



SUSTAINABILITY & CLIMATE ACTION PLAN

February 10, 2022

Sustainability and Climate Action Plan Ad Hoc Committee Meeting Focus: Funding and Financing Building Electrification

88 attendees + 5 additional via YouTube Live Stream

Questions and Answers

1. Could tariffed-on-bill financing be used for projects without cost savings if the homeowner agrees to pay the extra cost, either upfront, or over time?

A. Yes, every inclusive utility investment program based on the Pay As You Save system gives every participant the option to make an upfront Co-Payment that effectively brings down the cost of the upgrades at that location to a level that would produce positive cash flow going forward at that location. At that point, the utility can proceed to pay for the upgrades.

As a second point: The source of the copayment can be from any source, and organizations like Rewiring America have sought federal policies to provide copayments for building electrification upgrades, in particular. The California Governor's budget request includes \$1 billion for building electrification that could ultimately be authorized in ways that bring down the upfront cost for certain types of building energy upgrades.

2. To what extent is this opportunity (affordable building energy upgrades) dependent on historically low costs of capital (e.g. 3%) as compared to the gross and net savings available? In other words, does it still work for everyone if rates (inevitable) rise - and rise substantially? I go back just far enough to remember talk of 15-20% interest rates on mortgages, so today's low single digit rates seem like an outlier and thus a risk to business plans that rely on them.
 - A. Low cost of capital is essential for affordable building energy upgrades and virtually all clean energy solutions. For upgrades that save electricity use, rising electricity rates amplify the value of the savings.
3. My understanding is that given Palo Alto's current electricity and gas tariffs, many people who switch to heat-pump water heaters from gas water heaters will actually see their utility charges rise. Do you believe that could occur here in Palo Alto? If so, do you (Dr. Holmes Hummel) have any estimate as to how many people would experience such cost increases? Finally, how do the models that you discussed operate in areas where fuel-switching increases costs?

- A. This is a terrific line of inquiry, and the Building Decarbonization Coalition faced this in the stakeholder process featured in the BDC's report: "[Toward an Accessible Financing Solution](#)".

Inclusive utility investment alone cannot capitalize building energy upgrades that are expected to be cash flow negative.

Sections of that report entitled "Combining Multiple Value Streams" and "Funding and Financing" may be most responsive to the question here.

Under current gas and electric utility rates, some customers may see an increase in bills if they electrify. Some of this relates to the tiered electric rate system, which the City is currently in the process of studying for potential amendment. In addition, gas rates are expected to rise faster than electric rates over the long term for a variety of reasons. We do not expect people to see an increase in utility bills from electrifying appliances over the long term.

4. If I understood Miriam Joffe-Block, I believe you referred to having lists of contractors with which CHEEF has worked. Are any of those contractors ones that work regularly in Palo Alto? If so, who are they? Do you know whether they tend to charge a premium for securing permits and working in Palo Alto?

- A. Contractors enroll in the GoGreen Home program and there are 35 currently enrolled who provide service in Palo Alto. I am not sure which contractors pass on the costs of permitting or how they do so. Permitting is important to us as a state agency to ensure equipment is properly and safely installed and we do require it per our regulations.

If you go to this link and enter "Santa Clara" as the county, you can see the list.
<https://gogreenfinancing.com/contractorfinder>

5. Have you looked at using existing public financing resources to leverage targeted private investment?

- A. Yes, this is the approach embodied by the GoGreen Financing approach and similar financing programs under consideration.

6. Has anyone at the City reached out to Luis Aguirre-Torres, director of sustainability for the City of Ithaca? He has worked out a very sophisticated model combining both public and private funding for solar upgrades at community scale. Here's video of a January presentation he provided through Acterra: https://youtu.be/7qiDsP9_-44?t=3764.

- A. Yes, Diane Bailey, Executive Director of Menlo Spark, organized a meeting with Luis Aguirre-Torres, the S/CAP Ad Hoc Committee, and City Staff so that we could learn more about the Ithaca approach. We had a very informative and productive discussion about Ithaca's Green

New Deal and their goal for electrifying 6,000 buildings in their city. We have also followed up with Bloc Power separately.

7. Does City of Palo Alto Utilities buy excess electricity from solar at the same price it charges customers. More or less?
 - A. The price the utility charges customers for electricity has two elements, 1) cost of buying the electricity and transporting it to the edge of Palo Alto, and 2) the cost of transporting the electricity from the edge of Palo Alto to every customer. The City buys excess electricity at a cost roughly equal to the first component, the cost of buying and transporting the electricity to the edge of Palo Alto. The buyback rate (currently 10.78 cents/kWh) can be found in electric [rate schedule E-EEC-1](#).
8. Did you say that the costs for upgrading the City's electric system and retiring its gas system was, in a preliminary analysis in 2020, estimated at \$40-100m?
 - A. Staff did a very preliminary study that was shared with the Utilities Advisory Commission in November of 2020 and which can be found [here](#).
9. Thank you for making clear that your estimates of the community's costs for electrifying Palo Alto from last spring were preliminary and conservative, and also for updating your estimates, particularly with respect to the costs of financing. In terms of residential electrification and conversion to EVs, my understanding is that, in addition to costs for acquiring and installing products such as (a) heat-pump water heaters, and, in some cases, (b) gas oven-, cooktop- or dryer-conversions, (c) EVs, and (d) EV chargers, there would always be (e) permitting costs, and there would sometimes be additional costs for, at the individual residence level, (f) panel upgrades, (g) electrical engineering, including single-line drawings, (h) street-level transformer upgrades, and (i) city-electrical-line to panel wire upgrades. Is that correct? (John Kelley)
 - A. Costs for a through f were included in the [impact analysis](#) presented in [April 2021](#), while g through i were included in the very preliminary [November 2020 Utilities Advisory Commission](#) presentation.
10. Why does the city have to own my water heater? This complicates things. This is not the case with say a car loan.
 - A. Note that this is applicable to the tariffed on-bill financing approach, as opposed to other financing mechanisms. Anyone in the City is welcome to buy a high efficiency heat pump water heater with cash, a check, or a credit card - or any other form of debt. The pace of deployment is likely to be constrained by the rate at which residents prioritize those upgrades over all other uses of their financial capacity. Across the country, that pace is too low, even in locations where households are widely thought to have sufficient financial capacity to pay for the upgrades. For that reason, utilities are stepping in to offer to capitalize the upgrades, at which point they have paid for the high efficiency water heater (and have the receipts for it), so the resident at that location does not have a basis for claiming that they own the equipment until the utility's costs are recovered. The resident can get the water heater either way. The difference between the two is the pace at which

the residents *choose* the upgrade is far higher in the latter, where inclusive utility investment is available.

11. My understanding is that City of Palo Alto Utilities (CPAU) currently prohibits homeowners building Accessory Dwelling Units (ADUs) from establishing separate utility service for ADUs. Is that correct? If so, has City Staff considered how this policy impacts the S/CAP analysis, particularly insofar as requiring single electrical service for both a primary dwelling (and possibly a JADU) and an ADU may result in property-wide electrical load demands exceeding the capacity of 200A panels and requiring much more expensive 400A panels, particularly for properties that are simultaneously attempting to install EV chargers.
 - A. CPAU only allows one electric service main panel per residential parcel for safety reasons. The electric panel can have two meters. The need to upgrade to a 400 amp panel due to an ADU addition will be based on load calculations per National Electric Code. To avoid a panel upgrade, you can consider low amperage heat pump water heater models available from multiple manufacturers. A 120V heat pump water heater is expected to be commercially available this year. For space conditioning, a 1.5 ton minisplit heat pump has a low power draw and can sufficiently meet the heating/cooling needs of a 600 sq ft ADU.

12. It seems that on the margin, electrification produces net revenue to the electric utility that can lower rates or repay utility borrowing costs (e.g. increasing the sales of 19 cent electricity that costs the utility only 10 cents to buy wholesale, creates 9 cents per kWh of net revenue on the margin). Have you been able to assess this net revenue as a dollar source for reducing interest costs in loan programs?
 - A. We have incorporated it as a savings in the impact analysis and as a way of justifying the use of ratepayer funds to provide incentives. Those incentives could be used to help reduce interest costs or provide repayment assistance.

13. Has the City analyzed congestion pricing as an alternative for funding, particularly variable-priced congestion pricing, with different prices for those living in Palo Alto and those commuting into Palo Alto? If not, why not?
 - A. Congestion pricing on local roads is prohibited by the State of California. The City is evaluating parking pricing. Congestion pricing for parking could be something that the City could pursue if it adopts widespread parking pricing.

14. Has the City analyzed a municipal carbon tax, particularly a progressive, generally-revenue-neutral municipal carbon tax, that might complement the types of utility financing discussed today? If not, why not?
 - A. City staff has explored a municipal carbon tax at a very high level only. This is an area for future exploration and discussion.

15. On a related note about fiscal prudence, are you exploring the rapid implementation of a residential gas system decommissioning charge (starting at a few cents per therm) to help fund the retirement

the residential gas system? This would pass the proper price signal and help customers discover the savings of electrification.

- A. That is something the City could consider for analysis and that has been discussed internally. The price signal is similar to a carbon tax, though the use of funds is different.

16. Are there any cities, where the upgrades are cost saving, where upgrades are required by the city on burn out?

- A. We believe other cities are exploring such a mandate - but staff is not aware that any city has passed such an ordinance.

17. Rather than requiring upgrade on burnout, could City of Palo Alto Utilities offer 1) a “concierge” program to make it fast and easy to replace burned out water heaters with inventory, permitting, contractors and financing “ready to go” with one call from the homeowner, and 2) a predictive replacement program, annually contacting everyone who has a water heater near end of life with the offer to replace?

- A. How best to provide education, information, and incentives to residents as their appliances reach end of life is something City staff is considering. These ideas are a core part of the discussion and have been shared as ideas in previous sessions.

18. Would it make sense to encourage only the most power efficient of electrification devices (e.g. 15 Amp Water heaters, Highest efficiency heat pumps and 20-30 Amp EV chargers)? This would help electrify existing electric panels and give the utility a little time to catch up with pole mounted transformer increase projects.

- A. Yes, this idea is under discussion.

19. I would ask City of Palo Alto Utilities (CPAU) for incentives or rebates. We are estimating \$20,000 to convert our gas heated home to heat pump heated. Now there are no incentives or tax offering we are aware of to fund space heating – nothing from CPAU. So it is less an issue of finance, but rather offering any viable payback model. We anticipate our rate (gas – electric) will increase, as such it is not viable. I am lost as to finding any payback model we can offer other than altruism. My hunch is Palo Alto’s topic will not be financing by rather developing viable payback method.

- A. The City has certainly heard of the financial challenges and expects the business case to improve as additional programs and rebates are designed and released. The City offers many rebates and incentives now and is working on more:

<https://www.cityofpaloalto.org/Departments/Utilities/Residential/Save-Energy-Water>

Suggestion from Participant

- If you google NEM and CPAU you will find the answer to the question about if the City buys excess electricity from solar at the same price it charges customers. A little complicated by my reading, but the city buys excess residential PV electricity at half-ish the cost that a homeowner pays when they need to buy from the city.