



City of Palo Alto Utilities Advisory Commission Staff Report

Meeting Date: 1/5/2022

Title: Discussion of Objectives and Scope of Energy Resiliency and Reliability Plan

From: Director of Utilities

Lead Department: Utilities

<u>REQUEST</u>

Staff requests that the UAC discuss and provide feedback on the Energy Resiliency and Reliability Plan goal, objectives, and scope, and make suggestions regarding community engagement.

EXECUTIVE SUMMARY

In August 2021 Council received the <u>City of Palo Alto Utilities 2020 Energy Storage Report¹</u> and directed Staff to bring energy resiliency options back to the S/CAP Ad Hoc Committee.

In addition, Commissioner Metz of the UAC has reached out to Utilities leadership to discuss energy resiliency in all-electric community (Item #6 of Energy Storage Report) and community resiliency more broadly.

In November 2021 (<u>ID #13608</u>²), staff also presented the UAC with the initial results on the impact of decarbonization on the resiliency of single-family homes in Palo Alto.

Staff is seeking feedback from the UAC on the project goal, objectives, and scope prior to the formulation of an Energy Resiliency and Reliability Plan.

The draft Energy Resiliency and Reliability Plan Goal, Objectives and Scope are summarized below:

• Goal: Explore options for increasing energy resiliency in disasters which could potentially be considered for the customer programs portfolio, and local energy supply options for the energy portfolio

¹ https://efiling.energy.ca.gov/GetDocument.aspx?tn=236202-1&DocumentContentId=69171

² <u>https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/11-03-2021-regular/id-13608.pdf</u>

- Objectives: Preliminary investigations into options and costs to increase energy resiliency in disasters.
- Criteria: Planning-level costs, typical reliability, availability in different disasters, resiliency across disasters, co-benefits with electricity portfolio, air quality, equity
- Context: Given other City initiatives and regional planning efforts, the Energy Resiliency and Reliability Plan should be consistent, avoid duplication, identify gaps and consider opportunities that provide energy supply benefits.
- Reliability: include alternatives for consideration that provide Palo Alto with increased level of service during a major disaster that could disrupt energy infrastructure for 1-2 weeks.

Community engagement will be critically important for the success of the project. Staff seeks UAC input regarding forums and methods for soliciting such participation.

Any additional future work beyond the high-level assessment of what is described here would require additional staffing resources.

BACKGROUND

In August 2021 Council received the <u>City of Palo Alto Utilities 2020 Energy Storage Report</u>³ which found that energy storage within Palo Alto is not a cost-effective energy supply and reliability option under historical and anticipated reliability conditions. This analysis was consistent with other analyses⁴ given the lack of agreed upon value for disaster resiliency and use of the California CARB carbon prices (which are lower than the societal cost of carbon).

Staff also presented the initial results of a high-level disaster resiliency assessment at the November UAC.

The four key takeaways from the analysis presented to the UAC in November were:

- 1. Of natural gas appliances, only stoves and gas tank water heaters work when the power is out.
- 2. All-electric home resiliency could be enhanced with a wide-array of products.
- 3. The resiliency of EVs is equal or better than gasoline cars in the major disaster scenarios evaluated.
- 4. A 7.6 kW solar PV system and 13.5 kWh battery is enough to generally meet most the energy needs of an all-electric home and EV during a 24-hour power outage March through October.

During the discussion of those results in November 2021, the UAC expressed their interest in further discussion of energy resiliency more broadly.

³ <u>https://efiling.energy.ca.gov/GetDocument.aspx?tn=236202-1&DocumentContentId=69171</u>

⁴ Another analysis of potential value streams was completed by RMI in 2017 and can be found here: <u>https://rmi.org/wp-content/uploads/2017/03/RMI-TheEconomicsOfBatteryEnergyStorage-FullReport-FINAL.pdf</u>

To address the UAC interest, we are proposing to develop an Energy Resiliency and Reliability Plan. In addition to the Goal, Objectives, and Scope as outlined in the previous section, we are seeking feedback on the following key tenets for this Plan.

Key tenets of this Plan:

- 1. Plan will be a broad assessment of potential options for increased energy resiliency in natural and manmade disasters.
- 2. Plan will draw from completed work and work in coordination with Office of Emergency Services.
- 3. Plan will generate options to ensure resilient and affordable energy for Palo Alto residents and businesses.
- 4. This planning process must engage staff across relevant City departments, UAC, Council, and key stakeholders, and the public.

DISCUSSION

The UAC may want to consider the following questions to facilitate the discussion and feedback:

- 1. Is this the right goal for the Energy Resiliency Plan? Explore options for increasing energy resiliency in disasters which could potentially be considered for the customer programs portfolio and local energy supply options for the energy portfolio.
- 2. Is this the right objective for the Energy Resiliency and Reliability Plan? Investigate how the City can increase its energy resiliency to future uncertain conditions such as changes in climate, regulations, economics, political conditions, and natural disasters.
- 3. Does the UAC have feedback regarding the evaluation criteria under consideration and described as follows? Planning-level costs, typical reliability, availability in different disasters, resiliency across disasters, co-benefits with electricity portfolio, air quality, equity.
- 4. Is this the right focus? Evaluate locally-controlled energy supply and demand management projects and identify potential collaboration and regional project opportunities and education.
- 5. Should Palo Alto spend existing staff to do a high-level assessment of projects and actions that will result in increased reliability, exceeding current level of service in major disasters?
- 6. Is this the right approach? Focus on high-level assessment of costs for increased energy resiliency large disaster in concert with the S/CAP goals.
- 7. Does the UAC have input or ideas regarding methods for soliciting public input?

PUBLIC ENGAGEMENT

Resiliency, lowering costs, and lower carbon emissions are core values of CPAU. CPAU will engage the public as needed on the topic of energy storage in the S/CAP process and as part of any other local discussions on resiliency as they relate to energy storage.

NEXT STEPS

Staff will incorporate feedback from UAC members and return with an Energy Reliability and Resiliency Plan.

RESOURCE IMPACTS AND TIMELINE

The concepts listed here can be accomplished with existing staff resources. Staff time and Utilities priorities allowing, the concepts listed here should be completed by the end of calendar year 2022.

POLICY IMPLICATIONS

Energy storage is a key technology to enable increased penetration of renewable energy in California and, when installed in customer premises, reduce their utility use. These two aspects conform to Utilities Strategic Plan objectives and Council policy on environmentally sustainable development.

ENVIRONMENTAL REVIEW

UAC discussion of the scope and objectives of the Energy Resiliency and Reliability Plan is not a project requiring environmental review for the California Environmental Quality Act, because these are administrative activities of government that will not result in direct or indirect physical changes in the environment (Cal. Code Regs. Tit. 14 Sec. 15378(b)(5)).

Attachments:

• Attachment A: Colleagues Memo

Commissioner Memo: Neighborhood-Level Emergency Preparedness & Response City of Palo Alto Utilities Advisory Commission (UAC) December 28, 2021

From: UAC Commissioners Metz and Bowie

To: City of Palo Alto Utilities Director Batchelor CC: UAC Chair Forssell

Topic: Neighborhood-Level Emergency Preparedness & Response

Objective

Exploration by UAC of what, if any, initiative might make sense for PAU to provide energy / water for neighborhood-level emergency preparedness & response.

Background

Resilience is an important focus at UAC and CPAU this year. Over the past several years, our utility systems have been tested in the face of unprecedented climate-related events and black sky grid moments caused by transmission grid public safety power shutoffs. Despite general success and reliability in the face of these events, greater and more frequent challenges are projected. The ultimate test of resilience of our utility systems is their performance in an emergency, whether natural, technical, or manmade.

Palo Alto first responders and emergency facilities, such as hospitals, are prepared with backup electricity and water in the event of an emergency. However, residents in our neighborhoods are largely on their own to make emergency preparations for their basic needs, such as electricity to refrigerate medication and charge cellphones, and drinking water. Many are unaware of the gap between emergency preparedness and expectations for personal preparedness that may emerge during an actual event.

UAC Commissioner Phil Metz has explored the challenge of providing minimal electricity and water at the residential level with the goal of saving lives and enabling residents to remain in their homes: What emergencies should we prepare for? What is the "minimum credible" preparedness / response to these emergencies? What, if any, initiative might make sense for PAU to undertake? This exploration has included meetings and correspondence with Ken Dueker, Palo Alto's OES Director, an October 5, 2021 meeting with CPAU Director Dean Batchelor and several of his staff, subsequent one-one discussions with Lena Perkins, CPAU Senior Resource Planner and Emerging Technologies Manager, and a concluding meeting of Phil, Lena, and Ken.

Key Learnings

This exploration led to several insights regarding the nature of the challenge we face, the importance of preparation at the neighborhood level, the nature of "minimum credible" preparation that is required, and some of the obstacles we need to overcome:

- Emergencies are diverse and challenging to plan for [in OES nomenclature] natural (e.g., earthquake, wildfire, flood), technical (e.g., equipment failure), and manmade (e.g., cyberattack).
- Residents need to plan for a "worst case" of 1-2 weeks with no outside electricity or water. And in such an emergency residents will be largely on their own. City staffs have been cut and fewer employees live in or near Palo Alto who are ready to support in the face of an emergency.
- There appears to be a gap we need to reconcile between CPAU planning expectation (that a majority of customers will likely have electricity restored within 24-72 hours after a major disaster) and OES expectation (1-2 weeks of no residential electricity or water) in the event of a worst-case "design emergency". Meeting the basic needs of residents of multi-family residential buildings represent an especially difficult challenge.
- Though emergency preparation / response is an urgent and important problem, both CPAU and OES are shorthanded and cannot take on anything new without additional staffing and resources.

Recommended Actions

We recommend that UAC add the topic of Neighborhood-Level Emergency Preparedness and Response to its agenda as a high priority. In preparation for such a UAC discussion, we recommend that UAC advise PAU to:

- To the degree that a gap exists, reconcile CPAU and Palo Alto OES planning expectations: What constitutes a worst-case "design emergency" event? Are hazard/risk analysis probabilistic aligned between planning agencies? What would be the impact of such an event on residents? What preparation and response do residents need, especially in terms of meeting basic survival needs for electricity and water?
- 2. Investigate, in coordination with OES, a range of options for PAU's role in neighborhood-level preparedness and response especially in providing the electricity and water residents need for basic survival in a severe emergency (e.g., no grid electricity or City water for 1-2 weeks).
- 3. Based on this investigation, recommend what role, if any, CPAU should play in providing the electricity and water that residents will need for basic survival in the design emergency.
- 4. Recommend both near-term "right now" actions, based on current resources and available solutions (e.g., existing residential photovoltaic systems), and longer-term actions that anticipate future resources and emerging solutions that may accomplish multiple policy goals and provide optionality to individuals aiming to increase their own resilience, such as Solar + Storage and other forms of local generation and energy storage, such as EVs or electric bus "mobile batteries".

We recommend that, in conducting this work, PAU consider a broad range of preparedness / response options, from the most basic, such as community education, to using the existing OES Emergency Service Volunteer (ESV) network as "ambassadors" to get the word out, to providing "minimum

Commissioner Memo: Neighborhood-Level Emergency Preparedness & Response City of Palo Alto Utilities Advisory Commission (UAC) December 28, 2021

credible" emergency utility services, or even a more resilient electricity service for residents who want to be prepared and are willing to pay for it.