to my knowledge has not yet been clarified.

OTHER FIRE REQUIREMENTS

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

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

2. ESS Battery Clearance Requirements:

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

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

- A homeowner can park 1 or 2 (even 3?) Tesla cars in their garage, each containing a 100 kWh battery, with no sprinkler required!
- I'm going to remove my natural gas hookup, significantly lowering overall fire risk, but I can't put batteries along the exterior of my house within 3' of a window!, REALLY ???

Review of City Requirements Compared to Other Jurisdictions:

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

Lockable AC Disconnect:

As noted in the Staff report:

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

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

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

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

The lockable AC-Disconnect is solely and directly a consequence of CPAU's interconnection requirements, in other words, only CPAU is "to blame" for this requirement :-)

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

If we are comparing CPAU's requirements to those of other nearby jurisdictions, and PG&E serves all nearby areas, then it is to PG&E's requirements that we should compare CPAU's.

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

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

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

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

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

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

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

The staff report states:

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

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

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

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

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

Broader Concerns:

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

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

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

My Proposals:

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

Additional Discussion of Lockable AC-Disconnects

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UL-1741 Automatic Disconnect:

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

Main-Breaker as Disconnecting Means:

With respect to using the main-breakers at the service entrance to ensure disconnection, one objection I have repeatedly heard is that "breakers can/do fail". Obviously, any component can fail (including a lockable AC-Disconnect switch!). But I'd like to challenge this objection:

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

Following the logic to this point, my proposed system has BOTH a UL-1741 listed device at the service entrance, AND includes a main-breaker. To effect disconnection of my system, if CPAU doesn't trust UL-1741, then CPAU could also switch my main-breaker to "off", and lock the Tesla Backup Gateway panel door (via the hasp). At this point, backfeeding has been prevented in TWO ways, both by the UL-1741 automatic disconnect, AND by the main-breaker being switched to "off". BOTH the main-breaker and the UL-1741 listed automatic disconnect would need to simultaneously fail in order to endanger utility personnel, this seems to be extremely unlikely.

In my opinion and judgement, by providing both UL-1741 listed components and the required main-breaker in a cabinet capable of being locked, the homeowner has "done enough" to ensure the safety of CPAU and its linesworkers.
Requiring a separate disconnect, rated for the full service current and voltage (e.g. 200 Amps at 240 VAC), is both expensive and very large (e.g. 19 Inch W X 8.25 Inch D X 29 Inch H)
This is not reasonable or rational.

However, there is still an additional disconnect option/capability at CPAU's disposal: removal of the electric meter.
This further ensures/guarantees the disconnection (and safety), and is the primary method employed by many other utilities.
I've heard objections to the meter removal option, primarily because care must be taken when replacing/reinstalling the meter,

but presumably this is a standard operation Utility workers have training and experience performing, and the risks (of which I am aware) are not to the safety of Utility workers...

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