DRAFT

UTILITIES ADVISORY COMMISSION MEETING
MINUTES OF SEPTEMBER 5, 2018 REGULAR MEETING

CALL TO ORDER

Chair Danaher called the meeting of the Utilities Advisory Commission (UAC) to order at 7:00 p.m.

Present: Chair Danaher, Vice Chair Schwartz, Commissioners Ballantine, Forssell, Johnston, and Trumbull
Absent: Commissioner Segal

ORAL COMMUNICATIONS

David Carnahan, City Clerk's Office, shared information regarding recruitment for three vacancies on the Architectural Review Board, three vacancies on the Parks and Recreation Commission, and two vacancies on the Planning and Transportation Commission. The deadline for submitting applications for the positions is October 17 at 4:30 p.m. Commissioners are requested to encourage residents to apply for the vacancies.

APPROVAL OF THE MINUTES

Chair Danaher revised the second sentence of the second paragraph on page 8 to "If safety requires it, transformers should be pad-mounted …"

Commissioner Johnston requested staff complete the final sentence of the second paragraph on page 5.

Commissioner Trumbull moved to approve the minutes from the August 1, 2018 meeting as amended. Commissioner Johnston seconded the motion. The motion carried 5-0 with Chair Danaher and Commissioners Ballantine, Forssell, Johnston, and Trumbull voting yes, Vice Chair Schwartz abstaining, and Commissioner Segal absent.

AGENDA REVIEW AND REVISIONS

Chair Danaher announced Item 3 under New Business will be heard first.

REPORTS FROM COMMISSIONER MEETINGS/EVENTS

Vice Chair Schwartz reported in June she led a workshop for the Low-Income Community Solar Working Group where participants learned about business models other than subscription. In July, she attended the Smart Electric Power Alliance (SEPA) Grid Evolution Summit. In August, Vice Chair Schwartz attended a low-income energy issues forum and community solar webcast. As a merit reviewer of applications for Department of Energy (DOE) grants, she found the latest innovations for solar projects interesting.

UTILITIES GENERAL MANAGER REPORT

Dean Batchelor, Utilities Chief Operating Officer, delivered the General Manager's Report.

Council Votes to Support Bay Delta Plan - On July 6, the State Water Resources Control Board issued a Draft Final Bay Delta Plan Update, also known as the Bay Delta Plan, calling for 40% unimpaired flow on the

Tuolumne River between the months of February and June, regardless of water supply conditions. To-date the SFPUC, the City's water supplier, and BAWSCA, an association of wholesale water suppliers (including Palo Alto) served by the SFPUC, have advocated for a voluntary settlement agreement among affected parties rather than adoption of the 40% unimpaired flow requirement. On August 20, the City held a public hearing to discuss the State's proposed Bay Delta Plan. City staff recommended Council support a voluntary negotiated settlement process, and Council instead voted unanimously to support the Bay Delta Plan, including the flow criteria. The plan has not yet been adopted. While the State Board had originally planned to issue a final decision by August 23, action was delayed to allow more time for voluntary settlement and preserve what the State referred to as an "opportunity to make the non-flow elements more concrete and reduce the potential water supply impact." On August 28, Palo Alto's water supplier, the SFPUC, held a public hearing and heard testimony from advocates, but took no action to change its position. Another SFPUC hearing is expected at a later date. The Santa Clara Valley Water District, of which the City is part, also held a public hearing on August 28 on the Bay Delta Plan. The District Board voted unanimously to support a voluntary settlement process.

Emergency Tabletop Exercise this Week - On September 6, the City will participate in an annual regional disaster exercise known as Urban Shield. Simulating the aftermath of a major earthquake, staff from Utilities, Public Safety, Public Works, and other City departments will operate from the Mobile Emergency Operations Center (MEOC), collaborating with other regional agencies on a disaster recovery response. City Council will also proclaim National Emergency Preparedness Month at their September 10th meeting. Learn more about the City's emergency preparedness efforts at cityofpaloalto.org/preparedness.

Upcoming Events

- **Midtown Residents Association Ice Cream Social -** Utilities staff will host an information booth at the annual Midtown Residents Association Ice Cream Social on September 16. Please join us and other community organizations at Hoover Park from 1 to 4 pm.
- **Electric Vehicle Ride & Drive Event –** Also on September 16, the City is co-sponsoring an electric vehicle ride and drive event at the Peninsula Conservation Center. To commemorate National Drive Electric Week, EV owners and dealers will bring out various zero-emissions vehicles for interested drivers to test out. Find details and registration at cityofpaloalto.org/workshops.
- **SunShares Workshop -** On September 29, the City is hosting an introductory workshop on the SunShares solar and zero-emissions vehicle program. Attendees can learn more about these technologies, incentives, benefits of combining solar with electric vehicles, and how to access the program's group-buy discounts. Register at cityofpaloalto.org/sunshares.

COMMISSIONER COMMENTS

Commissioner Ballantine remarked on the importance of the esoteric Department of Energy analysis regarding N+1+1 redundancy given the scenario presented at the resilience workshop. The PG&E natural gas pipeline is probably an asset in N+1+1 scenarios; whereas, in the given scenario, it was not an asset. Another takeaway from the workshop was the need for City of Palo Alto Utilities (CPAU) staff or qualified volunteers to be in place following a disaster so that recovery can begin.

Commissioner Forssell understood the purpose of the workshop was to understand the community's perception of resiliency and the community's values. While the workshop illuminated interesting properties of the City's preparedness, it provided little time for residents to share their thoughts. Staff's presentations were more relevant than the consultants' presentations.

Vice Chair Schwartz stated the experts were supposed to answer questions rather than give presentations. The workshop should have been more interactive. The scenario should have been less drastic and more realistic to demonstrate the need for CPAU to invest in projects that aid recovery from realistic events.

Commissioner Trumbull concurred with use of the word esoteric in relation to the workshop.

UNFINISHED BUSINESS

None

NEW BUSINESS

ITEM 1: DISCUSSION: Discussion of the 2018 Electric Integrated Resource Plan (EIRP) and Related Documents.

Jim Stack, Senior Resource Planner, reported the EIRP needs to be approved by the City Council by the end of the year and submitted to the State. In October, staff will present the full EIRP to the UAC and request the UAC recommend the City Council approve it. The EIRP objectives, strategies, and work plan will guide staff over the next few years during implementation of the EIRP. Integrated resource planning is the process used to develop a roadmap for meeting energy needs over a specific planning horizon while achieving objectives for cost, sustainability, and reliability. SB 350 revised all the requirements for the Renewable Portfolio Standard (RPS) and energy efficiency; established formal greenhouse gas reduction targets for the electric sector; and requires all larger utilities to submit a periodic EIRP to State regulators. Since June 2017, staff has presented components of the EIRP every few months to the UAC. Previously, staff performed integrated resource planning under the framework of the Long-Term Electric Acquisition Plan (LEAP), which was last updated in 2012. Since 2012, targets for greenhouse gas emission reduction, RPS, and energy efficiency have increased, and distributed generation has proliferated along with growth in energy storage markets and electric vehicles. CPAU has adopted a carbon-neutral supply plan, almost tripled its RPS level, reduced greenhouse gas emissions, initiated a feed-in tariff program, signed six new solar Power Purchase Agreements, realized major energy efficiency savings, installed electric vehicle chargers on City property, and adopted a new Strategic Plan, a Sustainability and Climate Action Plan (S/CAP), a Local Solar Plan, and an Electrification Work Plan since 2012. CPAU's supply portfolio reflects the growth of solar purchases over the past few years, which places the RPS level far ahead of State requirements. The City's greenhouse gas emissions reached zero in 2013 with adoption of the Carbon Neutral Plan. Discussion of the appropriateness of the current methodology for carbon accounting will continue over the next year. CPAU's target for greenhouse gas emissions is a range because the State has not formally adopted a methodology. Staff expects the portfolio will include supply-side resources such as efficiency and behind-the-meter solar by 2020. By 2030, the amount of landfill gas and wind in the portfolio will decrease as contracts expire. A detailed look at the load forecast between 2018 and 2030 depicts the impacts staff expects on the load from various types of Distributed Energy Resources (DER). Electric vehicles (EV) and heat pump water and space heaters are expected to add to the load while efficiency and behind-the-meter solar are expected to reduce the load by a greater amount. Over all, staff expects the load to decrease slightly from the current level. Jonathan Abendschein, Resource Management Assistant Director, clarified that the 6.6% is not a decrease from the current level but a decrease from where the utility would be in 2030.

Stack further stated that the overall objective for the EIRP is derived from CPAU's Mission Statement. To fulfill the objective, staff proposes nine strategies to pursue an optimal mix of supply side and demand side resources. The strategies are to maintain a carbon neutral supply; to actively manage portfolio supply cost uncertainties; to manage the portfolio to ensure the lowest possible ratepayer bills; to partner with external agencies to implement optimization opportunities; to manage supplies to meet changing customer loads and load profiles; to ensure reliable and low-cost transmission services; to support local electric supply resiliency; and to comply with all State and Federal laws and regulations.

The EIRP Work Plan is organized around the nine strategies and lists a description of activities staff plans to pursue. First, staff will evaluate the merits of a new 30-year Western contract. The Western contract is the largest single resource in the portfolio in that it supplies almost 40% of CPAU's energy needs in an average year. The contract expires at the end of 2024. Western has been a good, low-cost resource; however, it is not as attractive now because of the availability of many new renewables and because of uncertainty around its output and cost. Analysis of the net value of a renewed Western contract indicates the Western contract will have the highest expected net value of all resources evaluated, except for new in-state wind resources.

However, there are many large uncertainties around the expected value for Western. Staff will attempt to narrow the uncertainties and get a better sense of the actual cost and value of the resource. Staff will also focus on negotiating the Western contract language in the next year to build flexibility into the contract. Second, staff will evaluate the merits of rebalancing the supply portfolio to more closely match load with resources. From season to season, the load profile does not change significantly, but the supply profile does. This is based on the assumption that staff dispatches hydroelectric resources in order to maximize their value based on market price signals rather than matching load with supply. Hydroelectric and solar generation exacerbate the imbalance between load and supply. Other resources, particularly out-of-state wind, may be complementary to the current profile. Staff will continue to examine the issue over the coming year in coordination with analysis of the Western contract. Third, staff will evaluate how best to utilize the City's 50 megawatt (MW) share of the California Oregon Transmission Project (COTP) transmission asset starting in 2024. The COTP Project is a way to import low-cost wind resources. Staff needs a more thorough examination of all potential uses for the resource and decide the best use of the resource. Fourth, staff will evaluate various methods of accounting for the supply portfolio's carbon content and consider updating the definition of carbon neutrality. Currently, calculation of the portfolio's emissions is based on the net annual volumes of market power purchases. However, the carbon content associated with market power on the grid varies significantly over the course of a year and a single day. The State is currently undertaking three initiatives regarding the accounting methodology. Fifth, staff will evaluate the merits of monetizing excess RPS supplies and consider different approaches to achieving RPS compliance. In November 2017, the UAC indicated its preference for a focus on cost minimization by selling excess supplies and potentially swapping some high-value category 1 resources for lower-cost category 3 resources. Staff is planning to return to the UAC with some analysis of different options for pursuing that approach. SB 100, if signed by the Governor, will provide certainty on CPAU's ultimate RPS target for 2030.

In response to Commissioner Forssell's query regarding SB 100's definition of clean energy, Stack understood the definition was basically renewables and large hydroelectric, but he would confirm the definition.

Stack further reported that staff will explore synergistic opportunities to work with the Northern California Power Agency (NCPA) and other agencies, including transacting with them or operating joint customer programs. Lastly, staff will undertake a competitive assessment of the Electric Utility within the context of the proliferation of customer-side DER technologies and will develop contingencies to address the potential for large changes in load as a result of DER adoption. DERs have the potential to substantially alter the magnitude and shape of the load.

Commissioner Johnston remarked that the slides dramatize the problem of matching resources with load and remind him that matching is a major issue.

Commissioner Ballantine questioned the projections that the load will remain flat or decrease given the electrification of homes and vehicles. It is very possible if not likely that the electric load will increase while the overall energy load decreases. Lena Perkins, Resource Planner, advised that the projections are consistent with statewide projections. The main drivers for the projections are the requirements for increasing energy efficiency and the decrease in manufacturing and industrial loads. The California Energy Commission (CEC) developed a Palo Alto-specific forecast that projects Palo Alto's load will decrease 10-15%. Abendschein added that CPAU's load is 20% residential and 80% commercial. A large increase in the residential load does not dramatically increase the Citywide load. Commissioner Ballantine commented that an analysis of a scenario wherein all houses and all vehicles are electric would be interesting. Perkins suggested staff could run that scenario as a sensitivity case. Doubling the residential load would total only 15% of the Citywide load. Chair Danaher noted the possibility of more commuters charging their vehicles at work. Perkins advised that the trend is the opposite; approximately 80% of charging happens at home. Stack indicated staff needs to consider the possibility of significant increases as well as decreases in load, build flexibility into the portfolio, and plan for such uncertainty.

In reply to Vice Chair Schwartz's query as to whether staff has considered block chain, Perkins reported staff has not considered block chain in any scenarios to date. Vice Chair Schwartz requested staff add some charts regarding coincident and non-coincident demand because everyone needs to understand those terms, as they have implications on whether the electrons they are using are truly carbon neutral. It would be useful to look at bulk storage options and other things that the utility could implement to utilize all the solar power generated in the City. A discussion of storage should include personal storage and the public safety of battery storage.

Commissioner Forssell expressed interest in the new average hydroelectric year given the effects of climate change. Stack advised that staff recently updated the long-term forecast for Western, based on recent historical data, and reduced the expected level of hydroelectric by approximately 10%. The updated data is reflected in the graphs. Commissioner Forssell hoped the initiative to rebalance the portfolio did not mean balancing the load just to Palo Alto, but to the wider California grid.

Chair Danaher concurred with prior comments about energy storage. Energy storage will become much more cost effective. The water resource will be at risk, which affects geothermal resources as well as hydroelectric resources.

Commissioners requested the next presentation include information regarding coincident and non-coincident demand; resources that could fill the voids in supply so that the cost effectiveness and value of storage can be determined; and information about the COTP transmission asset.

ACTION: No action

ITEM 2. ACTION: Staff Recommendation that the Utilities Advisory Commission Recommend that Council Accept the Utilities Smart Grid Assessment and Utilities Technology Implementation Plan, Including Advanced Metering Infrastructure-Based Smart Grid Systems to Serve Electricity, Water, and Natural Gas Utility Customers.

Shiva Swaminathan, Senior Resource Planner, reported staff framed the discussion in the broader context of coordinating projects for the Electric Resource Plan (ERP) System, the Customer Infrastructure System (CIS), and Advanced Metering Infrastructure (AMI). Staff quantified the benefits where possible, but there are significant qualitative benefits. The net present value for investment over an 18-20 year period was calculated to be zero with operating expenses of $27 million and capital expenses of $17 million.

In answer to Chair Danaher's question regarding inclusion of expanding the time-of-use (TOU) billing system and more aggressive or new demand response approaches as benefits, Swaminathan indicated that demand response was included, but a TOU rate was not included. The coincident capacity is accounted for. Benefits such as influencing the load with smart meters to charge at the right time were too difficult to quantify.

Swaminathan further reported that the expected customer bill impact is neutral, but a wide range occurs based on the outcomes of cost sensitivities. In adverse scenarios, the bill impact is predicted to be 1-2%. In more beneficial scenarios, the bill impact is a decrease of 0.5%.

Abendschein clarified that the staff recommendation is an indication that the general roadmap for AMI is acceptable to the UAC and Council. If the UAC wishes to submit a letter to the Finance Committee and Council regarding the UAC's position, he would appreciate any direction from the UAC.

Commissioner Johnston expressed some discomfort with the expected outcomes in each case falling at the bottom of the sensitivity range. In response to his question regarding AMI interaction with DERs, Swaminathan explained that AMI meters will aid in differential compensation for customers who invest in DERs. To the extent AMI can incentivize EV charging at a particular time, it can reduce the adverse impact on the distribution grid. For commercial customers, AMI can aid the implementation of TOU rates. Commissioner Johnston stated that reinforces the importance of AMI.

Herb Borock questioned whether customers could choose not to utilize a smart meter, the security of data transmissions, and whether fiber to the premises (FTTP) could be utilized with AMI. Swaminathan reported customers could opt out of smart meters with the cost of manual meter reading charged to the customer. FTTP is an option for data transmission, but it occurs at backhaul nodes only.

Vice Chair Schwartz remarked that utilities receive so much more value from AMI than anticipated. Techniques to enhance customer buy-in are known and available. Allowing customers to opt out of smart meters should be a policy. The DOE is developing a voluntary code of conduct that will align with information and data privacy concerns in both the U.S. and Europe. She volunteered to compile a list of publications and videos that explain all the components of AMI.

Dean Batchelor, Utilities Chief Operating Officer, agreed that customers have many concerns about radio waves and data security. The most important component of implementing AMI is a communication plan for all residents and businesses. Staff has plenty of time to explore best practices and lessons learned by other jurisdictions.

Vice Chair Schwartz believed the value of AMI is all the things it will enable.

In reply to Chair Danaher's query regarding communicating the UAC's strong support for implementing AMI to the Council, Councilmember Filseth did not believe AMI would be a controversial issue for the Council because the numbers work.

Chair Danaher commented that the numbers omit many of AMI's benefits.

Commissioner Forssell felt it is important for staff to point out to the Council that the business case does not express the full value of AMI.

ACTION: Commissioner Trumbull moved to recommend that Council accept the Utilities Smart Grid Assessment and Utilities Technology Implementation Plan, including Advanced Metering Infrastructure-based smart grid systems to serve Electricity, Water, and Natural Gas Utility customers. Commissioner Forssell seconded the motion. The motion carried 6-0 with Chair Danaher, Vice Chair Schwartz, and Commissioners Ballantine, Forssell, Johnston, and Trumbull voting yes, and Commissioner Segal absent.

ITEM 3. DISCUSSION: Discussion of 2019 California Energy Standards and Associated Rooftop Solar Mandate. Melanie Jacobson, Integrated Design 360, reported that enforcement of the new Building Code will begin January 1, 2020. The solar photovoltaic (PV) updates to the Energy Code create a mandatory requirement for new construction residential buildings, which include single-family homes and low-rise residential buildings. PV sizing requirements will be based on the annual electricity load. The consumption prediction is based on energy modeling software created by the California Energy Commission (CEC). The software remains in research mode with respect to all-electric homes with no gas hookup.

In response to Vice Chair Schwartz's inquiry regarding a home with no gas hookup or a home not allowed to have a gas hookup, Jacobson answered a home without a gas hookup. A larger PV system will likely be required for an all-electric home compared to a home with a gas hookup. The official requirement will be known when the compliant software is released in January 2019.

Jacobson continued with the presentation, stating several exceptions to the regulation have been provided for new residential construction that participates in community solar programs. The Code provides exceptions and specific requirements for situations where existing trees, hilltops, or adjacent structures inhibit the use of solar. Homeowners who install battery storage with PV will reduce the PV requirement by up to 25%.

In reply to Vice Chair Schwartz's hypothetical scenario of one neighbor planting a tree in his yard that could grow to block the solar panels on an adjacent neighbor's newly constructed house, Jacobson explained that the 2009 Solar Shade Act gives precedence to the item existing first.

Jacobson further stated that essentially any new residential permit submitted after January 1, 2020 will need to meet the requirement, but existing residential buildings undergoing any sort of alteration and all commercial construction will not be impacted by the requirement.

In answer to Commissioner Forssell's question regarding Code requirements to optimize roof design for solar and placement of solar panels, Jacobson advised that the Code provides specific rules for designing the roof and situating solar panels.

Chair Danaher noted 100-200 buildings in Palo Alto would be affected each year by the requirement. Over ten years, the requirement would impact the electric load. The regulation will cause cities to incur a higher cost for obtaining carbon neutrality, and staff will consider that and the regulation's impact on the tree canopy when discussing the City's legislative agenda.

Vice Chair Schwartz commented that implementation of Palo Alto's smart grid will occur two years after the regulation becomes effective; therefore, the City will not be able to manage the regulation effectively. With hundreds of new PVs and hundreds of new electric vehicles, CPAU could be in a difficult position. Palo Alto needs more time to comply with this regulation. Perhaps staff could conduct an audit to determine possible locations for community solar, even though it is more expensive, as a means to comply with PV requirements.

Christine Tam, Senior Resource Planner, reported that the CEC analyzed the solar mandate based on cost-effectiveness for each kilowatt hour (kWh) of solar generation from the rooftop. The analysis looked at the dominant utility in each climate zone, and Palo Alto's climate zone is based on PG&E's retail rates. PG&E has much higher electric retail rates than Palo Alto. The buy-back rate for Palo Alto residents is not as favorable as PG&E's rate. The analysis was noted to CEC staff, who replied that language in the Energy Code allows Palo Alto to request an exemption from the solar mandate if it can demonstrate that rooftop solar is not cost effective for Palo Alto residents. The solar mandate would not be cost effective for Palo Alto residents; however, most people are excited about mandate.

Vice Chair Schwartz remarked that most people do not understand the tradeoffs and are supporting the mandate based on their emotions. Palo Alto residents will not be happy to learn they cannot plant trees.

Chair Danaher requested a future staff report regarding plans and strategies for seeking changes in the law.

Commissioner Ballantine noted an oddity in that the mandate provides a reverse incentive to install solar with energy storage as opposed to a mandate for solar with energy storage. The only positive thing for Palo Alto would be promotion of solar energy with energy storage.

ACTION: No action

ITEM 4. ACTION: Selection of Potential Topic(s) for Discussion at Future UAC Meeting.
Chair Danaher reported staff will share their analysis of charging systems at a future meeting.

Jonathan Abendschein, Resources Management Assistant Director, advised that multiple cost of service studies and financial forecasts will be presented to the UAC over the next several months.

Commissioner Johnston requested an agenda item for energy storage.

ACTION: No action

NEXT SCHEDULED MEETING: October 3, 2018

Meeting adjourned at 8:57 p.m.

Respectfully Submitted
Rachel Chiu
City of Palo Alto Utilities