CITY OF PALO ALTO

UTILITIES ADVISORY COMMISSION
Special Meeting
Wednesday, July 09, 2025
Community Meeting Room & Hybrid
6:00 PM

Utilities Advisory Commission meetings will be held as "hybrid" meetings with the option to attend by teleconference/video conference or in person. To maximize public safety while still maintaining transparency and public access, members of the public can choose to participate from home or attend in person. Information on how the public may observe and participate in the meeting is located at the end of the agenda. Masks are strongly encouraged if attending in person. The meeting will be broadcast on Cable TV Channel 26, live on YouTube https://www.youtube.com/c/cityofpaloalto, and streamed to Midpen Media Center https://midpenmedia.org.

VIRTUAL PARTICIPATION CLICK HERE TO JOIN (https://cityofpaloalto.zoom.us/j/96691297246)
Meeting ID: 966 9129 7246 Phone: 1(669)900-6833

PUBLIC COMMENTS

Public comments will be accepted both in person and via Zoom for up to three minutes or an amount of time determined by the Chair. All requests to speak will be taken until 5 minutes after the staff's presentation. Written public comments can be submitted in advance to UAC@PaloAlto.gov and will be provided to the Council and available for inspection on the City's website. Please clearly indicate which agenda item you are referencing in your subject line.

PowerPoints, videos, or other media to be presented during public comment are accepted only by email to UAC@PaloAlto.gov at least 24 hours prior to the meeting. Once received, the Clerk will have them shared at public comment for the specified item. To uphold strong cybersecurity management practices, USB's or other physical electronic storage devices are not accepted.

Signs and symbolic materials less than 2 feet by 3 feet are permitted provided that: (1) sticks, posts, poles or similar/other type of handle objects are strictly prohibited; (2) the items do not create a facility, fire, or safety hazard; and (3) persons with such items remain seated when displaying them and must not raise the items above shoulder level, obstruct the view or passage of other attendees, or otherwise disturb the business of the meeting.

TIME ESTIMATES

Listed times are estimates only and are subject to change at any time, including while the meeting is in progress. The Commission reserves the right to use more or less time on any item, to change the order of items and/or to continue items to another meeting. Particular items may be heard before or after the time estimated on the agenda. This may occur in order to best manage the time at a meeting to adapt to the participation of the public, or for any other reason intended to facilitate the meeting.

CALL TO ORDER 6:00 PM – 6:05 PM

AGENDA CHANGES, ADDITIONS AND DELETIONS 6:05 PM – 6:10 PM
The Chair or Board majority may modify the agenda order to improve meeting management.

PUBLIC COMMENT 6:10 PM – 6:25 PM
Members of the public may speak to any item NOT on the agenda.

APPROVAL OF MINUTES 6:25 PM – 6:35 PM

1. Approval of the Minutes of the Utilities Advisory Commission Meeting Held on May 7, 2025

2. Approval of the Minutes of the Utilities Advisory Commission Meeting Held on June 4, 2025

UTILITIES DIRECTOR REPORT 6:35 PM – 6:50 PM

NEW BUSINESS

3. Design Principles for Gas and Electric Rates **ACTION:** 6:50 PM – 7:50 PM

4. Approval of a Third Phase Agreement with Northern California Power Agency for the Purchase of Battery Energy Storage Capacity from Trolley Pass Project LLC, Over a Term of up to 20 Years for a Total Not to Exceed Amount of $161.7 Million; CEQA status: Not a Project Under CEQA Guidelines Sections 15378(a) **ACTION:** 7:50 PM – 8:35 PM

5. Status Update on Studies Related to the Electric Utility's Reliability and Resiliency Strategic Plan (RRSP) Strategies 4 and 5 and Request for Feedback on Draft Proposals for Implementation. CEQA Status: Not a Project. **ACTION:** 8:35 PM – 9:35 PM

FUTURE TOPICS FOR UPCOMING MEETINGS

COMMISSIONER COMMENTS AND REPORTS FROM MEETINGS/EVENTS

ADJOURNMENT

SUPPLEMENTAL INFORMATION
The materials below are provided for informational purposes, not for action or discussion during UAC Meetings (Govt. Code

Section 54954.2(a)(3)).

INFORMATIONAL REPORTS

12-Month Rolling Calendar

Public Letter(s) to the UAC

PUBLIC COMMENT INSTRUCTIONS

Members of the Public may provide public comments to teleconference meetings via email, teleconference, or by phone.

1. **Written public comments** may be submitted by email to UAC@PaloAlto.gov.
2. **Spoken public comments using a computer** will be accepted through the teleconference meeting. To address the Council, click on the link below to access a Zoom-based meeting. Please read the following instructions carefully.
    - You may download the Zoom client or connect to the meeting in- browser. If using your browser, make sure you are using a current, up-to-date browser: Chrome 30 , Firefox 27 , Microsoft Edge 12 , Safari 7 . Certain functionality may be disabled in older browsers including Internet Explorer.
    - You may be asked to enter an email address and name. We request that you identify yourself by name as this will be visible online and will be used to notify you that it is your turn to speak.
    - When you wish to speak on an Agenda Item, click on "raise hand." The Clerk will activate and unmute speakers in turn. Speakers will be notified shortly before they are called to speak.
    - When called, please limit your remarks to the time limit allotted. A timer will be shown on the computer to help keep track of your comments.
3. **Spoken public comments using a smart phone** will be accepted through the teleconference meeting. To address the Council, download the Zoom application onto your phone from the Apple App Store or Google Play Store and enter the Meeting ID below. Please follow the instructions B-E above.
4. **Spoken public comments using a phone** use the telephone number listed below. When you wish to speak on an agenda item hit *9 on your phone so we know that you wish to speak. You will be asked to provide your first and last name before addressing the Council. You will be advised how long you have to speak. When called please limit your remarks to the agenda item and time limit allotted.

CLICK HERE TO JOIN **Meeting ID: 966 9129 7246 Phone:1-669-900-6833**

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Utilities Advisory Commission
Staff Report

From: Alan Kurotori, Director Utilities
Lead Department: Utilities

Meeting Date: July 9, 2025
Report #: 2506-4879

TITLE
Approval of the Minutes of the Utilities Advisory Commission Meeting Held on May 7, 2025

RECOMMENDATION
Staff recommends that the Utilities Advisory review and approve May 7, 2025 minutes.

Commissioner _____ moved to approve the draft minutes of the May 7, 2025 meeting as submitted/amended.

Commissioner _____ seconded the motion

ATTACHMENTS
Attachment A: May 7, 2025 Draft Minutes

AUTHOR/TITLE:
Alan Kurotori, Director of Utilities
Staff: Kaylee Burton, Utilities Administrative Assistant

UTILITIES ADVISORY COMMISSION MEETING
MINUTES OF MAY 7, 2025, REGULAR MEETING

CALL TO ORDER

Chair Scharff called the meeting of the Utilities Advisory Commission (UAC) to order at 6:02 PM.

Present: Chair Scharff, Vice Chair Mauter, Commissioners Croft, Gupta (Remote), Metz, Phillips (6:04 PM), and Tucher
Absent: None

AGENDA REVIEW AND REVISIONS

None

ORAL COMMUNICATIONS

Peter Drekmeier, Policy Director for the Tuolumne River Trust, stated he sent an email to the UAC on Friday that included a complaint he had sent to the State Water Board regarding the SFPUC's unreasonable use pattern of hoarding and spilling water. The SFPUC's regularly scheduled meeting was canceled on Earth Day due to lack of a quorum. The SFPUC and BAWSCA declined to participate in the League of Women Voters of Palo Alto's water forum. Mr. Drekmeier hoped to have SFPUC and BAWSCA come to Palo Alto for a study session or workshop, and was interested in hearing the responses to the questions the UAC encouraged the City to ask.

APPROVAL OF THE MINUTES

ITEM 1: ACTION: Approval of the Minutes of the Utilities Advisory Commission Meeting Held on April 2, 2025

Commissioner Gupta moved to amend the minutes with his written draft. Commissioner Gupta noted Item 2 was blank and the action on Page 37 needed to be clarified.

Vice Chair Mauter wanted time to review Commissioner Gupta's proposed amendments.

Commissioner Tucher wanted the finalized Work Plan document attached to the minutes, and Vice Chair Mauter agreed.

Chair Scharff suggested that the Commission not vote on the minutes tonight. Chair Scharff asked staff to make any necessary edits to the minutes after watching the video, and staff can follow up with Commissioner Gupta if needed.

Commissioner Metz expected to see the Work Plan in the meeting minutes. Commissioner Metz wanted to keep Commissioner Gupta's proposed amendments in addition to the detailed Work Plan to keep a history of the Commission's work.

Kiely Nose, Assistant City Manager, mentioned that staff had not yet reviewed Commissioner Gupta's amendments. Staff will take the Commission's feedback and update the minutes. Staff was in the process of finishing the revised Work Plan and will bring it to Council for review and adoption.

Commissioner Tucher asked when the UAC can see the revised Work Plan. Ms. Nose replied that the Commission could ask staff to bring the revised Work Plan back to the UAC for review as an agenda item or staff can transmit the revised Work Plan to Council as a consent item and staff will send the Commission a copy once Council's agenda goes out.

ACTION: April 2, 2025 revised minutes will come back to the UAC in June.

UTILITIES DIRECTOR REPORT

Kiely Nose, Assistant City Manager, reported that Council will have a study session on Monday about the Finance Committee's budget discussions. The budget process will continue through adoption on June 16. Staff will keep the UAC apprised. The Council adopted their 2025 Priorities and Objectives on Monday night's consent calendar. Two consent items were related to Utilities, one for trenching and work associated with undergrounding in the foothills for fire mitigation and grid modernization, the other item was for printing and mailing services for our utility bills.

Last week, the NCPA and NWPPA co-hosted their annual Federal Policy Conference. Vice Mayor Veenker and COO Alan Kurotori were in attendance.

Ms. Nose announced Terry Crowley was the new Assistant Director over Electric Engineering and Operations. Mr. Crowley had 27 years' experience leading public utilities, including as the Utility Director for the City of Healdsburg's Electric, Water, and Wastewater Department for the last 14 years; and previously held positions with the City of Redding and PG&E.

Ms. Nose confirmed that Council Member Stone submitted a letter to SFPUC. To Ms. Nose's knowledge, there had not been a response but staff will keep the Commission apprised on any outgrowth.

Staff finished reviewing the T's and C's for the $16.5 million federal grant and was signing the agreement.

CPAU was recently elected to the CMUA Board of Governors. CMUA is an important organization that advocates for the interests of 84 publicly owned utilities who provide water service to 75 percent of Californians and electric service capacity to 25 percent of the state.

Upcoming events can be found at paloalto.gov/workshops, including Save Money on an EV, affordable housing fair, and an e-bike and e-scooter expo.

For decades, Palo Alto had been working on a secondary electric transmission corridor to improve reliability, capacity, and redundancy. The CAISO Board of Governors will consider approval of a new 115 kV transmission line from NASA Ames in Mountain View to Palo Alto. This project has to go through design but was expected to cost between $40 and $80 million and will be funded through the

Transmission Access Charge assessed to electric utilities throughout the state. PG&E will build this new line, which is expected to be in service in 2034.

Staff has been doing community outreach about utility rates. At the Facility Managers Meeting, Utility Program Services staff presented the Westin Hotel with a rebate check for energy and water savings.

Ms. Nose provided the following update on UAC action items from the last meeting: Universal access was referred to the Human Relations Commission. An item on data center competitiveness will be scheduled. Stanford was informed of the City's interest in a transmission corridor. Topics on the legislative session and microplastics were scheduled. A discussion on emergency preparedness will be included with the Wildfire Mitigation Plan update.

Commissioner Tucher asked what was meant by the slide saying a new transmission line was proposed, how funding may impact the City's P&L and future rate base, and if the City will not go forward with a Stanford partnership. Alan Kurotori, Utilities Chief Operating Officer, explained that staff had been working with Stanford to get a second connection; however, in 2019, staff pivoted to work on a CAISO connection. Staff has been working through the CAISO process, which included transition planning and submitting load projections to the California Energy Commission (CEC). This project was published as part of CAISO's work plan and has been calendared for CAISO's consideration for approval. Ms. Nose stated a second CAISO transmission line will alleviate one of the City's core resiliency concerns but the City could build many connections. Having discussions with Stanford was part of the UAC's work plan. Mr. Kurotori said the cost was not 100 percent attributable to Palo Alto because CAISO's low-voltage transmission projects were funded by Transmission Access Charges (TAC), so the cost will be allocated throughout the state in CAISO's service territory. This transmission project was estimated to cost CAISO between $42 and $84 million. TAC was based on the amount of energy Palo Alto uses from CAISO.

Commissioner Croft received a notice today in the mail about a public hearing on water and wastewater rates and was curious why only those rates. Mr. Kurotori responded that water and wastewater rates fell under Proposition 218, which required Utilities to send a notice to customers. If 50 percent plus 1 customers protest at the meeting, the rate does not pass. The electric utility was not part of Proposition 218.

Commissioner Gupta found the table of action items very helpful.

NEW BUSINESS

ITEM 2: ACTION: Approval of Chair and Vice Chair to Serve a Short Term of May 7, 2025 through April 1, 2026

ACTION: Vice Chair Mauter moved to approve Chair Scharff continue for a second term as Chair of the UAC.

Commissioner Phillips seconded the motion.

The motion carried 7-0 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, Metz, Phillips, and Tucher voting yes.

ACTION: Chair Scharff moved to approve Vice Chair Mauter continue for a second term as Vice Chair of the UAC.

Commissioner Phillips seconded the motion.

The motion carried 6-0 with Chair Scharff and Commissioners Croft, Gupta, Metz, Phillips, and Tucher voting yes. Vice Chair Mauter abstained.

ACTION: Commissioner Croft moved for the Chair's and Vice Chair's one-year term to end April 30, 2026.

Chair Scharff seconded the motion.

The motion carried 7-0 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, Metz, Phillips, and Tucher voting yes.

Commissioner Tucher inquired who will communicate the results of Council's decision on their interviews for the two UAC openings. Chair Scharff answered that the incumbents were reappointed.

Public Comment: Ms. S. Peterson reminded Commission members to use their microphones because otherwise it was difficult to hear what was being said, which was critical for public access.

ITEM 3: ACTION: Utilities Advisory Commission Finance Subcommittee Recommends the Commission Recommend City Council Approve the FY 2026 Fiber Rates and Packages

Commissioner Croft said the subcommittee did not have time to discuss the budget because it was received the day before. For marketing purposes, Commissioner Croft felt it was necessary to have a map showing providers' penetration versus availability. The market was competitive with AT&T and Xfinity providing service at 1Gbps plus. Commissioner Croft reported the subcommittee discussed converting customers from AT&T Fiber might be difficult, and it was thought there was a greater chance to convert Xfinity customers but it required people to cut the cord with cable TV. This pilot was viewed as an opportunity to learn how Palo Alto compared to customers' current internet service, identify the decision factors for customers to convert, and what marketing was successful. Commissioner Croft stressed the need to collect data in an organized way to enable decision making. The subcommittee had seen in their meeting some key metrics including rates, take rates, and cost to install but the full UAC had not seen the business model. The three subcommittee members supported staff's recommended maximum rates for the pilot as presented in the slides; however, the subcommittee did discuss more discrete rates. Commissioner Croft stated the debt and investment were significant with $90 million of debt assumed to finance the buildout and it will take 9 or 10 years to turn net income positive. Two subcommittee members wanted an opportunity to review the pilot results prior to making a decision on whether to recommend continuing to Phase 1.

Chair Scharff invited staff to make their presentation and for Commissioner Croft to make a motion reflecting the subcommittee's majority opinion.

Dave Yuan, Utilities Strategic Business Manager, delivered a slide presentation. Mr. Yuan reminded the Commission that tonight's discussion was on the proposed fiber rates and offerings, not a discussion on whether the City should enter a competitive ISP market. Staff was working on delivering the following three projects approved by Council: (1) Rebuild the existing fiber backbone that was about 30 years old in order to provide additional capacity for current and future needs. Over $30 million had built up in

reserves from dark fiber licensing. (2) Council approved up to $20 million from the fiber reserves for Phase 1 of fiber to the premise (FTTP). The pilot is a subset of Phase 1 and will consist of about 1000 residents. An additional 5000 residents were expected in the Phase 1 build out. After the pilot is completed and as they expand into Phase 1, staff will return to the UAC and Council with data points, financials, and metrics to measure the success and financial sustainability of this new business. (3) FTTP was being aligned with grid modernization to increase efficiency, reduce construction costs, and minimize disruption in neighborhoods. As electric poles were replaced and transformers were added, messenger lines were being hung on the new poles.

A coverage map was shown of the pilot area with red dots representing where Xfinity was providing 2Gbps internet service and blue dots representing where AT&T was offering fiber service. Xfinity offered 2Gbps service in about 50 percent of the pilot area. AT&T offered fiber service to 90 percent of the pilot area. In response to Commissioner Croft inquiring if it was known who had what service in the pilot area, Mr. Yuan answered no.

Commissioner Tucher asked how fiber compared in delivery to 2Gbps down. Mr. Yuan explained that Xfinity did not have symmetrical speed. Fiber allowed symmetrical speed (equal up and down speed) up to 5 or 10Gbps with the right equipment. Xfinity had service up to 2Gbps download speed but upload was maybe 300Mbps. Commissioner Croft inquired if Xfinity offered 1.2Gbps in the entire pilot area. Mr. Yuan answered yes; he heard it was too costly for Xfinity to upgrade that area, so Xfinity would leave it at that level of speed.

Mr. Yuan showed a slide with the promotional and standard rates for Xfinity and AT&T. For 1Gbps, there were promotional rates as low as $55/month and gift cards; the standard monthly rate for AT&T was $80 and for Xfinity was $114. For financial reasons, the City will not compete with incumbents on the lowest promotional prices. The City will differentiate itself with speed, reliability, transparent pricing with no hidden fees, responsiveness, and exceptional customer service.

A slide was shown of estimated capital expenses for the pilot of approximately $4.5 million including a 10 percent contingency. Fiber overhead construction cost $584,080 for 37,000 feet whereas underground cost $383,859 for 2400 feet. One of Council's motions when they approved the phased buildout was to pass as many homes as possible during Phase 1. Therefore, the focus will be mostly on the aerial areas and aligning it with grid modernization to be more cost effective. The hut has been built but the padmount by the Colorado Power Station needed to be built before receiving the hut. Staff hoped to get the planning permit and building permit approvals by the end of this month, which are needed before starting construction on the padmount. The cost per passing including capital expenses was about $5500 per home, excluding one-time costs it was around $2200. The goal was to get costs down to the industry standard of $1500. Staff was learning from this pilot and thought they could get lower prices in the next phase.

Commissioner Tucher asked if labor in the total cost column shown on the slide reflected a 12-month period or another time frame. Mr. Yuan replied that the labor for VIP had been done already. The fiber overhead and underground construction will probably begin in the summer when the hut is built out. The labor cost shown on the slide represented the entire buildout phase for the pilot, which was a three-month timeline.

A slide was shown of the $1,577,940 operating expense assumptions for the pilot. Four FTEs were authorized but a lot of in-house staff was being used for this project. Two full-time managers were

budgeted. An outside plant manager was hired. A fiber systems operations manager will be hired in the future. Darren Numoto and his team as well as Utility staff were doing a lot of the work for the pilot area. Staff was currently able to manage the workload but there might be a need for more internal resources to expand into Phase 1. The operation expense was $200 for every installation. Mr. Yuan heard it cost about $500 in sales and marketing to acquire a customer. Equipment cost about $400 per subscriber.

In reply to Vice Chair Mauter seeking clarification if the operating expenses were on top of the capital expenses presented on the previous slide, Mr. Yuan answered yes. Nothing is bond financed right now because $20 million from the fiber reserve was authorized for capital and operating expenses. The fiber reserve is the same as the fiber fund. Previously, the fiber fund was dedicated to the dark fiber business but now the City was adding the high-speed broadband internet business.

A slide was presented on the proposed Palo Alto Fiber rates and offerings. Staff tried to mimic the top price of what the competition was providing. Staff proposed up-to rates to have pricing flexibility. The up-to prices were competitive with what competitors were listing. Installation will be free. Service at 500Mbps and 1Gbps will include free routers. Higher speeds will charge for routers to recover some of the cost of the more expensive 10Gbps routers. Residential service plans: 500Mbps rate assistance up to $30, 500Mbps up to $75, 1Gbps up to $95, 2Gbps up to $175, and 5Gbps up to $265. Commercial service plans: 500Mbps up to $125, 1Gbps up to $185, 2Gbps up to $195, and 5Gbps up to $295. Equipment: Calix GigaSpire up to $5/month, Calix Blast Mesh Extender up to $5/month, and Calix Gig WAN Port up to $600 one-time purchase.

Chair Scharff inquired why it costs less to provide 1Gbps versus 2Gbps or 5Gbps. Mr. Yuan explained that higher-speed modems and routers cost more money. Ms. Nose pointed out that fiber did not have strict regulations, as opposed to other utility rates requiring a COSA. The proposed rates were reflective of market sensitivity analysis and price competitiveness while doing their best to recover the cost to deliver the service but the rates did not have a direct correlation to cost.

Chair Scharff commented that it will cost money for a pilot customer to get rid of their other service and switch to Palo Alto Fiber; however, Palo Alto may go away at the end of the pilot and the customer has to switch back to their previous provider. Chair Scharff thought Palo Alto could be more competitive by offering 2Gbps for $100. Mr. Yuan stated that lower rates were calculated and it would take a lot longer to break even operationally, and charging much lower rates meant that Phase 1 would not be able to expand to as many customers given the approved up to $20 million budget.

Since most people choose the 1Gbps service, Chair Scharff wanted staff to think about offering 2Gbps for $100 to encourage customers to choose 2Gbps because you do not lose much money, it will differentiate the City from competitors, and he thought it was better than Xfinity and AT&T offering gift cards and introductory rates. Mr. Numoto stated the proposed rates were starting prices but once they get to market, staff had to evaluate and have a marketing strategy to see what the market will allow. Staff was asking for a range of options, products, and services because they needed to make sure they were able to recover costs at some point. Besides the technical aspects, Mr. Numoto remarked that the selling points were focused on delivering the same level of service that customers were accustomed to with Utilities, customer support, provide service to the entire community in Palo Alto, and we are local so if a customer had a problem in their home we can schedule staff more readily than the competitors. The current providers were delivering services only to the easy-to-build places. Mr. Yuan said the 2Gbps

device was more than 50 percent more expensive than 1Gbps home equipment; the cost difference was about $150 more for the 2Gbps device.

Mr. Yuan stated that the fiber offerings will be presented to the Council for their approval. For the pilot, offerings will include 1Gbps and 5Gbps, other services will not be offered until Phase 1. Our equipment can provide Calix Smart Home and Calix Smart Biz, so those services may be offered in the future. There will be no data allowance caps, and the contract term will be month to month.

Commissioner Metz suggested eliminating the 500Mbps rate since most people will want 1Gbps or 2Gbps. Commissioner Metz recommended including parental controls and intrusion protection as part of the basic offering without an extra charge. Commissioner Metz inquired what the plan was for penetrating multifamily. Mr. Yuan replied that multifamily was very difficult because some have exclusive agreements with the incumbents. To go in multifamily is usually costly because you have to rewire the entire building, so staff would have to do a cost benefit analysis, make sure they get a right of entry, and work with the property owner. As new MDUs are built, staff is trying to ask them to add a third conduit so Palo Alto can be a third provider option for new residents.

Commissioner Croft expressed concern about how to convince someone to switch, especially when they already have fast service. Commissioner Croft thought that offering faster speeds at a lower price or maybe combining additional features could create an incentive to switch. Commissioner Croft wanted to see creativity on building compelling offerings that get people to switch providers. Mr. Yuan stated the goal of this rate proposal was to give staff flexibility to bundle things together such as parental control or offer one or two months of free service.

Chair Scharff was concerned about taking a utility approach to a competitive business. Offering fiber service to everybody was a utility approach, not a business approach. Chair Scharff suggested that staff focus on marketing and give people a strong reason to switch in order to make the pilot successful and to build a sustainable business.

Mr. Yuan presented operational financial scenarios at different price levels. The scenarios did not include price elasticity of demand. FY 2026 will have about 932 passings, 27 percent take rate, and 250 subscribers. The first goals were operational feasibility and technical feasibility, meaning the fiber service was working at the correct speed and our delivery was meeting customers' expectations. Then, staff will try to increase the take rate and provide lower prices if feasible. Three scenarios were presented: lower end, mid-level, and higher end. Under lower end pricing, we break even in FY 2029 assuming a 33 percent take rate. Under higher end pricing, we break even in FY 2028 assuming a 33 percent take rate. Mr. Yuan sought the UAC's feedback on pricing and whether the goal was to get the highest penetration or financial sustainability. Low prices will get higher take rates but it will take longer to break even. Commissioner Phillips wanted clarification if breaking even meant operationally but did not include paying back any of the capital investment. Mr. Yuan answered breaking even referred to operational costs only.

Commissioner Croft inquired what was the assumed timeline to spend the $4.5 million for the pilot, and when were the pilot and Phase 1 occurring. Mr. Yuan replied the pilot will be in FY 2026 with 932 passings. Assuming Phase 1 is built right after the pilot, there will be an additional 5000 passings. For the pilot, about $5 million in CapEx will be spent on construction in addition to about $2 million for operating expenses. Mr. Yuan projected another $10 million to be spent on CapEx for phase 1 if we

choose to continue. Ms. Nose mentioned the initial $20 million budget included the first 1000 passings in the pilot and the additional 5000 passings in Phase 1.

Commissioner Tucher asked how many homes were in the Phase 1 map. Mr. Yuan answered 6000 homes. Since staff was seeking the UAC's guidance on pricing, Commissioner Tucher thought it was important to know what the low, medium, and high prices were and to have clarity on the pricing strategy. Commissioner Tucher thought the pricing strategy should be to win customers in Phase 1, even if it cost money. Commissioner Tucher thought that charging $95 for 1Gbps was substantially above the incumbents and would not attract enough customers for us to learn anything from the pilot. Commissioner Tucher said the objective in a pilot or Phase 1 was never to have a breakeven P&L or improve financial viability. Commissioner Tucher suggested making it easy in the pilot to add on value-add options such as parental controls and security to get feedback from customers on whether those options were worth it. Commissioner Tucher wanted to keep the 500Mbps offering to provide a low-price option for people who currently cannot afford broadband.

Vice Chair Mauter echoed Commissioner Tucher's comment about providing a range of pricing options and serving customers who otherwise cannot afford other providers. Chair Scharff pointed out the pilot was in one of the richest sections of Palo Alto. Vice Chair Mauter asked how the pilot location was chosen if it was well served by AT&T and Xfinity, and $20 million of City funds will be spent to be the third service provider to this area. Mr. Yuan explained the area was chosen because fiber was following grid modernization, and this area was being converted from 4 kV to 12 kV. Vice Chair Mauter stated the population in the pilot area may not be price sensitive and therefore not representative of the rest of Palo Alto.

Commissioner Phillips asked his fellow commissioners to think through the two points of view. Commissioner Phillips did not agree with serving the underserved in this pilot. Fiber did not have the Utility's obligation to serve but was that view consistent with what the Council and other people believed, was the City viewing fiber as getting into a business in competition with two established competitors, was the City trying to serve a social goal, or both.

Chair Scharff stated he would like to serve the social goal but believed you first need to have a business. CPAU customers do not have a choice to go to PG&E. Fiber has three choices. The more you subsidize the less profit you will make, so you have to raise the prices on other people, which is hard to do in a competitive business. If we get no uptake in the pilot and decide to do subsidies for a social goal, then we do not have a business.

Commissioner Phillips pointed out that a utility has a guaranteed monopoly and can charge more to subsidize serving others. A utility's obligation is to serve all people, even those who are more difficult to reach. Fiber will not have a monopoly. If you are running a business, you probably will not have a long-term goal to satisfy low-cost customers and make sure everybody in Palo Alto can have fiber at reasonable prices.

Vice Chair Mauter inquired what fraction of the city was not served by AT&T, Xfinity, or another high-speed internet provider. Mr. Yuan did not know but AT&T was about 50 percent of the market when the study was done last year or a couple years ago, so it was probably at a higher percentage now. Only AT&T offered fiber internet; other providers were fixed wireless or hybrid fiber coaxial. Mr. Yuan mentioned a benefit they noted when building the business case was that being a third provider will

bring more competition and another option for customers, which will hopefully drive down their prices, so data will be collected on that during the pilot.

Chair Scharff did not think we should worry about the long term right now. Chair Scharff thought the focus should be on getting a big uptake in the pilot and try to prove there is a business case that we can compete; if not, he assumed staff will come back to the UAC and say the pilot failed, and the UAC can instruct staff do something different or not move forward.

Mr. Yuan's concern with Chair Scharff's remarks was that the pilot is a very small sample set. Staff can take what they learned from the pilot and use it for Phase 1, such as bringing down construction costs, bringing more efficient services, or activating people faster. Mr. Yuan wanted to at least expand to Phase 1, maybe not the complete Phase 1 but staff will learn more as they pass more homes. Staff will bring data to the UAC as they do the pilot.

Vice Chair Mauter pointed out that staff was not diversifying the customers they were learning from by continuing this effort because the pilot and Phase 1 had a very similar set of customers. A different part of the city might have a different set of uptakes.

Mr. Yuan stated there was opportunity to look at different areas and not follow grid modernization. Staff will entertain it if they think there is a better market.

Commissioner Gupta emphasized the purpose of the pilot and Phase 1 was to learn and get ourselves installed but, given its limited sample size, the purpose was not to obtain a huge take rate. The target take rate for the pilot was 20 percent. Learnings from the pilot will be used to expand to Phase 1 where the focus can be more on marketing and take rate. Commissioner Gupta viewed the entire Phase 1 as a pilot or an MVP (minimum viable product). Phase 1 will provide a big enough sample size to see how we are doing against the competition as well as learn about marketing, installation, and customer service. Then, the City can decide whether there is a business case or an equity case to expand further. Commissioner Gupta thought it was good that the pilot was in an area with a lot of competition from Xfinity and AT&T to see how we do and how the competition responds with their pricing. Commissioner Gupta was interested in seeing how much money Palo Alto residents save not just from our lower pricing but from driving down the pricing of the competition. Commissioner Gupta agreed with staff's proposed maximum pricing.

Mayor Lauing, Council Liaison, thought that staff should recheck with Council before too many multimillion dollar checks were written. Mayor Lauing noted the competition has gotten better since the fiber discussions from three years ago. Mayor Lauing has had Xfinity for a long time and he used to have them out every two weeks but now did not because Xfinity has improved their downtime. Xfinity has improved their system enough that they do not need as much customer service. Mayor Lauing hoped staff was modeling that the competition will respond with price matches or lower pricing. Mayor Lauing urged staff to update the Council on the current variables.

Mr. Yuan presented a high-level slide on marketing. Marketing strategies for community awareness include a press release and updated website with FTTP goals, timeline, service area, and FAQs. Palo Alto Fiber will be promoted on the search engine, event presentations, email, direct mailer, door hanger, digital advertising, and door to door. Staff is still formulating the marketing plan and may meet with the Fiber Subcommittee to hear their ideas. Ms. Nose did not want marketing feedback from the UAC tonight as this agenda item was for approval of the maximum rates.

Mr. Yuan listed the following key metrics that staff was looking for with the pilot: Technical feasibility, reliability, speed, uptime, demonstration of operational success, making sure we deliver the service as promised, positive net promoter score/customer feedback, and a take rate of 20 percent. Staff did not plan to spend much on marketing in the pilot because marketing was very expensive. For someone to do marketing, they want a minimum of one-year commitment and costs many thousands of dollars. For the pilot, community or City employees and events will be used to spread the word and do some direct marketing to customers. Measures of success for Phase 1 included reducing construction costs, managing operational costs, take rate of at least 33 percent to break even by the third or fourth year, financial sustainability, as well as finding strategic partnerships to help with installation, customer support, or the call center. A previous study projected a take rate of 35 or 40 percent but the minimum needed to break even was 30 to 35 percent.

Staff will issue a PO soon to order materials. The hut has been built but the padmount needed to get built. Work is being done at Equinix to build out the servers. A contract was signed with an OSS/BSS to be the portal for customers to sign up and for staff's internal control to monitor the equipment and help with billing. Agreements and policies are in process for the broadband consumer label, right of entry, terms and conditions, internet privacy, and network management.

Public Comment:

1. Hamilton Hitchings pays $100/month for 1Gbps of AT&T Fiber after receiving a $5 discount for autopay. Mr. Hitchings was happy with AT&T Fiber's reliable service, which he found more reliable than Comcast. Palo Alto Fiber's maximum prices were similar to AT&T and seemed reasonable, although AT&T's discounts made it cheaper. AT&T Wireless customers who sign up for AT&T Fiber get a 20 percent discount. Mr. Hitchings believed the results of the pilot were only valid if you charge competitive rates, not by offering unrealistically low prices that cannot cover your costs and pay back your upfront investment. Mr. Hitchings opined the add-ons were pricey for parental filters and security at up to $10/month each, so the City might want to consider bundling them or pricing them competitively. AT&T Fiber included free ActiveArmor internet security. To evaluate the financial viability of municipal fiber, Mr. Hitchings thought it was important to measure AT&T Fiber's total coverage for Palo Alto. According to bestneighborhoods.com, AT&T Fiber covered 71 percent of households in the city. The majority of municipal residential fiber services lose money, which added significant risk to the City's strained finances. Mr. Hitchings biggest area of concern was borrowing $90 million upfront for a citywide rollout and not being able to pay it off, which costs about double to pay back. Using General Funds would result in cutting City services. Once the fiber pilot is completed, if the City believes there is a viable case for a citywide rollout, it is critical to perform a detailed financial analysis and put in place a risk mitigation plan.
2. Herb Borock did not want the Commission to vote for a recommendation. The Commission should have monthly cash flow spreadsheets showing the assumptions used to judge how the project was doing. You can see on the spreadsheet whether there will be great savings by combining the electric and fiber production as was claimed. Mr. Borock recalled hearing about 1½ years ago that there would be $11 million in savings, which seemed to Mr. Borock as a $1 million savings for FTTP and $10 million savings for the electric fund. An ISP should have a dedication to customer privacy that includes prohibiting data mining for the purposes of targeting advertising and tracking customer behavior. Utilities were not involved in competitive markets but fiber is competitive. An ISP connects to a customer premise's equipment and provides equipment and service, which are incident to property ownership. Mr. Borock thought

the City had to obtain customers' approval on any price increases. The City's current involvement with the internet is the City's webpages. If you ask potential customers what they think of the City's website and if they want that same provider to be the ISP, he was interested to see what the answer is.

Commissioner Croft remembered seeing signs in Atherton about Atherton Fiber, which was rolled out by a private company. Commissioner Croft wondered if the City could have taken a collaborative approach to roll out Palo Alto Fiber, and maybe it would not require the same level of approvals and timeframe. Mr. Yuan replied that staff had gone back to the Council multiple times looking for a partnership. RFPs were issued to find a partner but the numbers did not work out. Potential partners would provide the service and share the revenues but expected the City to pay for the infrastructure. Staff brought the partnership option to Council but the Council wanted local control and thought the City could do a better job, instead of relying on a partner and being dependent on their service and quality.

Ms. Nose remarked that fee schedules were approved by Council per the Municipal Code. Therefore, staff would still come to the UAC and Council with a fee schedule of maximums even if there was a fiber partner, unless the approval process of fees and rates was changed in the Municipal Code.

ACTION: Commissioner Croft moved to recommend that the City Council approve the maximum FY 2026 fiber rates and packages presented on the slide.

Commissioner Gupta seconded the motion.

The motion carried 6-1 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, Metz, and Phillips voting yes. Commissioner Tucher voted no.

In regard to his no vote, Commissioner Tucher thought there was lack of clarity on the timeframe and location of the pilot versus Phase 1, as well as not having numbers for high, medium, and low pricing. Strategically, Commissioner Tucher did not agree with charging $95. As an advisory commission, Commissioner Tucher did not consider it useful advice to recommend high numbers to Council because it did not provide much guidance. Commissioner Tucher was unable to vote yes for a price recommendation without knowing the pricing strategy. Was the intent of pricing to get a lot of customers, to get a high margin and profit, or to serve the underserved?

Commissioner Croft wanted to see the data after the pilot was done, and thought it was helpful to understand if there was a dividing line between ending the pilot and beginning Phase 1. Mr. Yuan answered yes because at this point they have not issued any construction. They have the design for the electric side but not any construction yet. Phase 1 for grid modernization will begin in Q3 of this year. Mr. Yuan asked for three or six months after completion of the pilot for staff to review data and come back to the UAC with the pilot results. Chair Scharff inquired if staff will wait three or six months before starting Phase 1. Mr. Yuan answered no. Chair Scharff wanted the UAC to have the opportunity to make a recommendation to the Council on whether to stop the process if it did not work or if the UAC thought something needed to be done differently for Phase 1. Mr. Yuan said that staff could stage it however they choose; they could pause it. Mohammad Fattah, Utilities Manager of Electric and Fiber Engineering, said that once the pilot was done, staff had Q4 to evaluate whether to move forward to Phase 1. Ms. Nose believed it will take longer than three months to compile the information.

Ms. Nose said the Commission could consider recommending phasing of construction with a full pause on further buildout of Phase 1 until whatever the recommendation was for timing of data on the pilot. Ms. Nose asked Mr. Fattah to clarify that when he said that staff would use Q4 to evaluate the pilot, if he meant staff would evaluate whether or not to proceed or an evaluation of how best to strategically implement Phase 1. Mr. Fattah was not sure if it was enough time to market, sell, penetrate, and pass. Mr. Fattah was targeting the end of the year, which was Q4, to be done with this. The marketing effort will start in parallel as they start the buildout of fiber. Mr. Fattah stated that the grid modernization pilot had been completed and was moving into Phase 1.

Commissioner Gupta pointed out that this question did not come before the Budget Subcommittee nor was this question properly agendized for this UAC meeting. If someone wanted to bring it forward on the agenda, then staff would have time to address the timing and develop a proposal; otherwise, further discussion and decision would not be compliant under the Brown Act. The rate proposal was discussed at the Budget Subcommittee and was on the UAC's agenda tonight, not discussion on anything else.

Commissioner Croft mentioned that the marketing strategy was a subject of discussion in multiple subcommittee meetings. Chair Scharff thought it was agendized because staff presented a slide with a list of marketing strategies. The agenda item said packages, which Chair Scharff understood it to mean the package that staff presented to the UAC, so the Commission can discuss anything within the package, including marketing, rates, timing, and how it is rolled out. Chair Scharff said the UAC was trying to understand from staff what their plan is.

Commissioner Croft felt reluctant to make the motion without knowing what the plan is. Commissioner Croft felt it was helpful to know what the timeline was for the pilot, meaning when do we build it, when do we market it, how much time do we give ourselves to try marketing techniques, and then can the UAC look at the data. Commissioner Croft wanted staff to talk about when they will start building the pilot area, when can they start marketing, how long do we want to give ourselves to try and convert people before we have a sense for how the pilot is going, and if staff planned to build Phase 1 areas during the pilot.

Ms. Nose replied that staff was not prepared to respond to Commissioner Croft tonight or to have that discussion. Staff brought these rates forward now to be proactive and have the ability to add early customers. Staff planned to provide a fiber update to the UAC between now and December. The UAC and Council will be going on summer break. Staff did not have a go-live date for fiber because they were in the permitting process for the hut padmount.

Chair Scharff suggested ending the item.

ITEM 4: ACTION: Utilities Advisory Commission Finance Subcommittee Recommends the Commission Receive the FY 2026 Utilities Department Budget and the Commission Recommend City Council Adoption

Commissioner Croft stated the subcommittee recommends that the UAC review the budget. The budget was provided to the subcommittee the day before and they did not have much time in the meeting to discuss it. Chair Scharff asked staff if this item should be tabled to the next UAC meeting after the Budget Subcommittee has had a chance to review it or proceed with discussion tonight. Ms. Nose, Interim Director of Utilities, replied that the Budget Subcommittee reviewed the Utilities budget today.

The next UAC meeting occurs in June, by which time all the Finance Committee meetings will be done, so Ms. Nose suggested the UAC address this item tonight.

Commissioner Gupta, Budget Subcommittee Member, offered to provide his insight based on his review and the questions he had asked staff. Vice Chair Mauter invited Commissioner Gupta to provide a brief summary of his review.

Commissioner Gupta noted net expenses were up, which was to be expected as has been seen by utilities across the country. Palo Alto was seeing rising commodity costs and pass-throughs from renewable power contracts and for wholesale Hetch Hetchy water but gas was expected to be roughly flat. The large CIP increases did not seem to include future bond-financed projects such as the wastewater headworks or grid modernization. Future CapEx for the post-pilot Phase 1 of the fiber-to-the-premises project will likely come from bond financing or another proposal.

Chair Scharff invited staff to deliver their presentation.

Anna Vuong, Utilities Senior Business Analyst, addressed the Commission. Staff requested that the UAC recommend that the Council approve the proposed FY 2026 Utilities operating and capital budget.

The FY 2026 Utilities budget had a continued focus on upgrades for grid modernization, FTTP deployment, and rate stabilization. The major proposed changes in the Utilities Department include: Complete construction of the electric grid modernization pilot serving 1000 residents, begin Phase 1 to support electrification for an additional 5000 residents, continue to align construction of Palo Alto Fiber internet service with electric grid modernization, evaluate and refine delivery strategies and product offerings in fiber pilot, develop a natural gas transition strategy, as well as replace aging gas, sewer, and water mains to enhance safety and reliability.

A chart was shown of FY 2026 Utilities expense allocation by category, comparing the FY 2025 adopted budget with the FY 2026 proposed budget. FY 2026 cost increases of $17.5 million for the Capital Improvement Program included $15 million for the Hanover Substation upgrade and a $2.5 million increase for grid modernization. Commodity purchases of $9.5 million were attributed to electric (local capacity, resource adequacy increases, scheduled increase from Western, and transmission charges), $1.8 million for water, and a $600,000 increase for wastewater collection. In General Expenses, an additional $3 million funded from restricted reserves was programmed to expand existing customer efficiency programs for multifamily EV chargers, commercial HVAC electrification, and heat pump water heaters. $1.6 million was programmed to support FTTP in marketing strategies, operational and customer support, business software, and on-site installation services.

Dave Yuan, Utilities Strategic Business Manager, explained the main drivers of administrative/general operating expense increases were for centralized City support, i.e., administrative services, legal, HR, facilities, purchasing, and payroll. As the Utilities Department gets larger with more FTEs, more support is required. As the Department gets more projects and applications, more IT support is needed, so costs have been increasing for security, infrastructure replacement, and applications (AMI, FTTP, GIS, OMS, and SAP). Other cost drivers include electrification of new fleet vehicles, higher salaries because of new FTEs added, filling of vacancies and market adjustments, benefits, proactive funding of pension (Council initiative), general liability and insurance premiums, as well as rent for substations, reservoirs, MSC, and City Hall.

Ms. Vuong showed a slide listing the following cost containment measures taken: A credit card convenience fee was implemented on bill payments over $5000. Larger CIP projects were scheduled for every other year to achieve efficient project management and lower construction costs. Long lead-time equipment was preordered to secure pricing (about 1000 transformers at a cost of $4.5 million and 10 to 20 switches). Cost containment measures to be implemented in FY 2026: No requests for new FTEs. Issue competitive IFBs and RFPs for construction contracts for grid modernization and FTTP projects. Reduce billing costs by encouraging customers to convert to paperless billing and pass-through credit card fees. Update standard connection fees to reflect current costs (last updated in 2019).

A slide was shown of the Electric Fund 2026-2030 CIP proposed budget summary. FY 2026 proposed revenues were $40.4 million and proposed expenses were $93.2 million. Staff realized there was an administrative error with the revenues missing bond financing on the chart for FY 2027 and FY 2028 but it will be corrected in the next version for the adopted budget. Projected expenses for the five-year outlook were $313.8 million. In FY 2026-2030, $194.8 million will be spent on grid modernization, $5.4 million for the Colorado Power Station to upgrade Transformer 3 and peripherals, and $4.5 for substation breaker replacement.

Mohammad Fattah, Utilities Manager of Electric and Fiber Engineering, reported the grid modernization pilot project was completed, which included replacing 103 transformers, 70 poles, 23,000 feet of overhead secondary cable, and installing 46,000 feet of steel messenger for FTTP. The grid modernization pilot project connected 903 homes (meaning ready for electrification), was all overhead construction, and trialed newer products and technology as well as stronger and longer-lasting fiberglass cross-arms. Distribution transformers were preordered in anticipation of continuing the grid modernization project. There are 500 transformers and 600 poles remaining to go in Phase 1, which will convert 4 kV to 12 kV. The 4 kV Hopkins Substation will eventually be retired.

Commissioner Tucher inquired how much was spent to date on grid modernization and if the total was expected to be $300 million. Ms. Vuong answered $10 million was spent for the pilot portion of the grid modernization project. Ms. Nose stated staff's best estimate for grid modernization was $300 million given the information they have but there was volatility in labor and supplies. Ms. Vuong mentioned that about $52 million was budgeted in FY 2026 for grid modernization. Mr. Yuan pointed out that the $10 million spent was for overhead areas, which was the least expensive phase, but costs will start escalating when they go into the underground areas.

Vice Chair Mauter reminded commissioners and staff that the UAC saw five-year budget projections for each of the utilities when this year's budget was set.

Ms. Nose presented a slide on the Fiber Fund 2026-2030 CIP proposed budget summary for dark fiber and FTTP. In FY 2026, the capital expense of $17.5 million included the Phase 1 buildout, and then expenses will normalize to a routine level.

The Gas Fund 2026-2030 CIP proposed budget summary showed that proposed expenses spike to $23.3 million in FY 2026. The $16.5 million grant awarded from the federal government was split between FY 2026 and 2027, which staff acknowledged an error on the slide because it did not recognize the second half of the grant in FY 2027. Staff notified the Finance Committee that the FY 2027 proposed revenues of $0.5 million will increase by about $8 million, and it will be corrected before budget adoption.

Ms. Nose presented the Wastewater Collection Fund 2026-2030 CIP proposed budget summary. FY 2026 proposed expenses were $3.7 million but FY 2028 and FY 2030 are higher because of delayed CIP. For FY 2030, staff acknowledged that $27 million in proposed expenses was too large, so staff will shift some of it to beyond FY 2030.

The Water Fund 2026-2030 CIP proposed budget summary included typical capital projects associated with scheduled water main replacements. Park and Dahl Reservoir seismic upgrades and rehabilitations will occur within FY 2026- 2030.

The FY 2025 staffing report showed budgeted FTEs and a total of 38 FTE vacancies in Utilities.

ACTION: Vice Chair Mauter moved that the UAC recommend the City Council adopt the proposed operating and capital budgets for the Utilities Department for FY 2026 with the corrections mentioned by staff.

Motion seconded by Commissioner Phillips.

Commissioner Phillips asked what was the Finance Committee's response and if they recommended any changes. Ms. Nose replied that the Finance Committee tentatively recommended approval. The Finance Committee has until May 20 to make a formal recommendation, so a tentative approval typically meant a formal recommendation in two weeks.

Public Comment: None.

Motion carried 7-0 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, Metz, Phillips, and Tucher voting yes.

ITEM 5: ACTION: 2025 Annual Water Supply and Demand Assessment

Karla Dailey, Assistant Director of Utilities, Resource Management Division addressed the Commission. It is an administrative regulatory requirement that all urban water agencies need to file their supply and demand balance with the State every year. This is a non-drought year. Staff asked that the UAC recommend approval by Council, as per the process out in the Urban Water Management Plan.

ACTION: Chair Scharff moved to recommend the UAC recommend City Council adopt the 2025 Annual Water Shortage Assessment Report.

Commissioner Phillips seconded the motion.

Public Comment: None.

Motion carried 7-0 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, Metz, Phillips, and Tucher voting yes.

ITEM 6: ACTION: Staff Recommendation that the Utilities Advisory Commission Recommend the City Council Approve 10-Year Energy Efficiency Goals for 2026-2035

Tim Scott, Resource Planner, stated that AB 2021 required publicly owned electric utilities to adopt annual electric efficiency (EE) savings goals over a 10-year period. New 10-year EE targets were established every four years. EE savings goals were used for CPAU's supply resource planning and EE program budget planning. CPAU was achieving EE goals until 2020 but COVID impacted participation rates. Other limiting factors included stricter State codes and the increased focus on electrification.

Vice Chair Mauter asked how EE savings were calculated. If EE was measured as a decrease in electric load, that was in direct contrast with the electrification priorities of the Utility. Mr. Scott explained that EE savings were calculated when completing an EE project such as an LED lighting upgrade. The impact of the new equipment was measured in comparison to the previous electric usage. Some efficiency savings were associated with electrification projects to install more efficient equipment but those electrification savings were not captured in the presented chart, which only reflected traditional energy efficiency measures. Mr. Scott said additional conversations were needed to reconcile setting efficiency goals with the City's electrification goal in the 80 x 30 sustainability goal. Christine Tam, Senior Resource Planner with Resource Management, stated the heat pump water heater program counted gas savings in the DSM report and quarterly report to the UAC when a gas water heater is converted to a heat pump water heater but it is not counted as EE savings. Ms. Dailey mentioned this topic was in transition because Utilities across the state were focusing on electrification and strict building codes were coming into effect but the State still had a traditional focus on EE.

Commissioner Phillips asked who sees the EE goals, what happens after EE goal approval, and what happens when we do not meet our EE goals. Mr. Scott replied these goals will be shared with the CEC, and he believed the CEC used it for energy efficiency modeling and planning. There was no penalty for not achieving your goal. The Utility was required to adopt goals to provide an estimate of EE achievements for the current year and the next 10 years.

Commissioner Croft asked if the UAC will have another discussion about the strategies to achieve EE goals or if staff wanted the UAC's comments now. Mr. Scott stated the purpose of this agenda item was to recommend adoption of these targets. If there was time, the UAC could put their suggestions forward or a separate follow-up time could be scheduled to discuss additional approaches or strategies. In reply to Commissioner Croft asking if Chair Scharff wanted her to provide her comments now, Chair Scharff said to let staff continue their presentation and then see where we are on time.

Mr. Scott stated that targets were set based on the achievable Energy Efficiency Potential Study that was completed in partnership with a number of other POUs in California. The EE potential has decreased due to increasingly strict State codes and standards. Nonresidential lighting had been over 60 percent of Palo Alto's EE savings in recent years, so the change in nonresidential lighting codes will have a large impact on EE savings moving forward. Customers who make efficiency upgrades result in market saturation, which then reduces the sample of available projects. The Conservation Voltage Reduction (CVR) program was estimated to start in 2028 and ramp up savings through 2032. The rollout of AMI meters will enable voltage measurements at different points in the system and optimize the voltage to stay within the acceptable threshold; it will not have an impact on customer behavior but there is a potential savings to be captured.

Proposed EE targets were equivalent to 2000 to 4500 MWh annually. Total EE savings from the 2026-2035 targets represent 2.8 percent of the forecasted electric load.

A chart was shown of actual and projected EE program costs, which included administrative costs, incentives, marketing, etc. The CVR program was expected to have low administrative costs and no associated incentives.

Staff will bring the proposed EE goals to City Council for adoption in early June. Adopted EE goals will then be shared with the California Energy Commission (CEC).

Public Comment: None.

Mr. Scott confirmed Commissioner Phillips's understanding that EE goals did not take into account the reduction of peak versus off-peak.

Vice Chair Mauter expressed her frustration that EE goals did not seem aligned with the reality of operating a grid in today's environment.

Commissioner Metz wanted staff to describe the technical basis for the 2.8% energy efficiency goal. Commissioner Metz noted the slide mentioned the Energy Efficiency Potential Study but he did not see a link to the study. Commissioner Metz wondered if buildings had been audited for energy efficiency. Mr. Scott said the Potential Study looked at cost-effective measures in our area based on our rates, estimated penetration of appliance saturation, assumed appliance usage, typical building envelopes and assumed equipment, our existing portfolio of efficiency programs, and the rebates we provide. Mr. Scott did not believe it applied to EV charging but it did apply to heating, cooling, water heating, building envelope improvements, and lighting. Some customers have an audit of their building performed through some of our programs; however, audits are not performed of each building citywide.

Commissioner Gupta read in the report about the mandated public benefits charge of 2.85% of electric retail revenue, which Commissioner Gupta understood that it would not include a lot of potential savings. Mr. Scott thought the rationale was that savings coming from our programs are deemed as cost effective and therefore are funded through the public benefits.

Ms. Tam stated that naturally occurring efficiency savings were not counted. For example, if someone's lightbulb burns out and they replace it with a more efficient lightbulb meeting the current lighting standards, the savings from the new lightbulb will not be counted because it was naturally occurring. Any efficiency standards adopted by the federal government or by California cannot be counted as EE savings.

In Commissioner Metz' experience of having worked in the energy side of many commercial buildings in Palo Alto and the Bay Area, he noted many were cheaply built and had weak envelopes. Commissioner Metz said there were a lot of buildings in Palo Alto where the owner could improve the building envelope or greatly reduce energy consumption, which was why he had asked about the technical assessment of buildings in the city. Mr. Scott stated there was accommodation in the modeling for the behavior of customers, not assuming every building could be more efficient, but was partially based on the participation rates in our programs and of people going through with upgrades. Commissioner Metz believed that was a reasonable way to project the forecast expectations but goals should be more ambitious. Mr. Scott explained these were not meant to be aspirational goals, rather they were a reflection of what was thought to be realistic and achievable based on our portfolio of programs.

Commissioner Gupta asked staff to provide further explanation about AMI and the Conservation Voltage Reduction program mentioned on Pages 8 and 9 of the staff report. Mr. Scott pointed out the increase in the savings trend from 2028 to 2032 on Slide 4. AMI metering will enable voltage measurements at different points along the feeder, particularly measuring voltage at the furthest point away from the substation will allow us to stay within the acceptable threshold and adjust the voltage coming out from the substation to avoid unnecessary distribution of energy. The cost estimates were preliminary but staff will do a more detailed evaluation of costs once the infrastructure was in place to start moving forward with the CVR program.

Vice Chair Mauter noted Slide 6 identified the tremendous potential in nonresidential and she wanted to make sure our outreach programs were targeted to the sector where there was the greatest potential for savings. Vice Chair Mauter inquired about the alignment of program costs to make sure we were not spending a lot of money for very little return. Mr. Scott stated residential spending aligned closely with the percentage of savings.

Commissioner Tucher would have liked the presentation to include a list of the programs, how much impact those programs have had thus far, and how much impact they will have in the goal timeframe, therefore he cannot vote yes to recommend the EE goals to Council. Mr. Scott remarked that the data Commissioner Tucher was asking for was available in the SB 1037 report published each year and he believed it was provided to the UAC as an informational item.

ACTION: Commissioner Phillips moved that the UAC recommend the City Council approve the adoption of the proposed annual and cumulative Electric Efficiency goals for the period 2026 to 2035 as shown in the summary table on the slide.

Chair Scharff seconded the motion.

The motion carried 5-2 with Chair Scharff, Vice Chair Mauter, and Commissioners Croft, Gupta, and Phillips voting yes. Commissioner Metz and Tucher voted no.

Commissioner Metz voted no because he did not see any connection between the technical potential and the action.

Commissioner Croft wanted to know when she could make her comments about programming. Chair Scharff recommended addressing it as a future topic.

Ms. Dailey believed the Demand Side Management (DSM) report was attached to the quarterly report provided to the UAC. The DSM report had a lot of information about programs, so it might be useful and interesting for Commissioners to read.

Commissioner Tucher requested staff to improve all future slide presentations to tell a more complete story instead of having commissioners refer to a document provided months ago in their packet.

Commissioner Croft read the annual reports submitted by other POUs on their energy efficiency achievements for the year. In comparing Pasadena to Palo Alto, Pasadena is a similar-sized utility but the savings were much greater than Palo Alto, half the savings were in commercial and half in residential. Pasadena had programs to haul away old appliances and they send customers their usage to encourage change in behavior. Commissioner Croft recommended benchmarking Palo Alto against similar POUs

and to see what programs others are doing that could work in Palo Alto. Ms. Dailey thought it was a good suggestion; however, Pasadena had a lot more air conditioning than Palo Alto. Mr. Scott asked if Commissioner Croft was looking at the SB 1037 annual reports. Commissioner Croft did not know what they were called but can follow up with Mr. Scott because she had the reports on her computer.

FUTURE TOPICS FOR UPCOMING MEETING: JUNE 4, 2025

Kiely Nose, Interim Director of Utilities, stated the next UAC meeting in June had a full agenda. The Wildfire Mitigation Plan needed to be adopted annually and will include a discussion about preparedness. Staff was working on a connection fee update that will be brought forward to the UAC. Staff will work with the Chair and Vice Chair to determine the timing of agenda topics on an energy storage service agreement, Tier 2 water allocation during a drought, and electric TOU rates.

COMMISSIONER COMMENTS and REPORTS from MEETINGS/EVENTS

Commissioner Tucher asked for a report on today's Finance Committee discussion on gas. Ms. Nose stated the Finance Committee performed an initial review and made tentative motions but all items go to the full City Council for a discussion in a Study Session on Monday night. The Finance Committee will resume discussion of those items on May 20 for a formal recommendation. Staff will keep the UAC apprised. The Finance Committee recommended that staff increase the FY 2026 gas rates in alignment with the current FY 2025 rate schedule, provide a climate credit to G-2 customers, and return the 2025 COSA back to the UAC likely sometime after the summer for further analysis and discussion about rate design. The values and policy questions the UAC asked and discussed were used to help guide the Finance Committee. The Finance Committee decided to use the previous COSA for one year with the intention of moving the 2025 COSA implementation to 2027's rates. Vice Chair Mauter wondered how it was allowable to perform a cost of service study and not follow it. Ms. Nose highly recommended that the commissioners watch the Finance Committee meeting.

ADJOURNMENT

Chair Scharff moved to adjourn.

Commissioner Phillips seconded the motion.

Meeting adjourned at 9:04 PM.

Utilities Advisory Commission
Staff Report

From: Alan Kurotori, Director Utilities
Lead Department: Utilities

Meeting Date: July 9, 2025
Report #: 2506-4880

TITLE
Approval of the Minutes of the Utilities Advisory Commission Meeting Held on June 4, 2025

RECOMMENDATION
Staff recommends that the Utilities Advisory review and approve the June 4, 2025 minutes.

Commissioner _____ moved to approve the draft minutes of the June 4, 2025 meeting as submitted/amended.

Commissioner _____ seconded the motion

ATTACHMENTS
Attachment A: June 4, 2025 Draft Minutes

AUTHOR/TITLE:
Alan Kurotori, Director of Utilities
Staff: Kaylee Burton, Utilities Administrative Assistant

UTILITIES ADVISORY COMMISSION MEETING
MINUTES OF JUNE 4, 2025 REGULAR MEETING

CALL TO ORDER

Chair Scharff called the meeting of the Utilities Advisory Commission (UAC) to order at 6:04 PM

Present: Chair Scharff, Vice Chair Mauter, Commissioners Croft, Gupta, Metz, and Tucher

Absent: Commissioner Phillips

AGENDA REVIEW AND REVISIONS

None

ORAL COMMUNICATIONS

Public Comment: Peter D. spoke about the One Water Plan saying it was based on a false premise. A letter had been sent to SFPUC with no response. The hope was that the BAWSCA Board Policy Committee would take up the issue at the next meeting.

Public Comment: Dave W. mentioned sharing letters such as the response from SFPUC for transparency and good journalism.

APPROVAL OF THE MINUTES

ITEM 1: ACTION: Approval of the Minutes of the Utilities Advisory Commission Meeting Held on April 2, 2025

Chair Scharff invited comments on the April 2, 2025 UAC draft meeting Minutes.

Commissioner Gupta wanted an amendment to replace the current action section on packet page 42 in the minute with the proposed revised amendments on packet pages 44 and 45. A document was provided to show the transcript level support for the amendment.

Vice Chair Mauter's understanding of minutes is that they are supposed to be a direct recounting of what was actually said in the video and questioned the appropriateness of including an after the fact summary instead of representation of what was said. Vice Chair Mauter suggested adopting it as part of the work plan instead.

Kiely Nose, Assistant City Manager, explained the intention of minutes to be between a transcript and simple action minutes that summarizes the conversations that occurred. It was abnormal to include something like this but it was at the Commission's discretion.

Commissioner Gupta explained the amendment summarizes the steps that were taken with respect to the work plan in a minutes format. The provided extra document answers questions as to the backing of that and provide a transcript for those questions.

Commissioner Metz wanted to replace "inaudible" on packet page 33, fourth paragraph from the bottom to say "option of a tie in as connected elsewhere than the transmission line along the Bay where CPAU currently ties in".

Chair Scharff instructed that would be added since there were no objections.

Commissioner Metz wanted to correct the sentence "he considered it to be a small part of 2 other topics" with "he recommended that it not be relegated to be a small part of 2 other topics" on packet page 38, fourth paragraph.

Chair Scharff agreed to make that change since there were no objections.

MOTION 1:

- Vice Chair Mauter moved to approve the draft minutes of the April 2, 2025 meeting with attachment B.
- Commissioner Croft seconded the motion.
- Motion Carries 6-0

MOTION 2:

- Commissioner Croft moved to approve the draft minutes of the April 2, 2025 meeting as amended.
- Commissioner Metz seconded the motion
- Motion Carried 6-0

UNFINISHED BUSINESS

None

UTILITIES DIRECTOR REPORT

Alan Kurotori, Utilities Director, provided a highlight of some items that went to Council. On May 12, City Council had a study session on some of the S/CAP uses of potential funds for low carbon fuel standards, the electric and natural gas cap and trade and the public benefit funds. No actions were taken. This was informal sessions with City Council. On May 19, there was a contract with Anderson Pacific Engineering for the wastewater treatment plant advanced water purification system. It is about a $47 million contract to improve the water quality of recycled water, which will benefit the City of Palo Alto and Mountain View on recycled water quality to the customers. On May 27, there was a professional service agreement with Franklin Energy Services, LLC to do a turnkey home electrification program for advanced single family electrification funded through gas cap and trade reserves. This is one of the Sustainability Climate Action Plan goals and objectives to have this program move forward. Mr. Kurotori attended a data center

meeting at the City of Santa Clara. A study session was done with their Planning Commission on the large amount of data centers and growth within their city. They have 55 discrete data centers in their city limits. They are going through the impact of what that does to rates and how it impacts the connection fees. On May 22, the California ISO at the Board of Governors meeting approved the 2024-2025 Transmission Plan which included the new transmission line for the City of Palo Alto. That would connect PG&E's switching station within the city limits to a substation in Mountain View at the NASA Ames substation. The city manager spoke at that meeting in support of this. The cost estimate for the project was between $42 and $84 million. That will be partially paid by Palo Alto as part of the transmission access charges and is also charged throughout PG&E service territory and northern California. It is a regional transmission project that benefits directly on Palo Alto. It reflects Palo Alto's electrification, some of the growth in the data centers and technology centers in Palo Alto. It is estimated to come to Palo Alto in 2034. There will be discussions with PG&E on how to move that faster and other maintenance projects that could be fast tracked such that this project can move forward.

Chair Scharff questioned why it takes so long.

Mr. Kurotori explained transmission projects in California are challenging. This is actually very quick in terms of the approval process. Engineering evaluation of the existing towers has to be done. They have to go out and contract for this work for the improvements that have to be made on the switching station and the substation at NASA Ames. As part of the grid modernization, improvements will also be made to the Colorado receiving station to accept the new power. On behalf of the federal DOT, the CPUC did an audit of the natural gas distribution system. A survey was conducted onsite from May 12 to May 23. Palo Alto came favorably through the comprehensive review process. CPUC complimented Palo Alto on the preparation of staff, the availability and all the good work that was being done. Some preliminary notes were done that go to the federal government for them to evaluate and provide findings. No recommendations were found that were potential notice of violation. The Tower Well Park is going to be dedicated to Fred Eyerly on June 18. There would be opportunity for Chair Scharff to speak. There are a few other workshops on the Palo Alto website.

Commissioner Tucher had questions about the second transmission line. Mr. Kurotori preferred to bring that back under grid modernization. Cal ISO authorized the project as part of the larger plan.

Commissioner Croft had questions on the data center study session. Mr. Kurotori replied data centers are a flat and stable load. As part of the work plan, there was a specific question on data center competitiveness and ensured the Commission that outreach is being done to look at how it is affecting neighboring utilities, learning the best practices, how it is permitted and how it is approved.

Commissioner Gupta asked questions about the subsidy for gas rates from the cap-and-trade reserve, fiber and the three consulting contracts before the City Council's consent calendar on June 9. Mr. Kurotori responded it will go in front of City Council as part of the rate increase on June 16 per the direction of the Finance Committee. The report is one time and it is $1.1 million which is the assumption of completing a potential updated cost of service study that will come back to UAC for additional input to be finalized. The Colorado substation is in the floodplain. There is an issue in terms of keeping the height of the fiber hut outside the floodplain being looked at causing some delays in terms of the installation of the fiber hut. Information would be brought back on the timing and scheduling as it becomes available. A certain capacity of internal staff is provided that can do a lot of the distribution work to ramp up to do major capital projects. It is a series of projects not only in the distribution system but also in upgrading the key substations. Specialized consulting design services is used for that support. An RFP was done last year. A

robust selection process was conducted in concert with the administrative services department which came up with three consultants to serve some of those needs in terms of that consulting services who will do a myriad of technical engineering work associated with the grid modernization. It is typical of what is done in terms of hiring specialized consultants for this work and no different than the industry.

(Update with Directors Report)

NEW BUSINESS

ITEM 2: City of Palo Alto Utilities Wildfire Mitigation Plan (WMP) 2025 Annual Update. **ACTION**
6:45PM – 7:30PM, *Staff: Terry Crowley, Assistant Director of Utilities, Electric Engineering and Operations*

Terry Crowley, Assistant Director of Utilities, Electric Engineering and Operations, provided a slide presentation of the Utility Wildfire Mitigation plan including a background, required WMP contents, high fire threat district, 2025 WMP performance metrics, 2024 accomplishments and 2025 current year goals.

In response to questions posed by Commissioner Croft about vegetation management and undergrounding equipment, Mr. Crowley explained with the investment of undergrounding, there would be a reduction in vegetation but there will still be costs related to managing the large urban forest of the rest of the city. The cost will be significantly reduced in the wildfire areas. The demarcation point between the utility and the customer is the meter so that would still be maintained. A visual patrol will still be needed for the undergrounding system. A detailed inspection of the undergrounding equipment is done every three years and vegetation still has to be cleared around those. There are plans to underground all the way to the meter and make sure the high voltage as well as low voltage secondary overhead is undergrounded. The goal is to have that finished by the end of this year. Additional capacity that would anticipate grid mod is being installed to accommodate future electrification.

Commissioner Gupta had questions about vegetation management, the advanced distribution management system and the OES plan to which Mr. Crowley answered there are aesthetic and tree health concerns when trimming trees around lines. If a tree is directly underneath a power line, there is not a way to allow that tree to grow healthily around the power lines so it would typically be lopped off. If the tree is off to the side, they are going to cut a notch out of that tree to maintain that clearance. The City and the tree crews hired by the City have arborists who understand what the health of the tree requires. There is a balance between the health of the tree, the aesthetics and the public safety that tree trimming provides. The advanced distribution management system topic will come back to UAC in the future. OES works collectively with all the departments within the City. The Electric and Utilities Department is part of that. The plan before the Commission focuses on prevention, not reaction. There is collaboration within the City to manage the reactive portion. Mr. Kurotori added the departments were involved with OES in terms of the update to the Emergency Operations Plan. Utility provided comments to that. Internal comments were before it went out to the public.

Commissioner Metz commented that CPAU should be a member of the Emergency Services Council. Mr. Crowley agreed to take that into consideration.

Commissioner Tucher had questions about the underground project in the foothills, transmission lines and tree trimming. Mr. Crowley explained city-owned utilities and fiber would be installed underground. PG&E and the phone companies will still have overhead lines in the area. Transmission lines in the areas would be PG&Es as well as there are other wood pole distribution lines in the area. Mr. Kurotori stated there are high-voltage lines and also some federal lines that go through there to serve Stanford. Mr. Crowley understood the City has an internal city crew that can trim trees but all of the high-voltage tree trimming is generally contracted out. Street trees in the downtown area would be outside the Utilities. Ms. Nose clarified it is one tree trimming contract that is used citywide; however, they do different services based on the needs of Utilities or Public Works.

MOTION: The Utilities Advisory Commission Approves the 2025 Wildfire Mitigation Plan

Vice Chair Mauter moved
Commissioner Tucher seconded
Motion Carries 6-0

ITEM 3: Resolutions Amending the Amended and Restarted Water Supply Agreement Between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County and Approving the Updated Tier 2 Drought Response Implementation Plan; CEQA Status: Not a Project **ACTION** 7:30PM – 8:15PM, *Staff: Karla Dailey, Assistant Director of Utilities, Resource Management Division*

Karla Dailey, Assistant Director of Utilities, Resource Management Division, provided a slide presentation about amendments to the Water Supply Agreement with San Francisco Public Utilities Commission and a new and updated Tier 2 Drought Allocation Implentation Plan including an agenda, key elements of the Water Supply Agreement between San Francisco and the wholesale customers, proposed amendment to the WSA that modifies the minimum purchase requirement, 3 elements of the minimum purchase amendment, minimum purchase requirement amendment impacts, Tier 1 Allocation Plan, shortages on the Regional Water System governed by two plans, Tier 1 Family Plan, update to Tier 2 Drought Allocation Implementation Plan, Tier 2 policy principles, Palo Alto customer will experience same water use restriction with new Tier 2 Plan and the recommended motion.

Public Comment: Peter D. encouraged the Commission to continue this item until the next meeting and commented that the Tier 2 is not necessary.

Public Comment: Dave W. agreed with waiting until after the BAWSCA Board Policy Committee meeting to decide whether to approve the WSA.

Public Comment: Tom S., General Manager of BAWSCA, clarified that Mountain View will be billed for the extra water they are not using as of July 1. BAWSCA is trying to get all agencies to approve the Water Supply Amendment and the Tier 2 Plan as soon as possible. The end of the year is not the target.

Commissioner Tucher wanted more information about Mountain View. Ms. Dailey responded they are one of the four agencies in the agreement that have this requirement to take a minimum amount of water because they are connected to Valley Water's system. The minimum quantities were set at a time when they were using much more water. It is a take or pay provision in the contract. They are investing

in recycled water because they have a Council dedicated to sustainability. Despite the fact that they are paying penalties, they are still moving forward with their investments in recycled water.

Commissioner Gupta had comments about supporting tabling this until more information is received on prior requests.

Vice Chair Mauter emphasized that alternative water supplies come in many flavors and it was worth differentiating between alternative water supply projects seeking to produce potable water often at high cost and other projects producing non-potable water often at significantly lower cost. It is important to differentiate between longstanding efforts to negotiate this agreement and the more recent concerns the Commission and BAWSCA members hope to bring to SFPUC. She stated her opinion that holding this agreement hostage for the purpose of extracting information from the SFPUC is inappropriate. Not passing the agreement would be handing SFPUC a victory. Vice Chair Mauter encouraged the Commission to act on the agreement in a timely manner and did not think a delay would yield the outcome being sought.

Commissioner Tucher took the positions that there was no urgency to make the decision. It is about signaling to BAWSCA the importance of getting BAWSCA-wide support for getting answers from SFPUC on these important things.

Commissioner Metz wanted to understand why Palo Alto would vote in favor of this. Ms. Dailey replied it is a package of 3 components that have been negotiated over a 3-year period among 26 individual agencies. The minimal extra cost is justified because it alleviates millions of dollars being paid by Mountain View and partner in the plant for water they are unable to use and helps them move forward with their recycled water expansion which their Council has already committed to. That also helps keep nutrients out of the Bay. Mr. Kurotori added these are marginal cost expansions for Mountain View, Milpitas and Sunnyvale. They have already invested into these non-potable systems. They typically talk to developers to expand those systems. Using recycled water as an alternative supply they have been using for decades reduces the amount of a potential water they are taking from SFPUC which reduces the potable water coming from Hetch Hetchy for other uses. That is a net environmental and otherwise benefit to the customer base. Alameda, Milpitas, Sunnyvale and Mountain View also have connections to the Santa Clara Valley Water District and other water supplies. The district also has their rates proposed and they are doing significant investments on their system for Anderson Dam and others. Their rates are also increasing at a rate projected higher than SFPUC. The use of recycled water and having partners investing in those systems at those marginal costs provides value for the customers as a whole because it decreases potentially the need of SFPUC water for irrigation.

Vice Chair Mauter clarified those regional investments are much cheaper than Palo Alto investing in the types of marginal water supplies seen in the One Water Report.

Commissioner Croft supported the documents that had been submitted and the negotiation that had been completed but was unclear about the BAWSCA meeting. Chair Scharff assumed Staff did not believe the agreement should be held up which was confirmed by Ms. Dailey. The representative from BAWSCA confirmed the same.

Chair Scharff associated with the comments made by Commissioners Mauter and Croft. The role of the UAC is not to play politics and decide to hold up some agreement on leverage. The role of UAC is to advise Council. The best alternative would be to recommend that Council agrees to this.

Commissioner Gupta moved to continue the item to the next meeting due to lack of information. Ms. Dailey added most agencies are seeking to approve the amendments and Tier 2 allocation before the end of fiscal year. Commissioner Tucher seconded the motion because it would send a signal to other BAWSCA members who may consider thinking about the lack of transparency from SFPUC.

Chair Scharff made a substitute motion to approve the amendment seconded by Vice Chair Mauter.

Commissioner Croft wanted to understand what the actions are by the people who want to hold this up. Commissioner Gupta explained there was no rush since they were the first of 26 agencies looking at this. It is a big change to regional water supply. It will have a cost component to Palo Altans. Commissioner Gupta asked Staff if a sensitivity analysis had been done to understand the cost impact for Palo Altans. Ms. Dailey replied the changes to the agreement would not be characterized as huge. The changes to minimum purchase quantities apply just to those four agencies who have been paying penalties for water that they cannot use. This has been a three-year negotiation built upon those policy principles that were agreed on. Staff has been involved in those negotiations and represented Palo Alto as best as possible. It is not up to Palo Alto to decide what is or is not in the final negotiated agreement with the two WSA modifications and the Tier 2 new allocation plan. The cost is in slide 7 and the impacts of the change in Tier 2 are highlighted on the slide that shows the Water Shortage Contingency Plan actions and the negligible impact on customers. The cost impact on slide 7 is forward looking. The agreement changes how minimum purchases by the four agencies are calculated based on the average usage of the last four non-drought years. [Daniel 1:54:25] added this is a one-time reset until 10 years from now when it might be reset again. The minimum purchase quantity will not be affected for these four agencies until the next go-round in 10 years. To the extent that any of the other agencies use less or more water, it can affect the rates.

Commissioner Gupta had questions about the $293 million SFPUC is spending. Tom Smeagle, BAWSCA General Manager replied San Francisco has a very large budget. That is over a 10-year period, roughly $30 million a year focused on planning for water supply projects. That could be projects within the system itself to maintain and improve the system. It could be the alternative water supply program but it's a very small amount if it is because they do not have very many active projects working in that area.

Commissioner Tucher was willing to attend the BAWSCA meeting the following Wednesday if the Commission wants and offered Alt Water as a reason to recommend this amendment saying the linkage seems clear.

Vice Chair Mauter clarified establishing is important. These alternative water supplies have lower marginal costs than big new capital infrastructure projects. Most of the alternative water supply sources being discussed for enhanced use or potential expansion are very low marginal cost projects. Vice Chair Mauter inquired what additional information Commissioner Gupta sought in order to vote in favor of this. Commissioner Gupta replied the information requested about the design drought at SFPUC was needed. A fundamental understanding of the actual water supply situation for the regional water supply was needed.

Vice Chair Mauter indicated the Commission was at risk of conflating their role as an advisory council with Staff's role as technical experts and Council's role as a political participant in a very complex negotiation. Chair Scharff added the Commission had to be clear on what their role is. Whether the amendment was supported or not, Council would not approve it until September. Not approving it

would have any affect on BAWSCA or anything else. There would be no more information on the item if it is brought back to the next meeting.

Commissioner Croft wanted a representative to address the split vote to Council.
Commissioner Gupta would be happy to address the Finance Committee and Council in public comment what resulted in the 3-3 vote.

Motion: The Utilities Advisory Commission Approves the Resolutions Amending the Amended and Restated Water Supply Agreement Between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County and Approving the Updated Tier 2 Drought Response Implementation Plan

Motion: Commissioner Gupta moved for the item to be continued to the next month's UAC meeting.
Commissioner Tucher seconded.
Motion Fails 2-4
Substitute Motion: Chair Scarff moved Staff's recommendation
Vice Chair Mauter Seconded
Motion Fails 3-3

Break @ 8:23PM
Resume @ 8:33

ITEM 4: Residential Electric Service Time-of-Use Rates (E-1 TOU) **ACTION** 8:15PM – 9:00PM, *Staff: Lisa Bilir, Senior Resource Planner*

Mr. Kurotori reminded the Commission there were two budget subcommittee meetings with the Commissioners. The last was on May 21, a day before the packet went out.

Lisa Bilir, Senior Resource Planner, provided a slide presentation about Electric Time of Use rates including an overview, residential time-of-use rates, key factors considered in developing TOU periods and rates, marginal cost of energy, distribution system peak timing, average and marginal emissions intensity, proposed E-1 TOU periods and rates in winter (October-May), proposed E-1 TOU periods and rates in summer (June-September), potential for residential E-1 customers to save money, next steps and recommendation.

Commissioner Metz asked about marginal cost of energy. Jim Stack, Senior Resource Planner, explained this is an average of the locational marginal prices on the grid that reflect the marginal cost of energy at those times. They are in Northern California, the MP15 market hub price.

Public Comment: Hamilton supported the proposed voluntary opt-in residential electric time of use program. It was suggested to reduce the peak hour time. A recommendation was made to cancel the program if there is insufficient participation.

Commissioner Metz made recommendations regarding financial impacts, sustainability impacts and emergency preparedness impacts. Commissioner Metz recommended continuing in this path but being more explicit about the goals.

Commissioner Croft had questions about why it is not fair to call middle of the day clean energy, how greenhouse gas intensity is priced in and if other periods were looked at. Ms. Bilir indicated the heat map was used to support the super off peak period being proposed. That is how that piece of information is being used as part of the cost of service. This information can be used to influence the periods picked for the off peak period. This is used to select the window and cost information to pick the price to charge during that time period. Different time periods were looked at but not with the goal of maximizing the differential. It did not change it very much. The most impactful thing would be changing the width of the peak period but that will also increase the rate in the off-peak period. Commissioner Croft observed the incentive to change does not give much return from a financial perspective. Ms. Dailey explained the intent was to balance what happened in the surrounding service territories. The subcommittee had a conversation about the opportunities to point out the benefits in addition to financial savings to use in communications and outreach materials. One idea was to label the super off peak with solar. There was concern that there was a lot of energy mixed in that time period. There was a conversation around eco but to some people it means cheap. When the marketing professionals get involved in the outreach effort, the concepts and spirit of the conversation with the subcommittee will be taken into account when the materials are developed. They were not at a place to rename them on the rate schedule and feel it had been vetted properly with professionals.

Commissioner Gupta suggested studying the affect of time of use on seniors and potential options that could be offered.

MOTION: The Utilities Advisory Commission recommend that the City Council adopt a resolution

Vice Chair Mauter Moved the motion
Commissioner Metz seconded
Motion carried 6-0

COMMISSIONER COMMENTS and REPORTS from MEETINGS/EVENTS

Commissioner Tucher spoke in protest in the way Chair Scharff conducted the nomination and election for chair and vice chair the prior month.

FUTURE TOPICS FOR UPCOMING MEETINGS ON July 9, 2025 AND REVIEW OF THE 12 MONTH ROLLING CALENDAR Discussed on June 4, 2024 (Every Other Meeting)

Commissioner Croft hoped to have a chance to weigh in on the portfolio as options are considered. Mr. Kurotori replied there are two power purchase agreements coming for consideration at the July meeting. Topics will include the IPA Energy Storage Service Agreement and IPA Energy. As part of that presentation, the plan is to include what the projections are and what the portfolio looks like.

Commissioner Metz wanted to know when the work plan would be published. Mr. Kurotori will be updating Staff on the forecast of the rolling calendar. The intent is to bring that at the next available meeting for Council in August after the break. The direction from this Commission was that Staff should make the corrections noted. It will be published for the public to see with those changes. Ms. Nose pointed out the Commission would not be able to respond or provide feedback on that and advised to consider it a serial meeting. Commissioner Metz was not looking for opportunity to amend it. Mr. Kurotori agreed to provide it to the Commission.

Commissioner Gupta asked for information about cap and trade policy. Mr. Kurotori replied that was part of the S/CAP funding plan. There will be some items that will come before the S/CAP Committee. That would be the appropriate area for that discussion and information on that schedule will be brought back to the Committee.

ADJOURNMENT

Vice Chair Mauter moved to adjourn.

Chair Scharff seconded the motion.

The motion carried 6-0 with Chair Scharff, Vice Chair Mauter, Commissioners Croft, Gupta, Metz, and Tucher voting yes.

Meeting adjourned at 09:17 PM

Respectfully Submitted
City of Palo Alto Utilities

CITY OF PALO ALTO

Utilities Advisory Commission
Staff Report

From: Alan Kurotori, Director of Utilities
Lead Department: Utilities

Meeting Date: July 9, 2025
Report #: 2505-4722

TITLE
Design Principles for Gas and Electric Rates

RECOMMENDATION
Staff recommends that the Utilities Advisory Commission (UAC) recommend that the Council accept the Design Principles for Gas and Electric Rates in Alignment with Proposition 26.

EXECUTIVE SUMMARY
Article XIII C of California Constitution (often referred to as Proposition 26) requires voter approval for municipal electric and gas rates that exceed the cost to the utility of providing service. The City Council can adopt cost-based utility rates without voter approval. Public agencies rely on ratemaking consultants to determine the costs of providing service and to design rates that accurately recover those costs; this is referred to as a "cost of service analysis", or COSA. This report proposes design principles to guide staff and the City's ratemaking consultants on future gas and electric COSAs in alignment with California's Constitutional requirements.

BACKGROUND
COSAs took on greater significance for California publicly-owned utilities following the passage of Proposition 26 in 2010. Proposition 26 added provisions to the California Constitution defining every local government fee or charge as a tax requiring voter approval, unless one of seven exceptions applies.[1] A rate set at a level "which does not exceed the reasonable costs to the local government of providing the service"[2] is an exception to the voter approval requirement, and can be approved by Council. The City bears the burden to prove that a rate is not a tax, the amount is no more than necessary to cover the reasonable costs of providing service, and the manner in which those costs are allocated to ratepayers bears a fair or reasonable relationship to the ratepayer's burdens on, or benefits received from, the governmental activity.[3]

[1] CA. Const. Article XIII C(1)(e).
[2] CA. Const. Article XIII C(1)(e)(2).
[3] CA. Const. Article XIII C(1)(e).

COSAs completed with the assistance of ratemaking consultants are designed to ensure that the City meets its burden to set rates accurately.

While the City's gas rates present the next opportunity for COSA review based on Council's June 16, 2025 direction, [4] the proposed rate design principles apply to both the City's gas and electric rates.[5]

ANALYSIS

Proposition 26 requires public agencies to determine all of the costs incurred to provide electric and gas service to customers, in order to collect those costs via rates. Such costs can include direct and incidental expenses like the costs of capital projects, operations, commodity and distribution, administrative expenses, regulatory compliance and reasonable reserves. Each utility is operated as a separate enterprise; ratepayer funds are not comingled among enterprises. Within the electric and gas utilities, policy goals such as conservation can be implemented via rates, if doing so does not require one group of ratepayers to subsidize another.

Staff propose that the UAC recommend Council accept the following design principles for gas and electric rates in alignment with Proposition 26, to guide the development of future gas and electric COSAs.

Design Principle 1: Evaluate rates to ensure they are cost-based

The goal of a COSA is to identify the costs associated with serving each customer class and the rates required to recover those costs. Specifically, a COSA determines the utility's revenue requirement, matches costs to their causes or drivers, classifies and allocates those costs, and designs rates that accurately collect those costs from each customer class. Accurate and equitable allocation of costs is the COSA's primary goal; all other rate design considerations are subsidiary.

Design Principle 2: Evaluate rate schedules for continuation or redefinition

Customer usage patterns and system impacts change over time. COSAs should evaluate existing rate schedules to determine whether they should be continued or redefined.

For the upcoming Gas COSA, this review should evaluate whether Utility Rate Schedule G-2, serving small commercial and master-metered residential customers,[6] should be subdivided or otherwise redefined to allocate costs within this customer class. This evaluation should study

[4] On June 16, 2025, City Council voted (5-1-1 Lythcott-Haims no, Stone absent) to approve the FY 2026 Gas Utility Financial Forecast and Reserves Management Practices, wherein all gas distribution rates were increased by a uniform 8.7% effective July 1, 2025. The Council also directed staff to return to the UAC for review of the Gas Cost of Service Study and a potential climate credit.

[5] A different constitutional provision, commonly referred to as Proposition 218, applies to the City's water, wastewater and refuse rates, which are deemed "property-related fees". While property-related fees must also be cost-based to avoid the voter approval requirement, the substantive and procedural rules for these fees differ from those applicable to electric and gas rates and are outside the scope of these rate design principles.

[6] Commercial customers who use less than 250,000 therms per year at one site and master-metered residential customers in multi-family residential facilities.

impacts on customers who use different amounts of energy or have different meter configurations or meter capacities.

Design Principle 3: Determine the proper allocation of fixed and variable costs and how those can be implemented in various rate designs

The gas and electric utilities incur costs for billing, metering, and system maintenance for each customer connected to its distribution system, regardless of that customer's consumption level. COSAs should consider how best to allocate and collect those costs among customer classes, using the City's specific revenue requirements and industrywide best-practices. COSAs should also examine all appropriate rate designs, including volumetric, tiered, flat, and demand-based charges, to determine which rate design best recovers costs for each customer class.

Design Principle 4: Review non-rate revenue sources that may be available for rate discounts or rebates

Proposition 26 does not permit a local agency to fund certain rate discounts or rebates, including low-income discounts, with revenue from fees charged to other customers. The City is nonetheless invested in assessing rate impacts on all customers. Staff should work with the City's ratemaking consultant to identify other available revenue sources. These may include revenues available for low income programs as directed by statute, or revenues derived from the City's participation in state-mandated Cap and Trade and Low Carbon Fuel Standard programs.

FISCAL/RESOURCE IMPACT

The work associated with this project will be absorbed using existing staff and contract budgets.

STAKEHOLDER ENGAGEMENT

After receiving the UAC's recommendation, staff will present the Design Principles for Gas and Electric Rates to the Finance Committee, followed by review and consideration by the City Council. If accepted by Council, staff will apply these Design Principles to the COSA which will be used to develop gas rates, effective January 1, 2026. Additionally, if accepted by Council, staff will apply these Design Principles to the next electric COSA. The most recent electric COSA was completed in 2024 and staff plans to update the electric COSA every three to five years. In the next one to two years staff plans to supplement the electric COSA with a review of the commercial time of use rates.

ENVIRONMENTAL REVIEW

Acceptance of the Design Principles for Gas and Electric Rates does not meet the definition of a project, under Public Resources Code Section 21065 and CEQA Guidelines Section 15378(b)(5), because it is an administrative governmental activity which will not cause a direct or indirect physical change in the environment, thus no environmental review is required.

AUTHOR/TITLE:

Alan Kurotori, Director of Utilities

Staff: Lisa Bilir, Senior Resource Planner

CITY OF PALO ALTO

Utilities Advisory Commission
Staff Report

From: Alan Kurotori, Director Utilities
Lead Department: Utilities

Meeting Date: July 9, 2025
Report #: 2506-4778

TITLE

Approval of a Third Phase Agreement with Northern California Power Agency for the Purchase of Battery Energy Storage Capacity from Trolley Pass Project LLC, Over a Term of up to 20 Years for a Total Not to Exceed Amount of $161.7 Million; CEQA status: Not a Project Under CEQA Guidelines Sections 15378(a)

RECOMMENDATION

Staff recommends that the Utilities Advisory Commission (UAC) recommend that City Council:

1. Authorize the City Manager, or their designee, to execute a Third Phase Agreement (Attachment A) with the Northern California Power Agency (NCPA) to purchase the output of a 50-megawatt (MW) share of a grid-connected battery energy storage system (BESS) owned by Trolley Pass Project LLC, a subsidiary of Aypa Power Development (Aypa), over a period of 20 years, at a total cost not to exceed $161.7 million;
2. Authorize the City Manager, or their designee, to execute on behalf of the City all related documents or agreements necessary to administer the Third Phase Agreement that are consistent with the Palo Alto Municipal Code and City Council approved policies, including, but not limited to, collateral assignment agreements; and take any and all actions as are necessary or advisable to implement and administer the Third Phase Agreement; and,
3. Authorize the City Manager, or their designee, to approve and execute amendments to the Third Phase Agreement, as may be required from time to time, so long as the contract price and length of the agreement remain unchanged.

EXECUTIVE SUMMARY

Through a Request for Proposals (RFP) recently conducted by NCPA, the City has the opportunity to enter into an agreement to purchase energy storage capacity from Aypa's Trolley BESS Project. This agreement is for a 50 MW share of a grid-connected battery energy storage system (BESS) over 20 years, at a cost not to exceed $161.7 million. The project is expected to begin operations in June 2029.

The proposed contract is intended to help the City ensure continued compliance with its resource adequacy (RA) capacity procurement obligations and to provide a financial hedge against the market price exposure created by the solar resources in the City's supply portfolio. The recommendation aligns with the City's 2023 Integrated Resource Plan (IRP) and will help satisfy requirements under Assembly Bill (AB) 2514 regarding energy storage procurement.

While the market for renewable energy and storage has seen price increases recently due to strong demand, supply chain issues, inflation, and tax and trade policy uncertainties, staff analysis indicates that the Trolley project will provide net financial benefits to the City. The contract is structured with NCPA acting as an intermediary, and participating NCPA members will enter into Third Phase Agreements with NCPA. The City will not be at risk of paying for output that is not delivered.

BACKGROUND

The proposed contract will help the City's electric utility satisfy one of its core needs: resource adequacy (RA) capacity to meet its RA procurement requirements. This recommendation is also consistent with the new resource acquisition schedule outlined in the City's 2023 IRP. Furthermore, this report and the recommendation to procure BESS capacity from the project will enable the City to satisfy its requirements under Assembly Bill (AB) 2514 to regularly evaluate the cost-effectiveness of energy storage.[1]

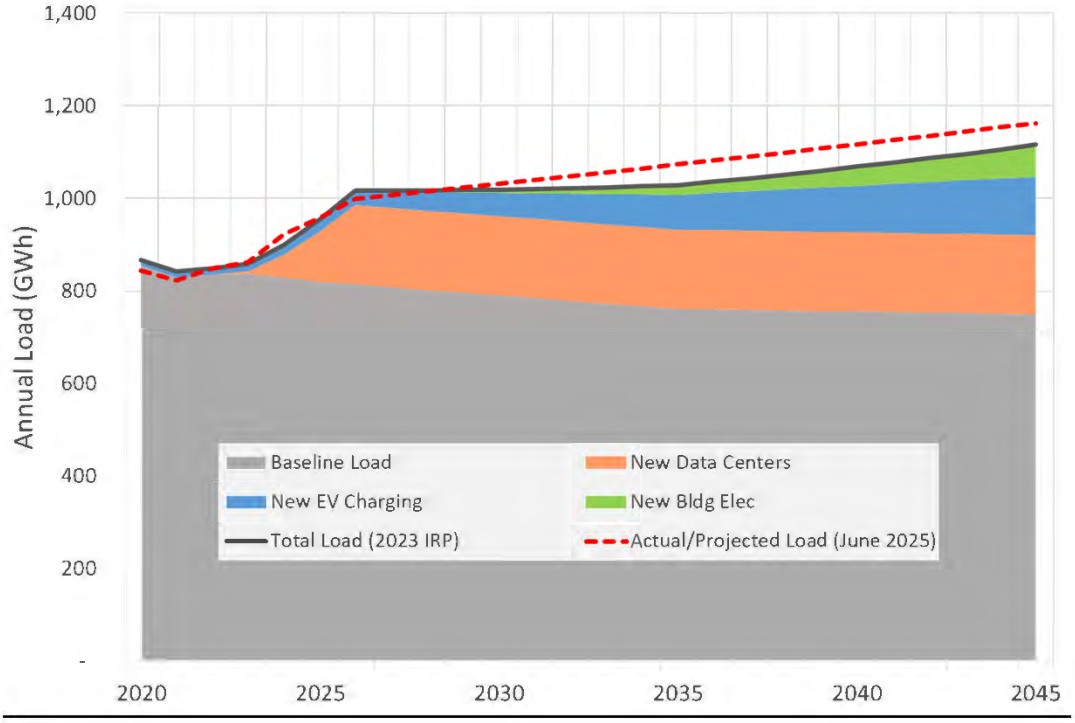
Load Requirements

The City's overall electricity consumption in 2024 was 922 gigawatt-hours (GWh), which represents a 12% increase (100 GWh) from the level in 2021. While this is a substantial amount of load growth in such a short period of time, it tracks closely with the load projections that staff presented in the 2023 IRP, as illustrated by Figure 1 below. While the trajectory of future load remains uncertain, staff anticipates some level of additional growth due to the City's aggressive

[1] The City's most recent AB 2514 Energy Storage Report (Staff Report 12142, https://www.cityofpaloalto.org/files/assets/public/v/1/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2021/id-12142.pdf, April 2021) found that "neither energy storage within the City nor on the transmission system [is] cost effective for the utility or its customers as a whole," and therefore the City declined to establish an energy storage procurement target at the time. However, it also noted that staff "will continue to monitor this rapidly maturing space and continue looking for specific projects which by virtue of their location could provide extraordinary resiliency, lower carbon emissions, and/or lower distribution system costs," and that staff will evaluate utility-scale storage proposals and "will move forward with competitive projects that complement CPAU's existing supply portfolio." This report serves as an update to this 2021 report's analysis on the cost-effectiveness of utility-scale energy storage resources, with staff now finding them to provide a net benefit to the City.
Staff Report 12142: https://www.cityofpaloalto.org/files/assets/public/v/1/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2021/id-12142.pdf

building and transportation electrification efforts, as well as reports of potential new data center projects from some of the City's commercial customers.

Figure 1: Actual and Projected Load Compared to 2023 IRP Load Projections



RA Requirements

In response to the severe electricity shortages, rolling blackouts, and soaring wholesale electricity prices that gripped the state during the energy crisis of 2000-2001, in 2004 California adopted an official RA program. The purpose of the program is to ensure the safe and reliable operation of the electric grid by requiring utilities to procure and maintain sufficient generating capacity – including from BESS facilities – to meet statewide peak demand plus a planning reserve margin (currently around 15%). While the City currently meets its system RA obligations, approximately 50 MW of RA capacity from its largest hydroelectric resource is at risk starting as early as 2027 due to potential regulatory changes.

ANALYSIS

The Market for Energy Storage and Renewable Energy in California

California's renewable energy and storage market has evolved significantly over the past decade due to shifting state and federal policies. While solar and storage prices steadily declined from 2010 to 2020, they have begun to increase in recent years. This market shift is attributable to: (a) strong demand driven by the state's ambitious procurement requirements for renewable energy, RA, and storage; (b) pandemic-related supply chain issues and inflation; and (c) recent volatility in federal trade policy and uncertainty surrounding future federal tax incentives for renewable energy and storage projects.

In 2022, Congress passed the Inflation Reduction Act (IRA), which provided generous benefits to developers of renewable energy and storage projects, and which extended those benefits into the 2030s. However, Congress is currently considering budget bills that would dramatically scale back or even eliminate those benefits. Furthermore, the U.S. has recently imposed tariffs on imports coming from most countries, including very steep ones on goods coming from China – which is a major producer of solar cells, lithium-ion batteries, as well as the raw materials and components that go into those products. This unprecedented level of policy uncertainty facing the renewable energy and storage industry in the U.S. has caused many project developers to put their development efforts on hold and has led others to raise the prices of the projects they are marketing.

Despite these challenges, renewable energy and storage capacity continue to grow steadily, as utilities strive to meet their various procurement requirements and ensure system reliability in the face of growing loads. Today, California has approximately 20,000 MW of utility-scale solar generation in operation[2], along with approximately 30,000 MW of behind-the-meter solar generation.[3] The state's BESS capacity has also exploded, going from just 771 MW in 2019 to over 15,000 MW operating today.[4]

Results of NCPA's 2024 Renewable Energy and Storage RFP

In early 2024, NCPA[5] issued an RFP for new renewable and/or carbon-free generating resources and energy-storage resources.[6] By the submission deadline in April 2024, NCPA had received a total of about 30 proposals, all of which were for solar and/or BESS facilities. Palo Alto staff evaluated these proposals, primarily based on the economic value provided by each project relative to its cost, narrowing the list down to a handful of projects. During the evaluation, some projects were removed from consideration after securing contracts with other buyers. Ultimately, Palo Alto staff expressed strong interest in the Trolley contract, as well as a portion of a 200 MW solar-plus-storage project located in Fresno County. Unfortunately, after months of negotiations between the project developer and NCPA and member utility staff, these discussions broke down due to an inability to agree to terms related to the risks associated with interconnection delays and tariff price risk. As a result, staff will pursue other avenues in the coming months to procure additional renewable energy capacity.

Aypa's Trolley BESS Project Summary

Aypa submitted several BESS project proposals into NCPA's 2024 RFP, including the Trolley project. Trolley is a planned 400 MW BESS project located in San Bernardino County, near the

[2] Energy Information Administration: https://www.eia.gov/state/analysis.php?sid=CA
[3] Solar Energy Industries Association: https://seia.org/wp-content/uploads/2025/03/California-3.pdf
[4] Governor's office: https://www.gov.ca.gov/2025/05/19/since-governor-newsom-took-office-californias-battery-storage-has-increased-1944-and-just-achieved-a-major-milestone/
[5] NCPA is a not-for-profit Joint Powers Agency whose membership includes municipalities, a rural electric cooperative, and other publicly owned entities, including the City of Palo Alto. The mission of NCPA is to provide members cost effective wholesale power, energy-related services, and advocacy on behalf of public power consumers through joint action.
[6] Section 2.30.340(l) of the City's Municipal Code permits the City to procure wholesale utility commodities and services through public agencies, including NCPA.

City of Rancho Cucamonga. The project is at an advanced stage of development, with an executed interconnection agreement (with Southern California Edison), and a Full Capacity Deliverability Status (FCDS) designation from the California Independent System Operator (CAISO), allowing its capacity to count towards RA obligations. It is expected to begin operating in June 2029.

The 20-year Energy Storage Services Agreement (ESSA) with Aypa has a contract price of $12.71/kW-month. However, due to current federal tax and trade policy uncertainty, the agreement allows Aypa to seek a slight price increase (up to 6%) within the next year if an independent evaluator confirms it's necessary for project viability due to cost increases such as changes in tax law or supply chain problems beyond Aypa's control. Even with a potential price increase, the Trolley project remains competitive with other BESS proposals presented to NCPA and is still projected to offer a net financial benefit to the City over its contract term.

Due to the high penetration levels of solar generation in California (particularly Southern California), there are often wide intraday price spreads between the solar-heavy mid-day hours and the more expensive evening hours, when load tends to increase just as solar generation tapers off. BESS facilities are perfectly positioned to capture this value opportunity, charging during the low-priced midday period and discharging during the high-priced evening hours.[7] Despite the significant increase in California's BESS capacity over the last several years, solar generation capacity continues to grow at an even faster rate, suggesting that this value opportunity is likely to persist or even expand in the future.

Staff estimates the Trolley project's net energy arbitrage value over the contract term will roughly equal its contract cost, based on a long-term forecast of energy prices at its location and a model of the battery's four-hour charging/discharging pattern. The project will also provide valuable RA capacity to the City. Assuming the project's RA capacity value equals NCPA's current monthly Capacity Pool Program prices, staff estimates the project's overall net value to be approximately $7.70/kW-month, or $4.63 million annually for a 50 MW share.

Accurately predicting the net value of any 15- or 20-year contract is challenging due to significant uncertainties in future energy and RA prices, which are influenced by macroeconomic conditions, regulations, and regional power market dynamics. Furthermore, the Trolley contract has added economic valuation uncertainty due to the potential for a slight contract price increase discussed above even after execution. Nonetheless, staff anticipates the resource will be a beneficial long-term investment for the City.

[7] The Trolley BESS project will be scheduled by NCPA in a way that maximizes the total net revenue it produces – whether in the ancillary services (regulation up/down) market, or in the energy market. Most likely it will be used in the "energy arbitrage" manner described here, charging during the lowest priced hours of the day and discharging during the highest priced hours. While it will not explicitly operate as a "load-following" resource (i.e., one that attempts to balance the City's load and resource supplies), because the City's portfolio has a high concentration of solar generation it tends to have surplus supplies during the lowest priced hours of the day, and therefore the BESS will likely have the effect of balancing the City's load and generation supplies.

Contract Structure

The Trolley agreement is structured as a direct contract between NCPA and the project developer, Aypa. To enable NCPA to enter into this agreement, participating NCPA members must execute Third Phase Agreements with NCPA, which specify the rights and obligations of NCPA and participating members regarding governance and administration of the agreement. These Third Phase Agreements also obligate the participating members to pay their contract percentage share of all project costs, including administrative services costs, scheduling coordination costs, and all other costs related to the ESSA. The City and NCPA utilized the same contractual arrangement in 2023 for the Calpine geothermal agreement.

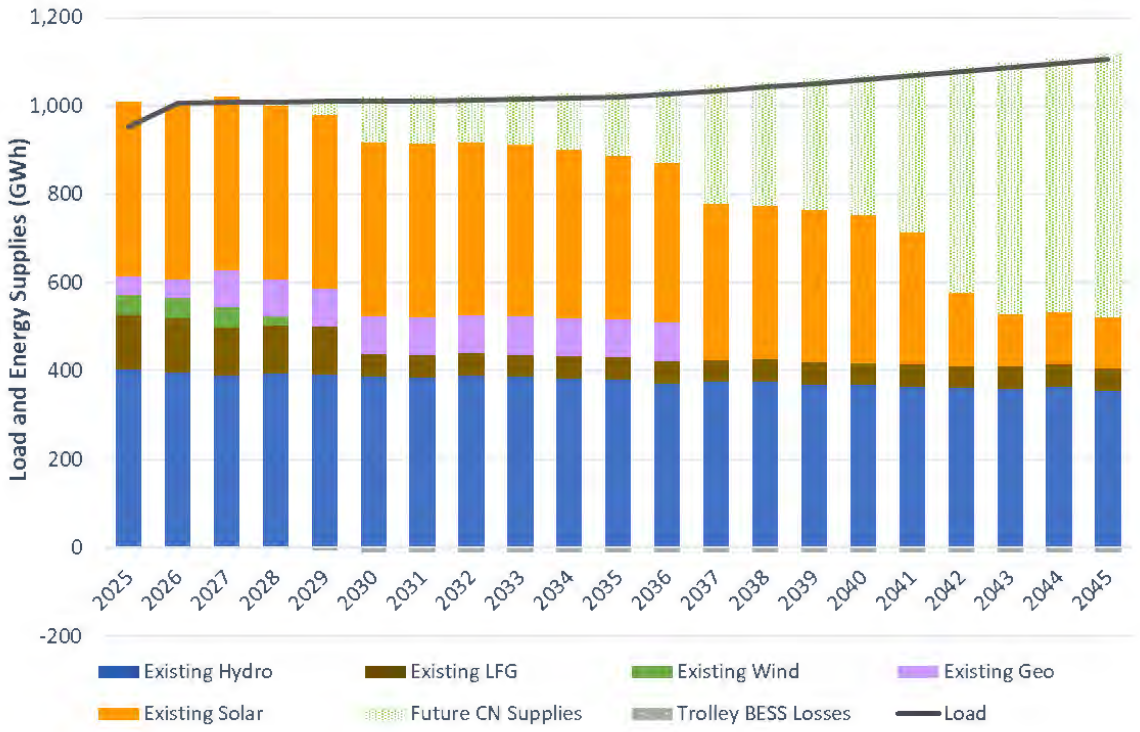
Palo Alto's Electric Supply Portfolio with the Trolley Project

As noted earlier, the Trolley project will provide the City with valuable RA capacity and a financial hedge against intraday market price volatility. In addition, adding this BESS capacity to the City's supply portfolio aligns with the City's adopted 2023 Integrated Resource Plan (IRP).

However, because BESS facilities only store, rather than generate, energy this resource will not have any impact on the City's renewable portfolio standard (RPS) position. Additionally, BESS facilities actually consume a small amount of energy, due to the 10-15% roundtrip efficiency losses that are inherent to battery storage systems. This minimal effect on the City's load-resource balance is illustrated by the small gray bars below the x-axis in Figure 2.

As Figure 2 illustrates, starting in 2029 staff projects that the City's load will exceed the volume of generation supplies that are currently under contract, and these deficits are projected to grow over time as existing contracts expire and the City's load increases. Staff is actively working to acquire resources to fill these deficit positions – for example, by initiating discussions with two suppliers about extending wind and landfill gas PPAs that are set to expire in the next few years. NCPA is also preparing to issue another RFP in early 2026 for new renewable energy and storage resources, and Utilities staff will again actively participate in this process to pursue new generation supplies.

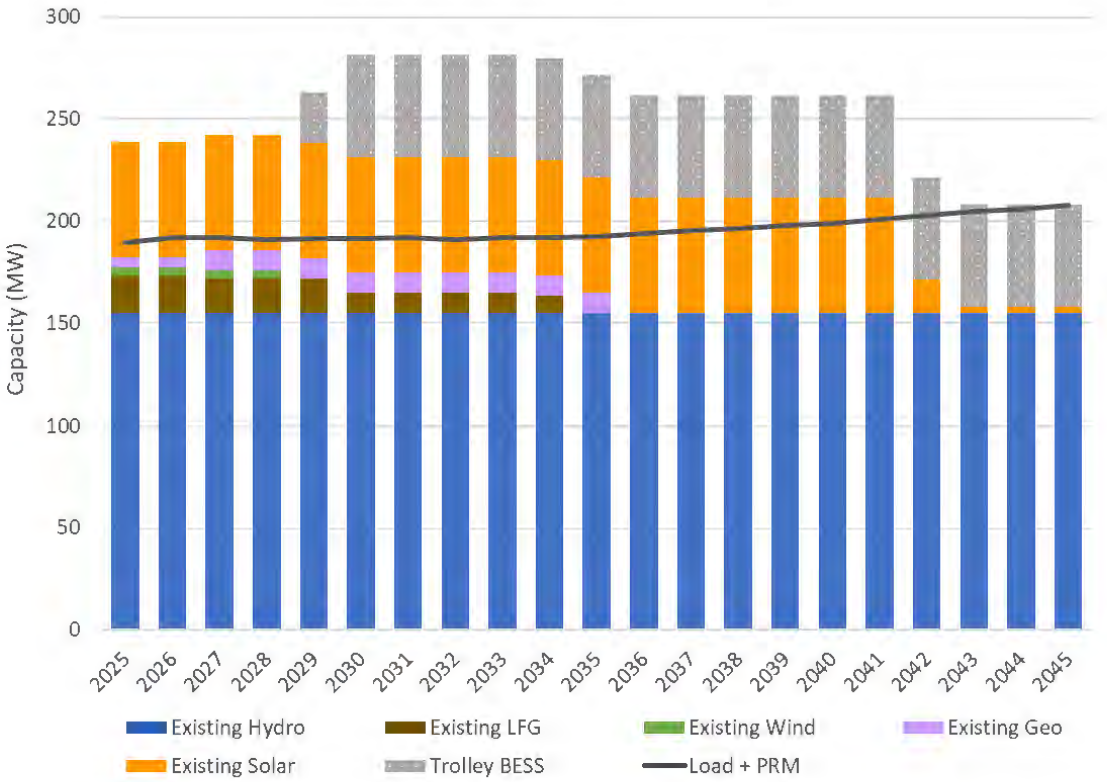
Figure 2: Projected Annual Load and Energy Supplies with Trolley



As a load-serving entity within the CAISO balancing authority, the City must comply with Resource Adequacy (RA) market obligations. CAISO RA requirements specify the annual and monthly generating capacity levels the City must procure for local, system, and flexible RA needs – which are based on the City's projected peak load plus a planning reserve margin (PRM). The City currently satisfies its RA requirements by leveraging its own resources, participating in NCPA's Capacity Pool Program, and engaging in bilateral transactions with other market participants. The BESS capacity from the Trolley contract will contribute to the City's system RA requirements.

Figures 3 below indicates that the City currently has system RA surpluses of approximately 50 MW per month. The recommended share of the Trolley contract would increase the City's system RA surplus position by 50 MW. Note, however, that roughly half of the RA capacity that the City receives from its largest single resource (representing about 50 MW from the Western Base Resource hydroelectric contract) is at risk as early as 2027 due to potential regulatory changes.

Figure 3: Annual Average System RA Balance Forecast with Trolley



Consistency with IRP's Recommended Plan

In 2023, in accordance with state law, the City adopted an Integrated Resource Plan (IRP) that included an extensive analysis of its future load and resource needs. The IRP's Recommended Plan called for acquiring 25 MW of new solar generation capacity in both 2030 and 2031 (followed by additional volumes in the late 2030s and early 2040s), plus some BESS capacity in the early 2040s[8]. Approving the Trolley contract aligns with the IRP's recommendations, although the BESS capacity will come online about a decade sooner than planned. This deviation is justified by the potential loss of significant RA capacity from the City's existing supply portfolio—a possibility that was not apparent in 2023 – and the strong financial merit of the Trolley contract.

Also, in the IRP staff noted that an important goal in new resource acquisitions was to diversify the City's supply portfolio and reduce its seasonal and intraday market price exposure. Given that Palo Alto's current electric supply portfolio lacks large-scale energy storage capacity, the recommended addition of 50 MW of BESS capacity will significantly diversify the City's resource mix. And with a significant concentration of solar resources in both the City's supply portfolio and the broader CAISO grid, the addition of this BESS capacity will allow NCPA to balance the City's load while substantially mitigating the City's exposure to daily low-priced hours.

[8] Specifically, the Recommended Plan included 25 MW of 4-hour BESS capacity in 2041, 25 MW of 10-hour BESS capacity in 2043, and 25 MW of 8-hour BESS capacity in 2045.

Risk Management Assessment

In general, businesses in the renewable industry often lack extensive financial and operational track records, and due to their capital-intensive nature, they tend to be highly leveraged as well. Aypa fits this pattern, in that it does not have a credit rating or an extensive balance sheet. However, it is a Blackstone portfolio company with a proven history of developing energy storage and hybrid (solar-plus-storage) renewable projects across North America, with 35 projects completed or under construction.

To mitigate the credit risk associated with the supplier, the contract requires that Aypa provide a significant amount of collateral (in the form of cash or a letter of credit)[9], which would protect the City and the other offtakers in a scenario where the facility is unable to produce the contracted output and the market price of the replacement storage capacity is higher than the price of this resource. And crucially, under the terms of the proposed contract the City is not at risk for paying for output that is not delivered. The City will only be obligated to pay if Trolley's capacity is available to be used for RA compliance and energy arbitrage purposes.

NEXT STEPS

At its June 2025 meeting, the NCPA Commission approved the Energy Storage Service Agreement and the associated Third Phase Agreement for Purchase Agreements with Aypa. Following a UAC recommendation for approval, staff will present the Trolley Third Phase Agreement to the Finance Committee and subsequently to the City Council for final approval.

FISCAL/RESOURCE IMPACT

Council approval of this Third Phase Agreement will grant the City the rights to a 50 MW share of the Trolley BESS, with a total not-to-exceed amount of $8.08 million/year during the 20-year contract term (which is expected to begin in June 2029). Funding for the purchase of the Trolley output will be included in the Electric Utility Fund budget beginning in FY 2029.

STAKEHOLDER ENGAGEMENT

Utilities staff and the City Attorney's Office coordinated with NCPA staff as well as staff from other participating NCPA member agencies to negotiate the terms of the contract with Aypa. Utilities staff also consulted with Administrative Services Department staff to assess the credit risk associated with this contract.

ENVIRONMENTAL REVIEW

The UAC's recommendation to approve the Trolley Third Phase Agreements does not meet the definition of a project under the California Environmental Quality Act (CEQA), pursuant to CEQA Guidelines sections 15378(a) since Palo Alto's purchase of capacity and storage under this Agreement has no potential to result in a physical change to the environment. The Seller, Trolley

[9] The collateral requirement will initially be $20 million for NCPA's share of the contract, increasing to $40 million on January 1, 2028. Once the project begins operating, the collateral requirement will be $32 million throughout the term of the agreement.

Pass Project, LLC, is responsible for obtaining CEQA approvals from Rancho Cucamonga, the Lead Agency, under Article 13 of the Agreement. The City has no obligation to make any purchases under the Agreement until CEQA approvals are complete, the judicial review period for CEQA challenges has passed, or such challenges, if any, have been dismissed.

ATTACHMENTS
Attachment A: Third Phase Agreement with NCPA for the Trolley Project
Attachment B: Presentation

AUTHOR/TITLE:
Alan Kurotori, Director of Utilities
Staff: Jim Stack, Senior Resource Planner

THIRD PHASE AGREEMENT

FOR

ENERGY STORAGE SERVICE AGREEMENT

WITH

TROLLEY PASS PROJECT LLC

TABLE OF CONTENTS

This THIRD PHASE AGREEMENT ("this Agreement") is dated as of _____, 20__ by and among the Northern California Power Agency, a joint powers agency of the State of California ("NCPA"), and the signatories to this Agreement other than NCPA ("Participants"). NCPA and the Participants are referred to herein individually as a "Party" and collectively as the "Parties".

RECITALS

A. NCPA has heretofore been duly established as a public agency pursuant to the Joint Exercise of Powers Act of the Government Code of the State of California and, among other things, is authorized to acquire, construct, finance, and operate buildings, works, facilities, and improvements for the generation and transmission of electric capacity and energy for resale.

B. Each of the Participants is a signatory to the Joint Powers Agreement which created NCPA and therefore is a Member.

C. Each of the Participants to this Agreement have executed the Amended and Restated Facilities Agreement, dated October 1, 2014, which establishes the framework under which Project Agreements are created for the development, design, financing, construction, and operation of specific NCPA Projects.

D. The Participants desire NCPA to enter into an Energy Storage Service Agreement ("ESSA") with Trolley Pass Project LLC ("Seller"), to purchase the Product for the benefit of the Participants' customers.

E. Each Participant is authorized by its Constitutive Documents to obtain the Product for its present or future requirements, through contracts with NCPA or otherwise.

F. To enable NCPA to enter into the ESSA on behalf of the Participants, pursuant to the terms and conditions of the Amended and Restated Facilities Agreement, NCPA and the Participants wish to enter into this Agreement to provide all means necessary for NCPA to fulfill obligations incurred on behalf of NCPA and the Participants pursuant to the ESSA, and to enable and obligate the Participants to take delivery of and pay for the Product and to pay NCPA for all costs it incurs for undertaking the foregoing activities.

G. Upon full execution of this Agreement, NCPA will enter into the ESSA on behalf of the Participants, and such ESSA shall be deemed a NCPA Project by the Commission.

H. Each of the Parties intends to observe the provisions of this Agreement in good faith and shall cooperate with all other Parties in order to achieve the full benefits of joint action.

I. The Parties desire to equitably allocate costs of NCPA's provision of services under this Agreement among the Participants.

J. The Participants further desire, insofar as possible, to insulate other Members who are not Participants, from risks inherent in the services and transactions undertaken on behalf of the Participants pursuant to this Agreement.

NOW, THEREFORE, the Parties agree as follows:

Section 1. Definitions.

1.1 Definitions. Whenever used in this Agreement (including the Recitals hereto), the following terms shall have the following respective meanings, provided, capitalized terms used in this Agreement (including the Recitals hereto) that are not defined in Section 1 of this Agreement shall have the meaning indicated in Section 1 of the Power Management and Administrative Services Agreement, dated October 1, 2014:

1.1.1 "Actual Contract Price Increase" has the meaning set forth in Section 1.1 of the ESSA.

1.1.2 "Administrative Services Costs" means that portion of the NCPA administrative, general and occupancy costs and expenses, including those costs and expenses associated with the operations, direction and supervision of the general affairs and activities of NCPA, general management, treasury operations, accounting, budgeting, payroll, human resources, information technology, facilities management, salaries and wages (including retirement benefits) of employees, facility operation and maintenance costs, taxes and payments in lieu of taxes (if any), insurance premiums, fees for legal, engineering, financial and other services, power management services,

general settlement and billing services and general risk management costs, that are charged directly or apportioned to the provision of services under this Agreement. Administrative Services Costs as separately defined herein and used in the context of this Agreement is different and distinct from the term Administrative Services Costs as defined in Section 1 of the Power Management and Administrative Services Agreement.

1.1.3 "Agreement" means this Third Phase Agreement, including all Exhibits attached hereto.

1.1.4 "All Resources Bill" has the meaning set forth in the Power Management and Administrative Services Agreement.

1.1.5 "CAISO" means the California Independent System Operator Corporation, or its functional successor.

1.1.6 "CAISO Tariff" means the duly authorized tariff, rules, protocols and other requirements of the CAISO, as amended from time to time.

1.1.7 "Capacity Damages" has the meaning set forth in Section 1.1 of the ESSA.

1.1.8 "Change in Tax Law" has the meaning set forth in Section 1.1 of the ESSA.

1.1.9 "Commercial Operation" has the meaning set forth in Section 1.1 of the ESSA.

1.1.10 "Commercial Operation Date" has the meaning set forth in Section 1.1 of the ESSA.

1.1.11 "Commission" has the meaning set forth in the Power Management and Administrative Services Agreement.

1.1.12 "Constitutive Documents" means, with respect to NCPA, the Joint Powers Agreement and any resolutions or bylaws adopted thereunder with respect to the governance of NCPA, and with respect to each Participant, the California Government Code and other statutory provisions applicable to such Participant, any applicable agreements, charters, contracts, or other documents concerning the formation, operation or decision making of such Participant, including, if applicable, its city charter, and any codes, ordinances, bylaws, and resolutions adopted by such Participant's governing body.

1.1.13 "Contract Price" has the meaning set forth in Section 1.1 of the ESSA.

1.1.14 "Defaulting Participant" has the meaning set forth in Section 7.2.

1.1.15 "Electric System" has the meaning set forth in the Power Management and Administrative Services Agreement.

1.1.16 "Event of Default" has the meaning set forth in Section 7.2.

1.1.17 "Facility" has the meaning set forth in Section 1.1 of the ESSA.

1.1.18 "Final Independent Report" has the meaning set forth in Section 1.1 of the ESSA.

1.1.19 "General Operating Reserve" means the NCPA General Operating Reserve created through resolution of the Commission, as the same may be amended from time to time.

1.1.20 "Initial Independent Report" has the meaning set forth in Section 1.1 of the ESSA.

1.1.21 "Installed Battery Capacity" has the meaning set forth in Section 1.1 of the ESSA.

1.1.22 "MW" means megawatt.

1.1.23 "MWh" means megawatt hour.

1.1.24 "NCPA" has the meaning set forth in the Recitals hereto.

1.1.25 "Participant" has the meaning set forth in the recitals of this Agreement.

1.1.26 "Party" or "Parties" has the meaning set forth in the preamble hereto; provided that "Third Parties" are entities that are not Party to this Agreement.

1.1.27 "Power Management and Administrative Services Agreement" means the NCPA Power Management and Administrative Services Agreement, dated as of October 1, 2014, between NCPA and the Members who are signatories to that agreement by which NCPA provides Power Management and Administrative Services.

1.1.28 "Product" has the meaning set forth in Section 1.1 of the ESSA.

1.1.29 "Project" or "ESSA" means the Energy Storage Service Agreement, dated as of _____, 20__ between NCPA and Seller, under which NCPA, on behalf of the Participants, purchases Product from the Facility located in San Bernardino County, California, consisting of a separately metered 300 MW_{AC} section of a larger battery energy storage facility commonly known as the Trolley Battery Energy Storage Project. Upon final execution of the ESSA, the Project shall be deemed a NCPA Project in accordance with the Amended and Restated Facilities Agreement. The ESSA has been attached to this Agreement as Exhibit B.

1.1.30 "Project Costs" means all costs charged to and paid by NCPA pursuant to the ESSA.

1.1.31 "Project Participation Percentage" has the meaning set forth in the Power Management and Administrative Services Agreement, and are set forth in Exhibit A of this Agreement.

1.1.32 "Proposed Contract Price Increase" has the meaning set forth in Section 1.1 of the ESSA.

1.1.33 "Proposed Contract Price Increase Cap" has the meaning set forth in Section 1.1 of the ESSA.

1.1.34 "Revenue" means , with respect to each Participant, all income, rents, rates, fees, charges, and other moneys derived by the Participant from the

ownership or operation of its Electric System, including, without limiting the generality of the foregoing: (a) all income, rents, rates, fees, charges or other moneys derived from the sale, furnishing and supplying of electric capacity and energy and other services, facilities, and commodities sold, furnished, or supplied through the facilities of its Electric System; (b) the earnings on and income derived from the investment of such income, rents, rates, fees, charges or other moneys to the extent that the use of such earnings and income is limited by or pursuant to law to its Electric System; (c) the proceeds derived by the Participant directly or indirectly from the sale, lease or other disposition of all or a part of the Electric System; and (d) the proceeds derived by Participant directly or indirectly from the consignment and sale of freely allocated greenhouse gas compliance instruments into periodic auctions administered by the State of California under the California Cap-and-Trade Program, provided that such proceeds are a permitted use of auction proceeds, but the term Revenues shall not include (i) customers' deposits or any other deposits subject to refund until such deposits have become the property of the Participant or (ii) contributions from customers for the payment of costs of construction of facilities to serve them.

1.1.35 "Scheduling Protocols" means the applicable provisions of the Amended and Restated Scheduling Coordination Program Agreement, and any other contractual or other arrangements between NCPA and the Participants concerning the scheduling, delivery and metering of the ESSA.

1.1.36 "Security Deposit" means the account established by NCPA and funded by the Participants in accordance with Section 5, the funds of which are available for use by NCPA in accordance with the terms and conditions hereof.

1.1.37 "Seller" means Trolley Pass Project LLC, as set forth in Recital D of this Agreement, or as otherwise set forth in the ESSA.

1.1.38 "Storage Contract Capacity" has the meaning set forth in Section 1.1 of the ESSA.

1.1.39 "Supply Chain Event" has the meaning set forth in Section 1.1 of in the ESSA.

1.1.40 "Term" has the meaning set forth in Section 10.

1.1.41 "Third Party" means an entity (including a Member) that is not Party to this Agreement.

1.2 Rules of Interpretation. As used in this Agreement (including the Recitals hereto), unless in any such case the context requires otherwise: The terms "herein," "hereto," "herewith" and "hereof" are references to this Agreement taken as a whole and not to any particular provision; the term "include," "includes" or "including" shall mean "including, for example and without limitation;" and references to a "Section," "subsection," "clause," "Appendix", "Schedule", or "Exhibit" shall mean a Section, subsection, clause, Appendix, Schedule or Exhibit of this Agreement, as the case may be. All references to a given agreement, instrument, tariff or other document, or law,

regulation or ordinance shall be a reference to that agreement, instrument, tariff or other document, or law, regulation or ordinance as such now exists and as may be amended from time to time, or its successor. A reference to a "person" includes any individual, partnership, firm, company, corporation, joint venture, trust, association, organization or other entity, in each case whether or not having a separate legal personality and includes its successors and permitted assigns. A reference to a "day" shall mean a Calendar Day unless otherwise specified. The singular shall include the plural and the masculine shall include the feminine, and *vice versa*.

Section 2. **Purpose.** The purpose of this Agreement is to: (i) set forth the terms and conditions under which NCPA shall enter into the ESSA on behalf of the Participants, (ii) authorize NCPA, acting on behalf of the Participants, to engage in all activities related to that basic purpose, and (iii) specify the rights and obligations of NCPA and the Participants with respect to the ESSA.

Section 3. **Sale and Purchase of Product.** By executing this Agreement, each Participant acknowledges and agrees to be bound by the terms and conditions of the Agreement, and that the Agreement is written as a "take-or-pay" agreement. Any Product delivered to NCPA under the ESSA shall be delivered to each Participant in proportion to such Participant's Project Participation Percentage as set forth in Exhibit A, and each Participant shall accept and pay for its respective percentage of such Product. To the extent a Participant is unable to accept such deliveries in full, NCPA shall dispose of such

surplus in its sole discretion, in such a manner to attempt to maximize Participant value and that Participant shall reimburse to NCPA any costs incurred by NCPA in doing so. Notwithstanding the above, NCPA may allocate Product procured through the ESSA among the Participants in such percentages as NCPA may, in its reasonable discretion, determine are necessary, desirable, or appropriate, in order to accommodate Participant transfer rights pursuant to Section 9.

3.1 Scheduling. Product delivered from Seller shall be scheduled for and to the Participants in accordance with Scheduling Protocols, and the terms and conditions of the ESSA.

Section 4. Billing and Payments

4.1 Participant Payment Obligations. Each Participant agrees to pay to NCPA each month its respective portion of the Project Costs, Administrative Services Costs, scheduling coordination costs, and all other costs for services provided in accordance with this Agreement and the Amended and Restated Facilities Agreement. In addition to the aforementioned monthly payment obligations, each Participant is obligated to fund: (i) any and all required Security Deposits calculated in accordance with Section 5, and (ii) any working capital requirements for the Project maintained by NCPA as determined, collected and set forth in the Annual Budget.

4.2 Invoices. NCPA will issue an invoice to each Participant for its share of Project Costs, Administrative Services Costs, scheduling coordination costs, and all other

costs for services provided in accordance with this Agreement and the Amended and Restated Facilities Agreement. Such invoice may be either the All Resources Bill or separate special invoice, as determined by NCPA. At NCPA's discretion, invoices may be issued to Participants using electronic media or physical distribution.

4.3 Payment of Invoices. All invoices delivered by NCPA (including the All Resources Bill) are due and payable thirty (30) Calendar Days after the date thereof; provided, however, that any amount due on a day other than a Business Day may be paid on the following Business Day.

4.4 Late Payments. Any amount due and not paid by a Participant in accordance with Section 4.3 shall be considered late and bear interest computed on a daily basis until paid at the lesser of (i) the per annum prime rate (or reference rate) of the Bank of America NT&SA then in effect, plus two percent (2%) or (ii) the maximum rate permitted by law.

4.5 Billing Disputes. A Participant may dispute the accuracy of any invoice issued by NCPA under this Agreement by submitting a written dispute to NCPA, within thirty (30) Calendar Days after the date of such invoice; nonetheless the Participant shall pay the full amount billed when due. If a Participant does not timely question or dispute the accuracy of any invoice in writing, then the invoice shall be deemed to be correct. Upon review of a submitted dispute, if an invoice is determined by NCPA to be incorrect, then NCPA shall issue a corrected invoice and refund any amounts that may be due to the Participant. If NCPA and the Participant fail to agree on the accuracy of an invoice within

thirty (30) Calendar Days after the Participant has disputed it, then the General Manager shall promptly submit the dispute to the Commission for resolution. If the Commission and the Participant fail to agree on the accuracy of a disputed invoice within sixty (60) Calendar Days after its submission to the Commission, then the dispute may then be resolved under the mediation and arbitration procedures set forth in Section 12 of this Agreement; provided, however, that prior to resorting to either mediation or arbitration proceedings, the full amount of the disputed invoice must be paid by the Participant.

4.6 Billing/Settlement Data and Examination of Books and Records.

4.6.1 Settlement Data. NCPA shall make billing and settlement data available to the Participants in the All Resources Bill, or other invoice, or upon request. NCPA may also, at its sole discretion, make billing and settlement support information available to Participants using electronic media (e.g. electronic data portal). Procedures and formats for the provision of such electronic data submission may be established by the Commission from time to time. Without limiting the generality of the foregoing, NCPA may, in its reasonable discretion, require the Participants to execute a non-disclosure agreement prior to providing access to the NCPA electronic data portal.

4.6.2 Examination of Books and Records. Any Participant to this Agreement shall have the right to examine the books and records created and

maintained by NCPA pursuant to this Agreement at any reasonable, mutually agreed upon time.

Section 5. Security Deposit Administration

5.1 Security Deposit Requirements. Each Participant agrees that any funds deposited at NCPA to satisfy Participant's Security Deposit requirements pursuant to this Agreement shall be irrevocably committed and held by NCPA in the General Operating Reserve, and that such funds may be used by NCPA in accordance with Section 5.1.3. Each Participant's Security Deposit will be accounted separately from and in addition to any other security accounts or deposits maintained pursuant to any other agreement between NCPA and the Participant, or any other such security account or deposits required of Members. In connection with fulfilling the Security Deposit requirements of this Agreement, Participant may elect to use its uncommitted funds held in the General Operating Reserve to satisfy in whole or in part its Security Deposit required under Section 5. If Participant chooses to satisfy in whole or in part its security requirements using its uncommitted funds held in the General Operating Reserve, then Participant is required to execute and deliver to NCPA an Irrevocable Letter of Direction, directing NCPA to utilize Participant's uncommitted General Operating Reserve funds for such purposes, and the designated funds will thereafter be irrevocably committed and held by NCPA to satisfy the requirements of this Agreement.

5.1.1 Initial Amounts. No later than ninety (90) day prior to the Commercial Operation Date, each Participant shall ensure that sufficient Security Deposit funds have been deposited with and are held by NCPA in an amount not greater than the highest three (3) months of estimated Project Costs, as estimated by NCPA. Such Security Deposit requirement may be satisfied by Participant in whole or part either in cash, through irrevocable commitment of its uncommitted funds held in the General Operating Reserve in accordance with Section 5.1, or through a clean, irrevocable letter of credit satisfactory to NCPA's General Manager.

5.1.2 Subsequent Deposits. Periodically, and at least quarterly, NCPA shall review and revise its estimate of Project Costs for which Participant shall be obligated to pay under this Agreement. Following such review, NCPA shall determine whether each Participant has a sufficient Security Deposit balance at NCPA. To the extent that any Participant's Security Deposit balance is greater than one hundred and ten percent (110%) of the amount required herein, NCPA shall credit such amount as soon as practicable to the Participant's next following All Resources Bill, or by separate special invoice. To the extent that any Participant's Security Deposit balance is less than ninety percent (90%) of the amount required herein, NCPA shall add such amount as soon as practicable to such Participant's next All Resources Bill, or as necessary, to a special invoice to be paid by Participant upon receipt. Credits or additions shall not be made to Participants who satisfy these Security Deposit requirements in whole through

the use of a letter of credit; provided, that the amount of the letter of credit shall be adjusted, as required from time to time, in a like manner to assure an amount not to exceed the highest three (3) months of estimated Project Costs is available to NCPA, as determined by NCPA.

5.1.3 Use of Security Deposit Funds. NCPA may use any and all Security Deposit funds held by NCPA (or utilize a letter of credit provided in lieu thereof) to pay any costs it incurs hereunder, including making payments to Seller, without regard to any individual Participant's Security Deposit balance or proportionate share of Project Costs, and irrespective of whether NCPA has issued an All Resources Bill or special invoice for such costs to the Participants or whether a Participant has made timely payments of All Resources Bills or special invoices. Should Participant have satisfied its Security Deposit requirements in whole or part through a letter of credit, NCPA may draw on such letter of credit to satisfy Participant's obligations hereunder at NCPA's sole discretion. Notwithstanding the foregoing, if any Participant fails to pay any costs incurred by NCPA pursuant to this Agreement, NCPA shall first use that non-paying Participant's Security Deposit and shall not use any other Participants' Security Deposit until such non-paying Participant's Security Deposit has been exhausted.

5.1.4 Accounting. If Security Deposit funds or a letter of credit are used by NCPA to pay any costs it incurs hereunder as described in Section 5.1.3, then NCPA

will maintain a detailed accounting of each Participant's shares of funds withdrawn, and upon the collection of all or a part of such withdrawn funds, NCPA will credit back to each non-defaulting Participant the funds collected in proportion to such non-defaulting Participant's share of funds initially withdrawn.

5.1.5 Emergency Additions. In the event that funds are withdrawn pursuant to Section 5.1.3, or if the Security Deposit held by NCPA is otherwise insufficient to allow for NCPA to pay any invoice, demand, request for further assurances by Seller, or claims, NCPA shall notify all Participants of the deficiency. In conjunction with such notice, NCPA shall send a special or emergency assessment invoice to the Participant or Participants that caused or are otherwise responsible for the deficiency. Each Participant of such an invoice shall pay to NCPA such assessment when and if assessed by NCPA within two (2) Business Days of the invoice date of the assessment, or shall consent to and direct NCPA to draw on any existing letter of credit Participant has established for such purposes. In the event that the Participant or Participants that caused or are otherwise responsible for the deficiency cannot, does not or will not pay to NCPA the special or emergency assessment within two (2) Business Days after the invoice date, NCPA shall immediately submit a special or emergency invoice to all remaining Participants, and such remaining Participants shall pay to NCPA such assessment within two (2) Business Days after the invoice date of

the assessment, or shall consent to and direct NCPA to draw on any existing letter of credit that Participant has established for such purposes.

5.1.6 Security Deposit Interest. NCPA shall maintain a detailed accounting of each Participant's Security Deposits, and withdrawals of such funds, held by NCPA. Security Deposits held by NCPA shall be invested by NCPA in accordance with the General Operating Reserve policies and investment policies adopted by the NCPA Commission. Interest earned on the Security Deposit funds shall be proportionately credited to the Participants in accordance with their weighted average balances held therein. Any Security Deposit losses caused by early termination of investments shall be allocated among the Participants in accordance with the General Operating Reserve provisions and guidelines approved by the Commission, as the same may be amended from time to time; provided, however, to the extent that either the General Operating Reserve provisions and guidelines do not apply or the Security Deposit is not adequate to cover the losses, then such losses shall be allocated among the Participants in accordance with their proportionate Security Deposit balances.

5.1.7 Return of Funds. Upon termination or a permitted withdrawal of a Participant in accordance with this Agreement, the affected Participant may apply to NCPA for the return of their share of Security Deposit funds ninety (90) days after the effective date of such termination or withdrawal. However, NCPA shall, in its sole but

reasonable discretion, as determined by the NCPA General Manager, estimate the then outstanding liabilities of the Participant, including any estimated contingent liabilities and shall retain all such funds, if any, until all such liabilities have been fully paid or otherwise satisfied in full. After all such liabilities have been satisfied in full, as determined by NCPA's General Manager, any remaining balance of the Participant's share of the Security Deposit will be refunded to the Participant within sixty (60) days thereafter.

Section 6. **Cooperation and Further Assurances.** Each of the Parties agree to provide such information, execute and deliver any instruments and documents and to take such other actions as may be necessary or reasonably requested by any other Party which are consistent with the provisions of this Agreement and which do not involve the assumption of obligations other than those provided for in this Agreement, in order to give full effect to this Agreement and to carry out the intent of this Agreement. The Parties agree to cooperate and act in good faith in connection with obtaining any credit support required in order to satisfy the requirements of this Agreement.

Section 7. **Participant Covenants and Defaults**

7.1 Each Participant covenants and agrees: (i) to make payments to NCPA, from its Electric System Revenues, of its obligations under this Agreement as an operating expense of its Electric System; (ii) to fix the rates and charges for services provided by its Electric System, so that it will at all times have sufficient Revenues to meet the obligations

of this Agreement, including the payment obligations; (iii) to make all such payments due NCPA under this Agreement whether or not there is an interruption in, interference with, or reduction or suspension of services provided under this Agreement, such payments not being subject to any reduction, whether by offset or otherwise, and regardless of whether any reasonable dispute exists; and (iv) to operate its Electric System, and the business in connection therewith, in accordance with Good Utility Practices.

7.2 Events of Default. An Event of Default under this Agreement shall exist upon the occurrence of any one or more of the following by a Participant (the "Defaulting Participant"):

(i) the failure of any Participant to make any payment in full to NCPA when due;

(ii) the failure of a Participant to perform any covenant or obligation of this Agreement where such failure is not cured within thirty (30) Calendar Days following receipt of a notice from NCPA demanding cure; provided, that this subsection shall not apply to any failure to make payments specified by subsection 7.2 (i));

(iii) if any representation or warranty of a Participant material to the services provided hereunder shall prove to have been incorrect in any material respect when made and the Participant does not cure the facts underlying such incorrect representation or warranty so that the representation or warranty becomes true and correct within thirty (30) Calendar Days after the date of receipt of notice from NCPA demanding cure; or

(iv) if a Participant is in default or in breach of any of its covenants or obligations under any other agreement with NCPA and such default or breach is not cured within the time periods specified in such agreement.

7.3 Uncontrollable Forces. A Party shall not be considered to be in default in respect of any obligation hereunder if prevented from fulfilling such obligation by reason of Uncontrollable Forces; provided, that in order to be relieved of an Event of Default due to Uncontrollable Forces, a Party affected by an Uncontrollable Force shall:

(i) first provide oral notice to the General Manager using telephone communication within two (2) Business Days after the onset of the Uncontrollable Force, and provide subsequent written notice to the General Manager and all other Parties within ten (10) Business Days after the onset of the Uncontrollable Force, describing its nature and extent, the obligations which the Party is unable to fulfill, the anticipated duration of the Uncontrollable Force, and the actions which the Party will undertake so as to remove such disability and be able to fulfill its obligations hereunder; and

(ii) use due diligence to place itself in a position to fulfill its obligations hereunder and if unable to fulfill any obligation by reason of an Uncontrollable Force such Party shall exercise due diligence to remove such disability with reasonable dispatch; provided, that nothing in this subsection shall require a Party to settle or compromise a labor dispute.

7.4 Cure of an Event of Default. An Event of Default shall be deemed cured only if such default shall be remedied or cured within the time periods specified in Section 7.2 above, as may be applicable, provided, however, upon request of the Defaulting Participant the Commission may waive the default at its sole discretion, where such waiver shall not be unreasonably withheld.

7.5 Remedies in the Event of Uncured Default. Upon the occurrence of an Event of Default which is not cured within the time limits specified in Section 7.2, without limiting other rights or remedies available under this Agreement, at law or in equity, and without constituting or resulting in a waiver, release or estoppel of any right, action or cause of action NCPA may have against the Defaulting Participant, NCPA may take any or all of the following actions:

(i) suspend the provision of services under this Agreement to such Defaulting Participant; or

(ii) demand that the Defaulting Participant provide further assurances to guarantee the correction of the default, including the collection of a surcharge or increase in electric rates, or such other actions as may be necessary to produce necessary Revenues to correct the default.

7.6 Effect of Suspension.

7.6.1 Generally. The suspension of this Agreement will not terminate, waive, or otherwise discharge any ongoing or undischarged liabilities, credits or

obligations arising from this Agreement until such liabilities, credits or obligations are satisfied in full.

7.6.2 Suspension. If performance of all or any portion of this Agreement is suspended by NCPA with respect to a Participant in accordance with subsection 7.5(i), then such Participant shall pay any and all costs incurred by NCPA as a result of such suspension including reasonable attorney's fees, the fees and expenses of other experts, including auditors and accountants, or other reasonable and necessary costs associated with such suspension and any portion of the Project Costs, scheduling and dispatch costs, and Administrative Services Costs that were not recovered from such Participant as a result of such suspension.

Section 8. Administration of Agreement

8.1 Commission. The Commission is responsible for the administration of this Agreement. Each Participant shall be represented by its Commissioner or their designated alternate Commissioner ("Alternate") pursuant to the Joint Powers Agreement. Each Commissioner shall have authority to act for the Participant represented with respect to matters pertaining to this Agreement.

8.2 Forum. Whenever any action anticipated by this Agreement is required to be jointly taken by the Participants, such action shall be taken at regular or special meetings of the NCPA Commission.

8.3 Quorum. For purposes of acting upon matters that relate to administration of this Agreement, a quorum of the Participants shall consist of those Commissioners, or their designated Alternate, representing a numerical majority of the Participants.

8.4 Voting. Each Participant shall have the right to cast one vote with respect to matters pertaining to this Agreement. A unanimous vote of all Participants shall be required for action regarding: (i) any transfer of rights to a Third Party as described in Section 9 of this Agreement; and (ii) for matters related to any of the following actions as provided for in the ESSA: (a) exercising any early termination provisions as set forth in the ESSA, and (b) exercising any assignment rights as set forth in the ESSA. For all other matters pertaining to this Agreement, a majority vote of the Participants shall be required for action.

8.5 Storage Rate Adjustment Event. Section 2.5 of the ESSA permits the Seller to request a Contract Price adjustment from NCPA to address cost increases that Seller incurs as a result of a Change in Tax Law or Supply Chain Event. If the Proposed Contract Price Increase or Actual Contract Price Increase is equal to or less than the Proposed Contract Price Increase Cap, then as further set forth in Section 2.5 of the ESSA, such Proposed Contract Price Increase or Actual Contract Price Increase shall be deemed accepted by the Participants and NCPA, and the parties to the ESSA shall amend the Contract Price in the ESSA.

If the Proposed Contract Price Increase and/or Actual Contract Price Increase is greater than the Proposed Contract Price Increase Cap by an amount that is less than or equal to fi[redacted]) of the original Contract Price, in aggregate, then the NCPA General Manager is hereby delegated authority by the Participants to approve the price increase based on their determination that (1) the Initial Independent Report or Final Independent Report supports the Proposed Contract Price Increase and/or Actual Contract Price Increase, and (2) the ESSA with the Proposed Contract Price Increase and/or Actual Contract Price Increase is still favorable when compared to current market conditions for similar products. The NCPA General Manager shall notify the Commission of the acceptable Proposed Contract Price Increase and/or Actual Contract Price Increase and associated modifications to the ESSA with the foregoing findings, if any, at the next available Commission meeting. If the Proposed Contract Price Increase and/or Actual Contract Price Increase is greater than fif[redacted]) of the original Contract Price, in aggregate, then the proposed modifications to the ESSA will be brought to the Commission for discussion and further action.

Section 9. Transfer of Rights by Participants

9.1 A Participant has the right to make transfers, sales, assignments and exchanges (collectively "transfers(s)") of any portion of its Project Participation Percentage and rights thereto, subject to the approval provisions in Section 8.4 of this Agreement, provided that the transferee satisfies all applicable criterion in the ESSA. If a Participant

desires to transfer a portion or its entire share of the Project for a specific time interval, or permanently, then NCPA will, if requested by such Participant, use its best efforts to transfer that portion of the Participant's share of the Project.

9.2 Unless otherwise set forth in this Agreement, before a Participant may transfer an excess Project share pursuant to Section 9.1 to any person or entity other than a Participant, it shall give all other Participants the right to purchase the share on the same terms and conditions. Before a Participant may transfer an excess Project share pursuant to Section 9.1 to any person or entity other than a Member, it shall give all Members the right to purchase the share on the same terms and conditions. Such right shall be exercised within thirty (30) days of receipt of notice of said right.

No transfer shall relieve a Participant of any of its obligations under this Agreement except to the extent that NCPA receives payment of these obligations from a transferee.

Section 10. **Term and Termination.** This Agreement shall become effective when it has been duly executed by all Participants, and delivered to and executed by NCPA (the "Effective Date"). NCPA shall notify all Participants in writing of the Effective Date. The Term of this Agreement shall be coterminous with the ESSA, and shall commence on the Effective Date, and shall continue through the term of the ESSA.

Section 11. **Withdrawal of Participants.** No Participant may withdraw from this Agreement except as otherwise provided for herein.

Section 12. Settlement of Disputes and Arbitration. The Parties agree to make best efforts to settle all disputes among themselves connected with this Agreement as a matter of normal business under this Agreement. The procedures set forth in Section 10 of the Power Management and Administrative Services Agreement shall apply to all disputes that cannot be settled by the Participants themselves; provided, that the provisions of Section 4.5 shall first apply to all disputes involving invoices prepared by NCPA.

Section 13. Miscellaneous

13.1 Confidentiality. The Parties will keep confidential all confidential or trade secret information made available to them in connection with this Agreement, to the extent possible, consistent with applicable laws, including the California Public Records Act. Confidential or trade secret information shall be marked or expressly identified as such.

If a Party ("Receiving Party") receives a request from a Third Party for access to, or inspection, disclosure or copying of, any other Party's (the "Supplying Party") confidential data or information, which the Receiving Party has possession of ("Disclosure Request"), then the Receiving Party shall provide notice and a copy of the Disclosure Request to the Supplying Party within three (3) Business Days after receipt of the Disclosure Request. Within three (3) Business Days after receipt of such notice, the Supplying Party shall provide notice to the Receiving Party either:

(i) that the Supplying Party believes there are reasonable legal grounds for denying or objecting to the Disclosure Request, and the Supplying Party requests the

Receiving Party to deny or object to the Disclosure Request with respect to identified confidential information. In such case, the Receiving Party shall deny the Disclosure Request and the Supplying Party shall defend the denial of the Disclosure Request at its sole cost, and it shall indemnify the Receiving Party for all costs associated with denying or objecting to the Disclosure Request. Such indemnification by the Supplying Party of the Receiving Party shall include all of the Receiving Party's costs reasonably incurred with respect to denial of or objection to the Disclosure Request, including but not limited to costs, penalties, and the Receiving Party's attorney's fees; or

(ii) that the Receiving Party may grant the Disclosure Request without any liability by the Receiving Party to the Supplying Party.

13.2 Indemnification and Hold Harmless. Subject to the provisions of Section 13.4, each Participant agrees to indemnify, defend and hold harmless NCPA and its Members, including their respective governing boards, officials, officers, agents, and employees, from and against any and all claims, suits, losses, costs, damages, expenses and liability of any kind or nature, including reasonable attorneys' fees and the costs of litigation, including experts, to the extent caused by any acts, omissions, breach of contract, negligence (active or passive), gross negligence, recklessness, or willful misconduct of that Participant, its governing officials, officers, employees, subcontractors or agents, to the maximum extent permitted by law.

13.3 Several Liabilities. No Participant shall, in the first instance, be liable under this Agreement for the obligations of any other Participant or for the obligations of NCPA incurred on behalf of other Participants. Each Participant shall be solely responsible and liable for performance of its obligations under this Agreement, except as otherwise provided for herein. The obligation of each Participant under this Agreement is, in the first instance, a several obligation and not a joint obligation with those of the other Participants.

Notwithstanding the foregoing, the Participants acknowledge that any debts or obligations incurred by NCPA under this Agreement on behalf of any of them shall be borne solely by such Participants in proportion to their respective Project Participation Percentages, and not by non-Participant Members of NCPA, pursuant to Article IV, Section 3(b) of the Joint Powers Agreement.

In the event that a Participant should fail to pay its share of the debts or obligations incurred by NCPA as required by this Agreement, the remaining Participants shall, in proportion to their Project Participation Percentages, pay such unpaid amounts and shall be reimbursed by the Participant failing to make such payments.

13.4 No Consequential Damages. FOR ANY BREACH OF ANY PROVISION OF THIS AGREEMENT FOR WHICH AN EXPRESS REMEDY OR MEASURE OF DAMAGES IS PROVIDED IN THIS AGREEMENT, THE LIABILITY OF THE DEFAULTING PARTY SHALL BE LIMITED AS SET FORTH IN SUCH PROVISION, AND ALL OTHER

DAMAGES OR REMEDIES ARE HEREBY WAIVED. IF NO REMEDY OR MEASURE OF DAMAGE IS EXPRESSLY PROVIDED, THE LIABILITY OF THE DEFAULTING PARTY SHALL BE LIMITED TO ACTUAL DAMAGES ONLY AND ALL OTHER DAMAGES AND REMEDIES ARE HEREBY WAIVED. IN NO EVENT SHALL NCPA OR ANY PARTICIPANT OR THEIR RESPECTIVE SUCCESSORS, ASSIGNS, REPRESENTATIVES, DIRECTORS, OFFICERS, AGENTS, OR EMPLOYEES BE LIABLE FOR ANY LOST PROFITS, CONSEQUENTIAL, SPECIAL, EXEMPLARY, INDIRECT, PUNITIVE, OR INCIDENTAL LOSSES OR DAMAGES, INCLUDING LOSS OF USE, LOSS OF GOODWILL, LOST REVENUES, LOSS OF PROFIT OR LOSS OF CONTRACTS EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND NCPA AND EACH PARTICIPANT EACH HEREBY WAIVES SUCH CLAIMS AND RELEASES EACH OTHER AND EACH OF SUCH PERSONS FROM ANY SUCH LIABILITY.

The Parties acknowledge that California Civil Code section 1542 provides that: "A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor." The Parties waive the provisions of section 1542, or other similar provisions of law, and intend that the waiver and release provided by this Section of this Agreement shall be fully enforceable despite its reference to future or unknown claims.

13.5 Waiver. No waiver of the performance by a Party of any obligation under this Agreement with respect to any default or any other matter arising in connection with this Agreement shall be effective unless given by the Commission or the governing body of a Participant, as applicable. Any such waiver by the Commission in any particular instance shall not be deemed a waiver with respect to any subsequent performance, default or matter.

13.6 Amendments. Except where this Agreement specifically provides otherwise, this Agreement may be amended only by written instrument executed by the Parties with the same formality as this Agreement.

13.7 Assignment of Agreement.

13.7.1 Binding Upon Successors. This Agreement shall inure to the benefit of and shall be binding upon the respective successors and assignees of the Parties to this Agreement.

13.7.2 No Assignment. Neither this Agreement, nor any interest herein, shall be transferred or assigned by a Party hereto except with the consent in writing of the other Parties hereto, which consent shall not be unreasonably withheld.

13.8 Severability. In the event that any of the terms, covenants or conditions of this Agreement or the application of any such term, covenant or condition, shall be held invalid as to any person or circumstance by any court having jurisdiction, all other terms, covenants or conditions of this Agreement and their application shall not be affected

thereby, but shall remain in force and effect unless the court holds that such provisions are not severable from all other provisions of this Agreement.

13.9 Governing Law. This Agreement shall be interpreted, governed by, and construed under the laws of the State of California.

13.10 Headings. All indices, titles, subject headings, section titles and similar items are provided for the purpose of convenience and are not intended to be inclusive, definitive, or affect the meaning of the contents of this Agreement or the scope thereof.

13.11 Notices. Any notice, demand or request required or authorized by this Agreement to be given to any Party shall be in writing, and shall either be personally delivered to a Participant's Commissioner or Alternate, and to the General Manager, or shall be transmitted to the Participant and the General Manager at the addresses shown on the signature pages hereof. The designation of such addresses may be changed at any time by written notice given to the General Manager who shall thereupon give written notice of such change to each Participant. All such notices shall be deemed delivered when personally delivered, two (2) Business Days after deposit in the United States mail first class postage prepaid, or on the first Business Day following delivery through electronic communication.

13.12 Warranty of Authority. Each Party represents and warrants that it has been duly authorized by all requisite approval and action to execute and deliver this Agreement and that this Agreement is a binding, legal, and valid agreement enforceable in accordance

with its terms. Upon execution of this Agreement, each Participant shall deliver to NCPA a resolution of the governing body of such Participant evidencing approval of and authority to enter into this Agreement.

13.13 Counterparts. This Agreement may be executed in any number of counterparts, and each executed counterpart shall have the same force and effect as an original instrument and as if all the signatories to all of the counterparts had signed the same instrument. Any signature page of this Agreement may be detached from any counterpart of this Agreement without impairing the legal effect of any signatures thereon, and may be attached to another counterpart of this Agreement identical in form hereto but having attached to it one or more signature pages.

13.14 Venue. In the event that a Party brings any action under this Agreement, the Parties agree that trial of such action shall be vested exclusively in the state courts of California in the County of Placer or in the United States District Court for the Eastern District of California.

13.15 Attorneys' Fees. If a Party to this Agreement brings any action, including an action for declaratory relief, to enforce or interpret the provisions of this Agreement, then each Party shall bear its own fees and costs, including attorneys' fees, associated with the action.

13.16 Counsel Representation. Pursuant to the provisions of California Civil Code Section 1717 (a), each of the Parties were represented by counsel in the negotiation and

execution of this Agreement and no one Party is the author of this Agreement or any of its subparts. Those terms of this Agreement which dictate the responsibility for bearing any attorney's fees incurred in arbitration, litigation or settlement in a manner inconsistent with the provisions of Section 13.2 were intentionally so drafted by the Parties, and any ambiguities in this Agreement shall not be interpreted for or against a Party by reason of that Party being the author of the provision.

13.17 No Third Party Beneficiaries. Nothing contained in this Agreement is intended by the Parties, nor shall any provision of this Agreement be deemed or construed by the Parties, by any third person or any Third Parties, to be for the benefit of any Third Party, nor shall any Third Party have any right to enforce any provision of this Agreement or be entitled to damages for any breach by the Parties of any of the provisions of this Agreement.

IN WITNESS WHEREOF, NCPA and each Participant have, by the signature of its duly authorized representative shown below, executed and delivered a counterpart of this Agreement.

NORTHERN CALIFORNIA POWER AGENCY 651 Commerce Drive Roseville, CA 95678	CITY OF SANTA CLARA 1500 Warburton Avenue Santa Clara, CA 95050
_____	_____
By: Randy S. Howard	By: _____
Title: General Manager	Title: _____
Date: _____	Date: _____
Approved as to form:	Approved as to form:
_____	_____
By: Jane E. Luckhardt	By: _____
Its: General Counsel	Its: City Attorney
Date: _____	Date: _____
Attestation (if applicable):	Attestation (if applicable):
_____	_____
By: _____	By: _____
Its: _____	Its: _____
Date: _____	Date: _____

CITY OF ALAMEDA
2000 Grand Street
P.O. Box H
Alameda, CA 94501

By:_____
Title: _____
Date: _____

Approved as to form:

By:_____
Its: City Attorney
Date: _____

Attestation (if applicable)

By:_____
Its:_____
Date: _____

CITY OF LOMPOC
100 Civic Center Plaza
Lompoc, CA 93436

By:_____
Title: _____
Date: _____

Approved as to form:

By: _____
Its: City Attorney
Date: _____

Attestation (if applicable)

By:_____
Its:_____
Date: _____

CITY OF PALO ALTO
250 Hamilton Avenue
Palo Alto, CA 94301

_____

By:_____
Title: _____
Date: _____

Approved as to form:

_____

By: _____
Its: City Attorney
Date: _____

Attestation (if applicable)

_____

By:_____
Its:_____
Date: _____

CITY OF REDDING
777 Cypress Avenue
Redding, CA 96001

_____

By:_____
Title: _____
Date: _____

Approved as to form:

_____

By: _____
Its: City Attorney
Date: _____

Attestation (if applicable)

_____

By:_____
Its:_____
Date: _____

CITY OF SHASTA LAKE
4477 Main Street
Shasta Lake, CA 96019

_____

By:_____
Title: _____
Date: _____

Approved as to form:

_____

By: _____
Its: City Attorney_____
Date: _____

Attestation (if applicable)

_____

By:_____
Its:_____
Date:_____

CITY OF UKIAH
300 Seminary Avenue
Ukiah, CA 95482

_____

By:_____
Title: _____
Date: _____

Approved as to form:

_____

By: _____
Its: City Attorney_____
Date: _____

Attestation (if applicable)

_____

By:_____
Its:_____
Date:_____

CITY OF OAKLAND, acting
by and through its
Board of Port Commissioners
530 Water Street
Oakland, CA 94607

_____

By:_____

Title: _____

Date: _____

Approved as to form:

_____

By: _____

Its: City Attorney_____

Date: _____

Attestation (if applicable)

_____

By:_____

Its:_____

Date:_____

EXHIBIT A

PROJECT PARTICIPATION PERCENTAGES

Table 1 of this Exhibit A lists the Members, and their respective initial Project Participation Percentage share of the Project, that are expected to execute this Agreement by signature, and therefore become Participants (the "Initial Participants):

Table 1
Initial Project Participation Percentages

Participants	Project Participation Percentage (%)	Project Participation Percentage (MW)
City of Santa Clara	66.6667%	200.00
City of Alameda	3.3333%	10.00
City of Lompoc	1.0000%	3.00
City of Palo Alto	10.0000%	30.00
City of Redding	15.0000%	45.00
City of Shasta Lake	1.6667%	5.00
City of Ukiah	1.0000%	3.00
Port of Oakland	1.3333%	4.00
Total	**100.0000%**	**300.00**

On the Effective Date of the Agreement, NCPA shall prepare Table 2 to reflect the Final Project Participation Percentages of each Participant, and such Table 2 will be added to this Exhibit A as an amendement to this Agreement. NCPA shall provide Notice to each Participant of Table 2 that is incorporated into this Exhibit A as described herein. Pursuant to Section 5 of Exhibit B of the ESSA, if, at Commercial Operation, the Installed Battery Capacity is less than one hundred percent (100%) of the Storage Contract Capacity, Seller shall have one hundred twenty (120) days after the Commercial Operation Date to install additional capacity such that the Installed Battery Capacity is equal to (but not greater than) the one hundred percent (100%) of the Storage Contract Capacity. If Seller fails to construct the Storage Contract Capacity by such date, Seller shall pay NCPA

Capacity Damages, and for each MW (or portion thereof) that the Storage Contract Capacity exceeds the Installed Battery Capacity, the Project Participation Share for the Participants shall be automatically adjusted and reduced, on a pro rata basis, to equal to actual amount of Installed Battery Capacity.

EXHIBIT B

Energy Storage Service Agreement

The Energy Storage Service Agreement between Trolley Pass Project LLC and Northern California Power Agency has been attached to this Agreement as Exhibit B.

CITY OF PALO ALTO

Trolley Energy Storage Contract

Utilities Advisory Commission

Presenter:

Jim Stack, Senior Resource Planner

July 9, 2025

Paloalto.gov

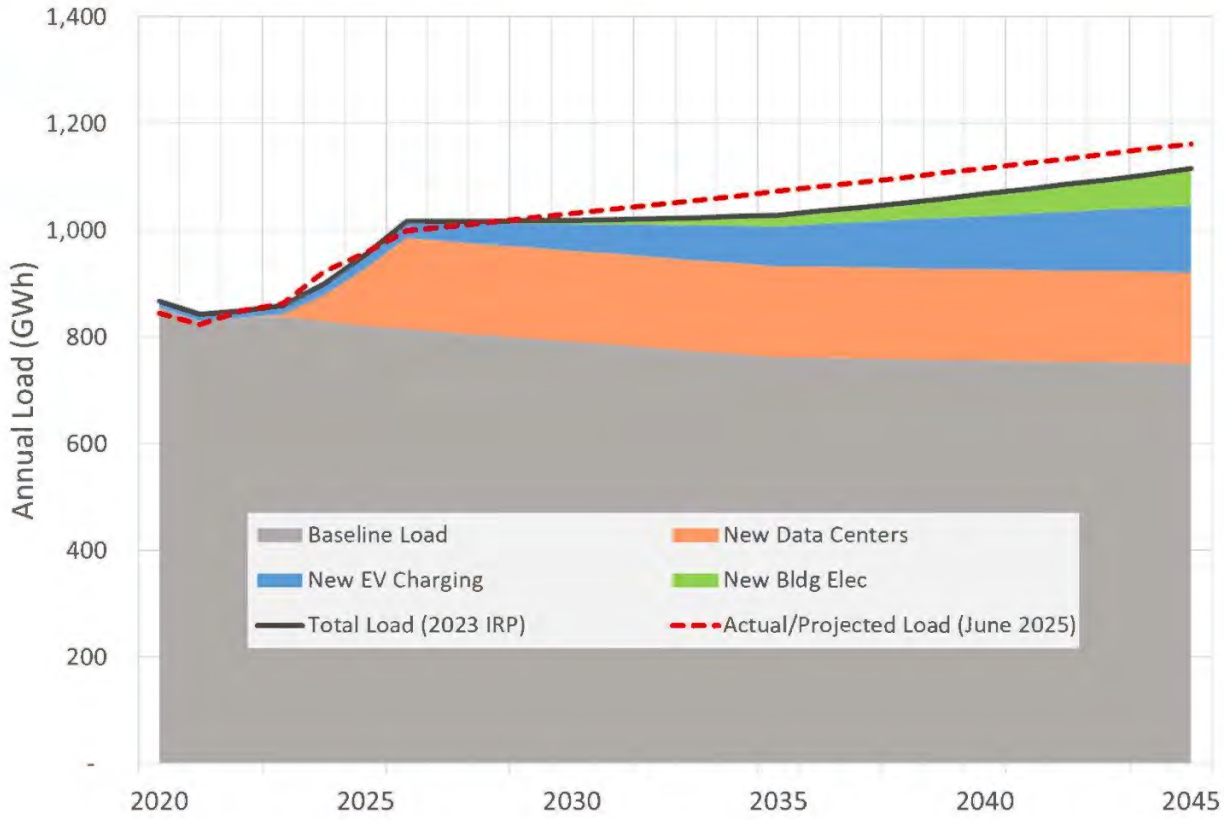
Background

- NCPA Renewable Energy & Storage RFP – closed April 2024
  - 9 standalone solar proposals
  - 8 standalone storage (BESS) proposals
  - 10 solar + storage proposals
- Palo Alto electric load grew 12% from 2022-2024 and continues to climb
  - Legacy PPAs (wind, landfill gas) set to expire 2028-2034
- Interconnection timelines are now 5+ years
- Federal policy changes creating lots of pricing uncertainty

Recommendation

- Recommend Council approve Third Phase Agreements with NCPA for:
  - 50 MW BESS from Trolley

Load Growth Projections



Trolley Storage Project (Aypa)

- Energy Storage Agreement between Aypa and NCPA for ~320 MW BESS in San Bernardino County
  - Palo Alto share: 50 MW
  - Other participants: SVP, Lodi, Redding, Alameda, smaller members
- 20-year term, starting ~June 2029
- Contract price of $12.71/kW-mo*
  - Annual cost to Palo Alto: $7.6M**
- Energy value: $11-13/kW-mo
- System RA value: $4-11/kW-mo
- Net value (projected): ~$8/kW-mo ($2.8M/yr)

**Contract price subject to refresh until July 2026, with potential 6% price increase due to tax law changes or supply chain issues.*

***$8.1M if 6% price increase is required.*

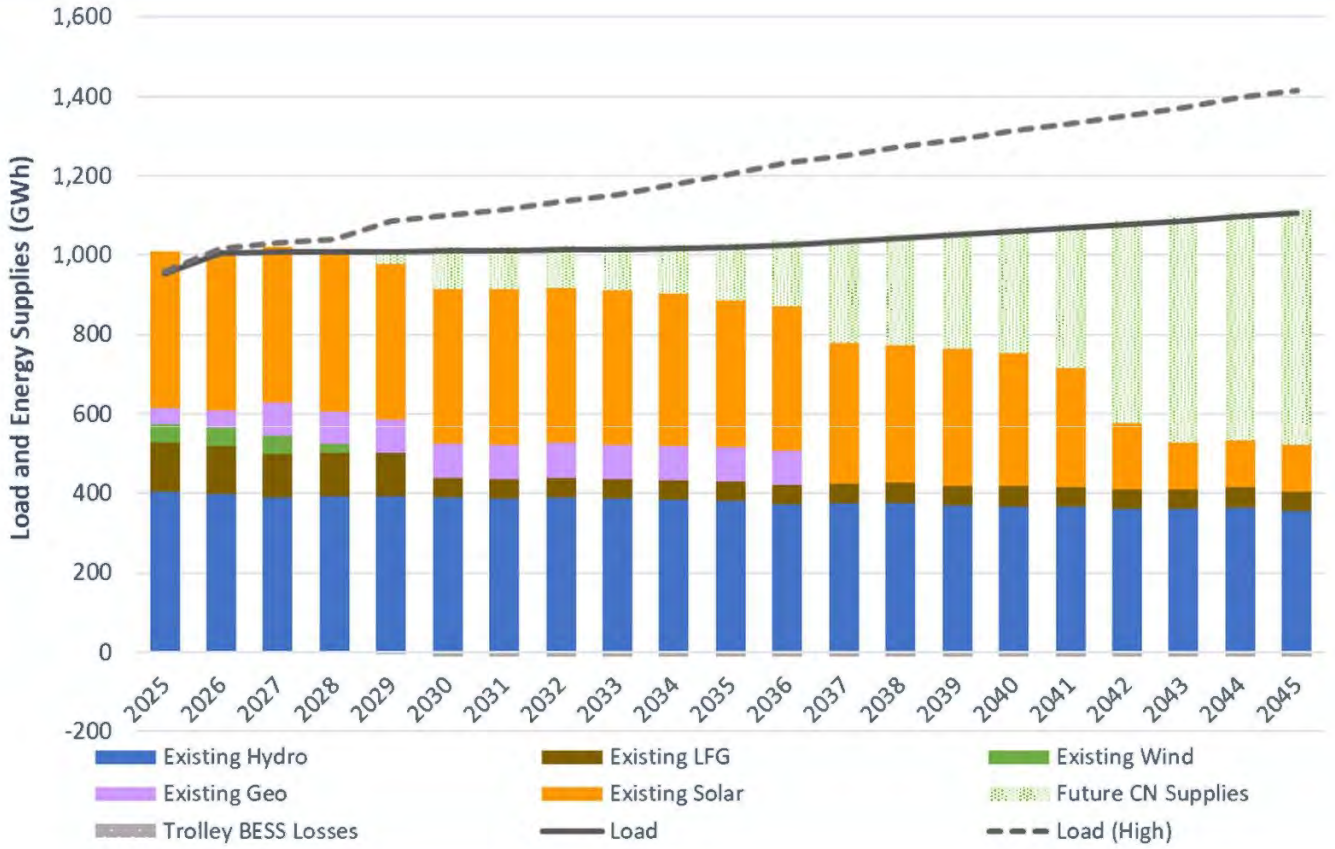
Trolley Project Info

Located in an Energy Community and the LA Basin LCR. Project has an E&P agreement with SCE and 400 MW FCDS.

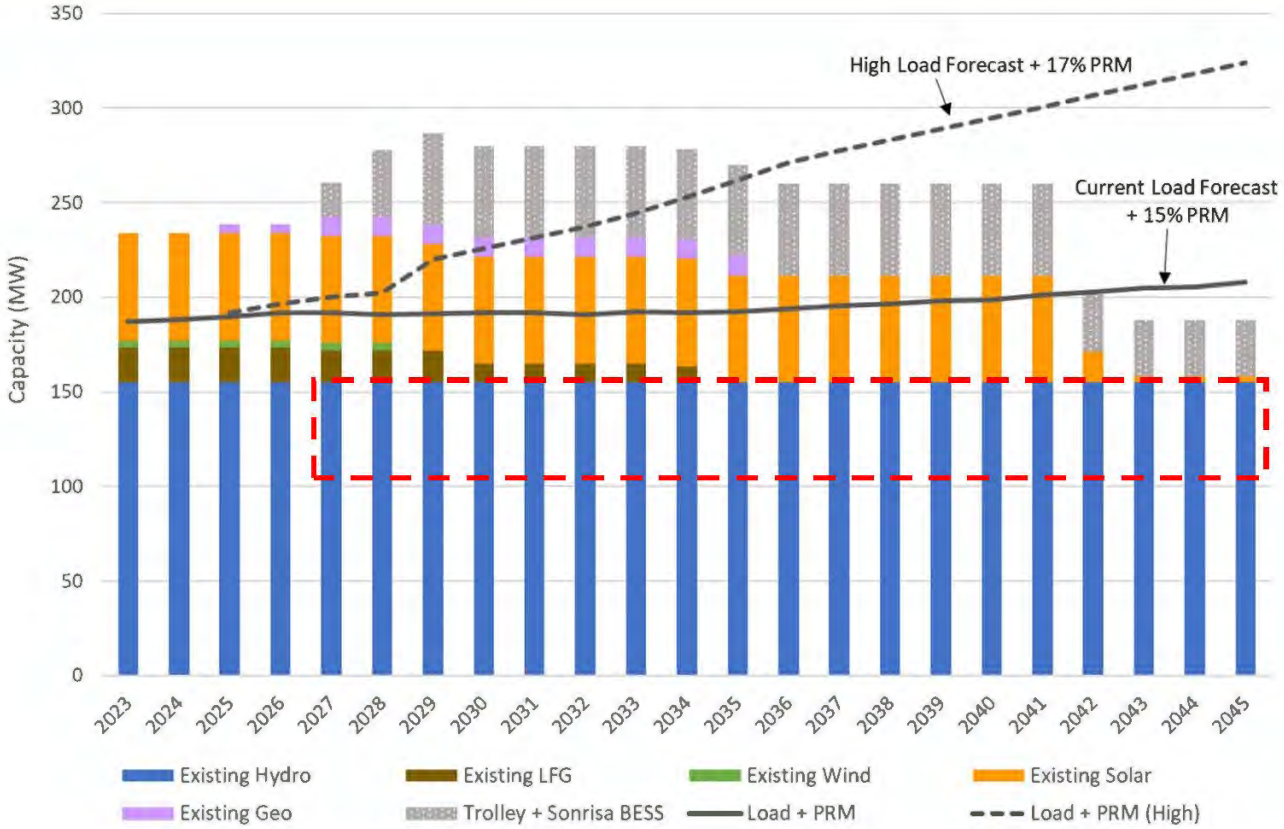
PROJECT DETAILS	
Project Name	Trolley Battery Energy Storage Project
Project Type	Battery Energy Storage System
City & County	San Bernardino County
Capacity	400 MW
Duration	4 hours
Local Capacity Area	LA Basin
Utility Transmission Territory	Southern California Edison
Point of Interconnection (POI)	Etiwanda Substation 230 kV Bus
GIA Reference	Cluster 14, Q # 2032
Deliverability Status	Received 400 MW FCDS
pNode Delivery Point (proxy)	Proxy: ETIWANDA_6_N001
COD	June 1, 2028

CITY OF PALO ALTO

Annual Load-Resource Balance through 2045

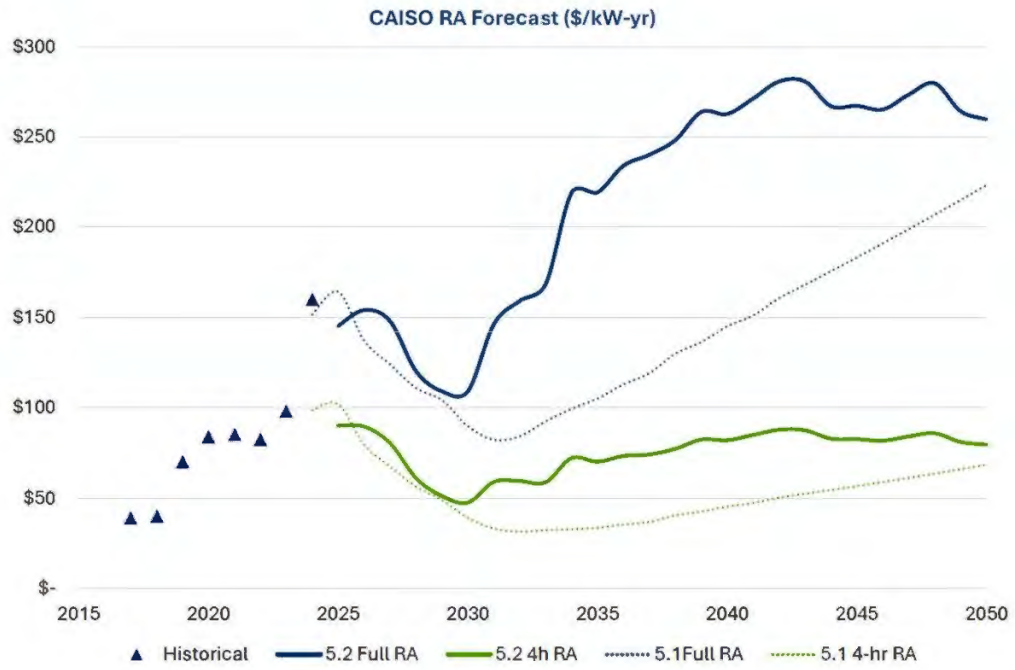


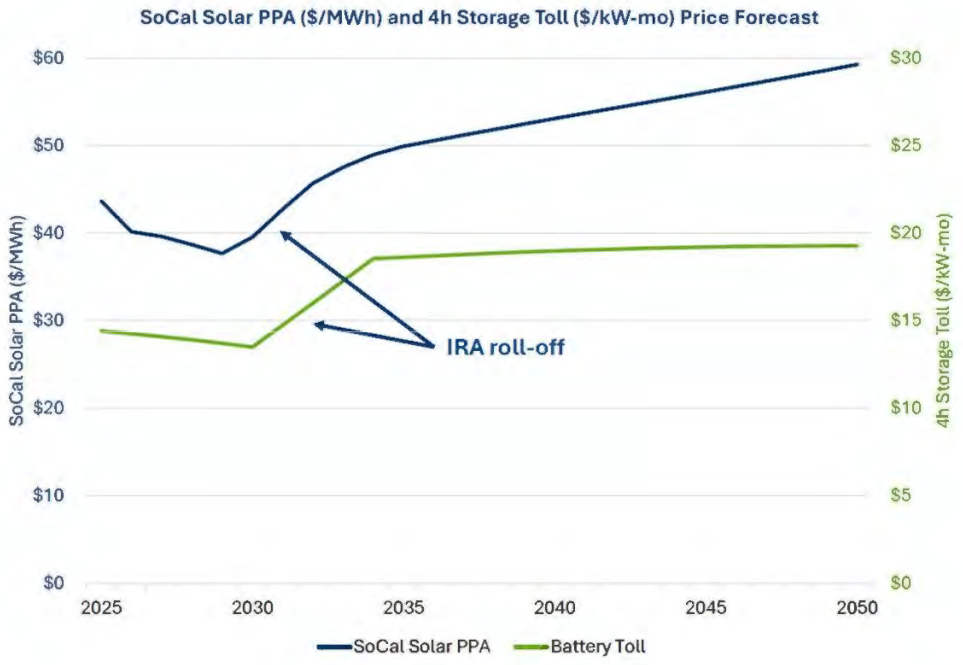
Average System Capacity Balance



Capacity at risk starting 2027

Projections of California Energy Market Dynamics through 2050





Next Steps

1. Participating members seek approvals (Summer 2025)
2. Finance Committee review – August 2025
3. City Council review – September 2025

Recommended Motion

The UAC recommends that City Council:

1. Authorize the City Manager, or their designee, to execute a Third Phase Agreement with NCPA to purchase the output of a 50 MW share of a battery energy storage system (BESS) owned by Aypa, over a period of 20 years, at a total cost not to exceed $161.7 million;
2. Authorize the City Manager, or their designee, to execute on behalf of the City all related documents or agreements necessary to administer the Third Phase Agreement that are consistent with the Palo Alto Municipal Code and City Council approved policies, and take all actions to administer the Third Phase Agreement; and,
3. Authorize the City Manager, or their designee, to approve and execute amendments to the Third Phase Agreement, as may be required from time to time, so long as the contract price and length of the agreement remain unchanged.

CITY OF PALO ALTO

Jim Stack, PhD
Senior Resource Planner
james.stack@cityofpaloalto.org
(650) 329-2314

Utilities Advisory Commission
Staff Report

From: Alan Kurotori, Utilities Director
Lead Department: Utilities

Meeting Date: July 9, 2025
Report #: 2505-4687

TITLE
Status Update on Studies Related to the Electric Utility's Reliability and Resiliency Strategic Plan (RRSP) Strategies 4 and 5 and Request for Feedback on Draft Proposals for Implementation. CEQA Status: Not a Project.

RECOMMENDATION
Staff is seeking feedback on studies and draft proposals for implementing two of six strategies under the Electric Utility's Reliability and Resiliency Strategic Plan: Strategy 4 (Evaluate the benefits of flexible and resiliency technologies and efficient electrification strategies to the utility and community) and Strategy 5 (Evaluate the resource needs to promote the adoption of various flexible demand reduction and resiliency solutions and efficient electrification strategies) . Staff requests the Utilities Advisory Commission (UAC) provide feedback by discussion on various policy approaches to be incorporated into a forthcoming report to Council with a cost benefits for various technologies (Strategy 4) and programs for consideration (Strategy 5). Staff recommends the following policy feedback as a starting point for the UAC's discussion:

1. Promote ways community members can save money by reducing peak period load (helping the electric grid) under time of use (TOU) rates once those rates are launched.
2. Monitor demand response technologies for positive benefit-cost opportunities but continue existing City practice of not pursuing demand response (unless benefit to cost ratios change in the future).
3. Promote residential solar and battery adoption, standalone batteries and thermal storage, but continue the City's current policies of not providing technical assistance programs or incentives due to the fact costs exceed benefits.
4. Promote electric vehicle to home/grid as it becomes more available, but continue the City's current policies of not providing technical assistance or incentives (unless benefit-to-cost ratios change in the future).
5. Further explore the cost-effectiveness of local larger-scale commercial solar + battery programs and bring to the UAC and City Council for consideration as part of the report

on Strategies 4 and 5 if cost-effective options can be identified, while continuing to pursue utility-scale solar and storage and other renewables in parallel.
6. Monitor opportunities for distribution investment deferral using flexible technologies and efficient electrification but do not pursue additional analysis or new policies or programs at this time.
7. Maintain City's current policies on microgrids and backup power (long-term resiliency).
8. Explore electric utility / treatment plant partnership on airport microgrid.

Staff welcomes recommended adjustments to this set of policy choices or other approaches, but seeks majority UAC support to include implementation strategies given the amount of staff time and consultant costs that could be expended in further analysis or development of potential program ideas. These policy approaches and alternatives are explained further in the Analysis section (Topic 6) below.

EXECUTIVE SUMMARY

The RRSP was adopted by Council in April 2024 and contains six strategies intended to ensure a reliable, well maintained electric system with enhanced reliability to support an electrified community, and options for electrified homes during outages. An overall status update on RRSP implementation is in Attachment F. RRSP Strategies 4 and 5 encompass a wide range of studies and research to evaluate the use of solar and storage, other flexible technologies, and efficient electrification to reduce utility supply costs, defer distribution investment, and enhance short-term and long-term resiliency, with the goal of identifying potential utility and customer programs for Council consideration. This report provides updates on five topics staff and its consultants have analyzed or researched:

1. **Supply Costs and Short-term Resiliency:** Preliminary results of a cost-benefit analysis of the use of solar and storage and other flexible technologies to reduce utility supply costs and enhance short-term resiliency (Attachment A). This analysis completes implementation of RRSP Strategy 4, Action 1 and partially implements Strategy 4, Actions 3 and 4 (the parts focused on short-term as opposed to long-term resiliency).
2. **Deferral of Distribution Investment:** Preliminary analysis of the cost-benefit of deferring distribution investment and the associated challenges with doing so (Attachment B). This analysis implements RRSP Strategy 4, Action 2.
3. **Microgrid and Long-term Resiliency Policies:** Overview of current City policies on solar and storage microgrids and emergency backup power for community needs in an emergency and potential alternatives and challenges (Attachment C). This assessment partially implements RRSP Strategy 4, Actions 3 and 4 (the parts focused on long-term resiliency).
4. **Airport Microgrid Study:** Preliminary findings from the airport microgrid study (Attachment D). This study implements RRSP Strategy 5, Actions 3 and 4.
5. **Draft Criteria for Cross-Parcel Microgrids**: Draft screening criteria based on lessons learned from the airport microgrid study on when cross-parcel microgrids might be appropriate (Attachment E). These criteria partially implement RRSP Strategy 5, Action 4.

BACKGROUND

The RRSP[1] resulted from discussions with the UAC and the Council's Sustainability and Climate Action (S/CAP) Committee and its Working Group leading up to and following the June 5, 2023, adoption of the S/CAP and the 2023-2025 S/CAP Work Plan[2]. Included in the S/CAP Work Plan was work items 1.B and 1.C to create and implement the Electric RRSP. At its December 6, 2023, meeting the UAC discussed the elements and scope of the RRSP and recommended Council approval[3]. The City Council approved the Reliability and Resiliency Strategic Plan (RRSP) on April 15, 2024[4]. In September 2024 the UAC reviewed the scope for a consultant study to implement Strategies 4 and 5 of the RRSP.[5] In February 2025 the UAC provided feedback on some preliminary insights and results from the study.[6] This report provides more comprehensive and developed results (though not yet finalized) and requests additional feedback to enable completion of the final report.

ANALYSIS

This report requests Commission feedback on the five topics above to help staff complete a final report containing the cost-benefit analysis (Strategy 4) and programs for consideration (Strategy 5) related to flexible technologies and efficient electrification for utility supply cost savings, distribution investment deferral, and customer resiliency. The Commission's feedback will enable staff to finish developing the proposed programs.

Topic 1: Results of Benefit-to-Cost Study on Supply Costs and Short-Term Resiliency

Attachment A shows the results of an analysis by the City's consultant, Buro-Happold, on the net community benefit of running programs to help people install various technologies (e.g batteries, vehicle to grid, solar, etc.) in Palo Alto. They assessed the benefits of the utility supply

[1] Reliability and Resiliency Strategic Plan, Approved by the City Council April 14, 2024: https://cityofpaloalto.primegov.com/api/compilemeetingattachmenthistory/historyattachment/?historyId=f90b4733-eb24-4699-b4f1-229af03f8fd5

[2] Adopted 2023-2025 S/CAP Work Plan: https://www.cityofpaloalto.org/files/assets/public/v/1/sustainability/reports/2023-2025-scap-work-plan_final.pdf

[3] UAC, Staff report 2311-2263, December 6, 2023, *S/CAP Strategic Plan on the Reliability and Resiliency for the Electric Distribution Utility.* https://www.cityofpaloalto.org/files/assets/public/v/3/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2023/12-dec-2023/12-06-2023-packet-v2.pdf

[4] City Council, Staff Report 2401-2496, April 15, 2024, *Approve the Reliability and Resiliency Strategic Plan as Recommended by the Utilities Advisory Commission*, https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=4485&meetingTemplateType=2&compiledMeetingDocumentId=9592

[5] UAC, Staff Report 2405-2984, September 4, 2024, *Discussion of Implementation of Reliability and Resiliency Strategic Plan – Review of Consulting Scope of Work to Scope Projects to Enhance Resiliency, Staff report: https://cityofpaloalto.primegov.com/api/compilemeetingattachmenthistory/historyattachment/?historyId=71a87cda-639b-441d-9069-91ee5b89e717* Attachments: https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=5416&meetingTemplateType=2&compiledMeetingDocumentId=11628

[6] UAC, Staff Report 2501-4058, February 5, 2025, *Reliability and Resiliency Strategic Plan: Update on Studies*, https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=7116&meetingTemplateType=2&compiledMeetingDocumentId=13041

cost savings and the value of the short-term resiliency benefits during utility outages. The analysis showed that almost no programs based on these technologies showed a positive benefit to cost ratio just based on these two factors, meaning they would need more value from other sources (such as deferral of distribution investment or long-term resiliency). More specifically:

- TOU rates were not evaluated for cost-effectiveness since the overhead is minimal. Instead, the consultant estimated the potential savings associated with the rates.
- Demand response showed low benefits relative to the costs. The costs were primarily the program costs of operating a demand response program. These programs require much larger economies of scale than are easily achievable in a small service territory like Palo Alto to be cost-effective. This is consistent with past City electric utility experience with these programs.
- Standalone battery programs (including fixed battery storage systems, vehicle to grid, and thermal batteries in both residential and commercial contexts) also showed low benefit to cost ratios, primarily due to technology costs, but also program costs. Commercial standalone fixed battery storage programs showed the most promise, achieving a 0.9 benefit to cost ratio. A significant portion of the benefit came from the short-term resiliency gains for commercial property owners, which were estimated to be considerable based on the applied resilience valuation model.
- Solar plus battery programs showed the most promise. Residential programs had a 0.9 benefit-cost ratio, with long-term resiliency benefits potentially pushing the benefits higher than costs for those who value them highly enough. Commercial programs achieved a 1.07 ratio, driven by significant short-term resiliency gains, suggesting owners may be willing to invest. However, long payback periods to realize benefits are a challenge, as businesses often require 2–4 year returns. To succeed, commercial programs may need on-bill financing or utility ownership models that treat systems as off-book expenses rather than capital investments.

Topic 2: Preliminary Results - Distribution Investment Deferral Study

Attachment B summarizes a preliminary analysis on deferring distribution upgrades to assess whether a deeper $150,000–$200,000 study was justified. Only 360 of 1,700+ transformers in Palo Alto were good deferral candidates, offering about $1 million per year in avoided debt service—or a 0.55% rate impact. However, achieving this would require over 2,400 batteries costing at least $1.3 million per year, and that does not include the additional costs for battery controllers, staffing of battery system control, operations and maintenance, and program management costs to get the batteries installed. Risks include insufficient participation that incurs program costs without realizing benefits, reduced efficiency of the grid modernization program by excluding some transformers in upgraded neighborhoods, construction costs rising faster than inflation and increasing the real cost of future replacements, and the fact that the approach is novel and cutting edge — posing execution risks for a small utility like Palo Alto.

Topic 3: Policies on Microgrids and Long-term Resiliency

Attachment C outlines the City's current policies on microgrids and long-term resiliency (i.e. planning for backup power in a major emergency). A microgrid is essentially the combination of a local on-site solar and storage system that serves two functions by replacing imported non-local utility power while also providing backup power (supplementing or replacing diesel generators).[7] Under current policies the City takes any utility supply cost savings created by on-site solar and battery and passes it through to the utility customer who installed the system through either the net energy metering rate or the PaloAltoCLEAN feed-in tariff. Typically, that value is insufficient to pay for the solar/battery system, so people who install systems in Palo Alto typically value short-term and long-term resiliency highly enough that the extra cost is worth it.

Alternatives to solar and storage for backup power include both diesel and dual fuel (diesel or natural gas) backup generators. Fossil fuel backup generators are more scalable than solar and storage (they are not limited by available roof space) so can power larger electric loads. But they require fuel, where a solar and storage system sized properly can run electric loads indefinitely. Fuel availability is particularly a challenge for diesel generators in a longer-term emergency, but this issue can be mitigated by installation of a dual fuel generator that can use natural gas so long as the emergency did not result in a break in the natural gas infrastructure to the site.

Current policies leave decisions about backup generation to the utility customers themselves. The City runs some programs to facilitate solar installations and removes barriers to adoption, but does not provide technical assistance or incentives. The Office of Emergency Services (OES) and City facility managers assess backup power needs for City facilities, but do not do the same for private facilities.

If the City were to change those polices there would be a few decisions to make:

- The purpose of the program. Some options might be:
    - Expanding community resiliency – focused incentives for facilities that would help. the community in an emergency if powered (e.g. groceries, community centers)
    - Assisting income-qualified households access resiliency.
    - Promoting local solar plus storage for all to enhance community resiliency, even if it increases electric bills for all.
- Whether to provide technical assistance, financing, or incentives
- How to fund the program
- If implementing a community resiliency program, how to determine which facilities to prioritize. This would likely require additional resources for OES to develop recommendations

[7] More broadly a microgrid can be any combination of generators, not just solar and batteries, but solar and battery microgrids are the most common system cited when the topic of microgrids is discussed.

Staff is seeking feedback on whether to change policies, and if so, what the purpose of a microgrid / long-term resiliency program would be.

Topic 4: Airport Microgrid Study Preliminary Results

The airport has provided a good test case for microgrid analysis. The City's consultant, Burns-McDonnell, has done some high-level analysis to determine the maximum potential for solar at the airport and some ways it could be used (Attachment D). First, there is a lot of solar potential – about 7 MW, which generates energy equal to about 1% of the community's annual electric load. Staff and its consultant identified three potential purposes for all that energy:

- A power purchase agreement (PPA) with the utility.
- Backup power for the Regional Water Quality Control Plant (RWQCP).
- Creating an EV charging depot that would be a fast charger for drivers just off the highway under normal operating conditions and enable vehicle charging during a major emergency, which would enable residents to power their homes using vehicle to home technology.

The findings were mixed. The proposed power purchase agreement was costlier than importing non-local power. The system could reduce diesel use at the RWQCP, extending operations by 1–5 days in January (when solar generation is lowest) and 45+ days in September (when it is highest). With only 1–3 days of diesel on site, this is appealing—but integrating with the existing backup system would be complex. Simpler options, like a dual-fuel generator, may offer better reliability. A 10-charger, 100 kW EV depot could provide major outage support for community EV charging but would need high non-outage use to justify the investment.

It could be possible to combine these purposes, using the system for a utility PPA under normal operating conditions and to power the RWQCP under emergency conditions. If the RWQCP partners were willing to pay enough for this additional resiliency, it might make the project viable. Determining the feasibility would require additional analysis.

If none of these alternatives worked, a small solar and storage microgrid at the airport without utility partnership could still be viable.

Topic 5: Draft Criteria for Consideration of Cross-Parcel Microgrids

The airport microgrid analysis provided some insights into when a cross-parcel microgrid might or might not be useful. This concept is a solar and storage installation that is connected across multiple sites that normally would have completely separate utility connections. Staff created draft criteria for future consideration of this concept in Attachment E. It envisions a cross-parcel microgrid potentially being useful only for a site that:

1. First, has such a high priority electric power need that it requires a backup power solution more resilient than a diesel or dual fuel natural gas / diesel engine. Diesel fuel availability in a major emergency would need to be a concern, as would breaks in the natural gas system feeding the site.

2. Second, the electric power need would have to require more power than an on-site solar + storage microgrid can provide
3. Third, there would need to be a nearby parcel or parcels that has enough spare solar capacity to help power the high priority electric load.

Staff is seeking UAC feedback on these criteria before incorporating them into the final proposed report on Strategies 4 and 5.

Topic 6: UAC Feedback on Next Steps for Further Analysis and Program Idea Development

Staff is seeking UAC feedback on how to proceed with further analysis and program development. Below are explanations for the proposal staff provided in the Recommendation section and potential alternatives to each component for UAC discussion.

1. Promote ways community members can save money by reducing peak period load (helping the electric grid) under time of use (TOU) rates once those rates are launched.

As the City launches TOU rates, staff recommends promoting technologies and behaviors that will help community members save money under time of use rate designs but not pursuing technical assistance programs or technology incentives. An alternative policy approach could be to evaluate appliances with scheduling capabilities and provide incentives for those capabilities based on the expected grid savings in addition to providing information to potential buyers.

2. Monitor demand response technologies for positive benefit-cost opportunities but continue existing City practice of not pursuing demand response (unless benefit to cost ratios change in the future).

Given the low cost-benefit found for demand response in the Buro Happold study (see Topic 1 and Attachment A), staff does not recommend pursuing demand response at this time. The City could track demand response technologies and, if opportunities for demand response programs with a positive benefit to cost ratio arise, pursue them. An alternative approach could involve a comprehensive analysis to identify the scale and type of demand response technology with the highest benefit-cost ratio, helping the City uncover potential niche opportunities worth pursuing.*3. Promote residential solar and battery adoption, standalone batteries and thermal storage, but continue the City's current policies of not providing technical assistance programs or incentives due to the fact costs exceed benefits.*

Staff does not recommend providing incentives or technical assistance programs for technologies with a low benefit to cost ratio in the Buro Happold study (see Topic 1, Attachment A). These technologies can help the electric grid if installed voluntarily, but do not provide enough value to merit providing incentives or technical assistance programs. This includes residential solar and commercial batteries. These both had higher benefit to cost ratios than most other technologies analyzed, but overall benefits are lower than costs. Both of these technologies would be affordable under existing rates and policies to a utility customer who values resiliency and reliability highly enough. An alternative to this approach could be to

provide programs or incentives for residential solar and battery adoption to income-qualified customers.

4. Promote electric vehicle to home/grid as it becomes more available, but without continue the City's current policies of not providing technical assistance or incentives (unless benefit-to-cost ratios change in the future)

Vehicle to home and vehicle to grid technologies, based on current early estimates of technology costs and availability, have costs that exceed benefits. However, these technologies are still being commercialized. Staff recommends monitoring these technologies, reducing barriers as they become more widely available, and reassessing this analysis in a few years to see if they would be cost-effective. An alternative could be to actively run a pilot program of these technologies, which would require staff time and other resources that could be defined in the final report if such an option were requested by the UAC.

5. Further explore the cost-effectiveness of local larger-scale commercial solar + battery programs and bring to the UAC and City Council for consideration as part of the report on Strategies 4 and 5 if cost-effective options can be identified, while continuing to pursue utility-scale solar and storage and other renewables in parallel.

Commercial-scale solar and battery programs showed a positive benefit to cost ratio based on the combined reduced utility supply costs and customer short-term resiliency benefit. Staff recommends further exploration of this project type. A program involving a commercial customer monthly on-bill financing payment or third party ownership with a utility PPA may avoid some of the challenges that come with the short payback periods commercial customers generally need and the lack of availability of capital for nonprofits and public agencies. An alternative could be to do no more exploration of this project type.

6. Monitor opportunities for distribution investment deferral using flexible technologies and efficient electrification but do not pursue additional analysis or new policies or programs at this time

The results of staff's preliminary analysis of deferring distribution investment was not promising (see Topic 2, Attachment B). Staff recommends continuing to promote efficient electrification (e.g. circuit sharing, circuit pausing, and low wattage equipment, avoiding panel upgrades), and continue to seek even more cost-efficient approaches to the grid modernization project through efficient capital planning and project management. Staff does not recommend pursuing further analysis or program proposals on deferring distribution investment using flexible technologies like batteries. An alternative to this approach could be to do a more detailed analysis for $150,000 to $200,000 or wait until AMI data is available from more all-electric homes and rerun the analysis with a broader data set to see if it surfaces potential opportunities.

7. Maintain City's current policies on microgrids and backup power (long-term resiliency)

As described in Topic 3 and Attachment C, there are several current policies facilitating microgrids for those who value long-term resiliency sufficiently. As noted in the Buro Happold analysis (Topic 1, Attachment A) the benefit to cost ratio for solar plus batteries is close to one based on just supply cost savings and short-term resiliency, and a utility customer who values long-term resiliency enough will do an installation. Staff recommends continuing these policies. An alternative could be providing incentives for long-term resiliency, which requires determining the goal of the incentives as discussed in Topic 3 and Attachment C (e.g. to promote long-term resiliency at community-serving businesses like grocery stores that might be beneficial to have operating in an emergency, to help residents on an income-qualified basis, or to create long-term resiliency programs accessible to all).

8. Explore electric utility / treatment plant partnership on airport microgrid

Staff recommends additional discussion between the City's Utilities and the Public Works Departments to determine whether a partnership to develop a microgrid at the airport for utility-scale power and backup power provision at the Regional Water Quality Control Plant (RWQCP) could be made cost-effective for both the RWQCP partners and the electric utility. This solution for extending the RWQCP's backup power capabilities should be compared to a dual fuel diesel and natural gas combination backup solution. An alternative to this approach could be to stop work on this analysis or to prioritize further exploration of the EV charging depot concept in addition to or instead of the RWQCP backup power solution.

FISCAL/RESOURCE IMPACT

The studies and draft proposals for implementing RRSP Strategies 4 and 5 have been performed through existing budget and contracts, which are adequate for project completion. These include:

- A $213, 250 contract with Buro Happold for evaluation of supply and short-term resiliency, research and recommendations on potential programs, and development of the final Reliability and Reliability and Resiliency Cost-Benefit Study and Program Inventory. Of this, $187,660 has already been spent and it will require the remaining $25,590 to complete the project.
- A contract with Burns-McDonnell for evaluation of solar and storage at the airport for $208,000, of which $178,000 is for evaluation of microgrid options and use of the energy and $30,000 is estimated for site evaluations to enhance planned Federal Aviation Administration filings for the airport to enable this project in the future. To date $138,000 has been expended.
- A contract with Energeia to complete the preliminary analysis of deferring distribution investment, already completed for just over $12,000.

To date, $337,660 has been expended, and an additional $85,590 will be expended to complete the tasks currently underway.

Pursuing additional analysis of the potential for deferring distribution investment would require an additional $150,000 to $200,000 in consultant costs and 0.25 FTE in staff time. This would come from existing Utilities' consulting budgets. The City has received a $75,000 grant from the American Public Power Association (APPA) for this work, if the City were to proceed with the study. If the City did not proceed, staff could speak with APPA to explore reducing the grant and applying it to the preliminary study instead.

Based on feedback from the Commission at this meeting, with the Climate and Sustainability Committee in August, and with stakeholders, staff will evaluate the fiscal impact of the programs listed in Attachment A for future Commission and Council consideration.

STAKEHOLDER ENGAGEMENT

The use of flexible technologies and efficient electrification, both before and after adoption of the RRSP, has been the subject of many public meetings and stakeholder discussions, including:

- Various public and private meetings of the S/CAP Ad Hoc Committee and its Working Group from 2021 – 2023
- June 5, 2023 Council meeting adopting the Sustainability and Climate Action Plan and the 2023-2025 S/CAP Work Plan, including guidelines for development of the RRSP[8]
- The UAC and Council meetings listed in the Background section above related to the adoption and implementation of the RRSP, as well as a Council study session on the draft RRSP on February 12, 2024.[9]

Staff plans to bring this topic to the Climate Action and Sustainability Committee in the fall of 2025, and plans to discuss this with the Climate Action and Sustainability Working Group around that time as well.

ENVIRONMENTAL REVIEW

Potential environmental impacts of an RRSP were analyzed as part of the Sustainability and Climate Action Plan (S/CAP) Addendum to the Comprehensive Plan Environmental Impact Report. On June 5, 2023 (Staff Report #2303-1158), Council certified the Addendum, which found that the S/CAP programs would not result in any significant or substantially more severe effects beyond what was previously analyzed in the Comprehensive Plan EIR. Under CEQA Guidelines section 15183, projects consistent with an existing general or comprehensive plan do not require additional CEQA review.

ATTACHMENTS

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[8] City Council, June 5, 2023, Adoption of a Resolution Approving an Addendum to the 2017 Comprehensive Plan Environmental Impact Report and Adopting the Sustainability and Climate Action Plan (S/CAP); Approval of the 2023-2025 S/CAP Workplan; and Review of the 2023 Earth Day Report, https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=2276&meetingTemplateType=2&compiledMeetingDocumentId=7200

[9] City Council, Staff Report 2311-2211, February 12, 2024, *Reliability and Resiliency Strategic Plan for the City's Electric Utility*, https://cityofpaloalto.primegov.com/meetings/ItemWithTemplateType?id=4071&meetingTemplateType=2&compiledMeetingDocumentId=9079

Attachment A: Preliminary Benefit-Cost Results for Supply Costs and Short-term Resiliency
Attachment B: Preliminary Distribution Cost-Benefit Analysis
Attachment C: Current Microgrid and Long-term Resiliency Policies and Potential Alternatives
Attachment D: Overview of Preliminary Airport Microgrid Study Results
Attachment E: Draft Criteria for Consideration of Cross-Property Microgrids
Attachment F: Status Update on RRSP Implementation
Attachment G: Staff Presentation

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Summary of Draft Reliability and Resiliency Cost-Benefit Results and Potential Programs

Introduction

- This cost-benefit analysis assesses customer programs for flexible energy technologies that enhance customer reliability and resilience in Palo Alto.
- Customer programs were identified through an extended inventory of programs, pilots, and customer-scale projects throughout California that support resilience and electrification with technologies such as battery energy storage systems (BESS), solar, vehicle to grid (V2X), thermal energy storage, and demand response technologies.
- The analysis considers the technological viability of each technology, avoided supply costs, value of resilience, as well as program feasibility, accessibility, and community impacts.
- Table 1 and Figures 1-2 summarize the preliminary community cost-benefit results for baseline reliability conditions.
- The results focus on the quantitative metrics associated with each technology and program, and they are subject to change as program parameters are adjusted and refined in the future. Additional qualitative parameters will also inform the final analysis and recommendations from this study.

Cost-Benefit Analysis Results (Palo Alto Community Perspective)

- The results indicate that most programs are a net loss to the Palo Alto community unless additional benefits are valued, or program characteristics are adjusted to improve performance.
    - Valuing long-term resilience (for the community and the utility) and fully capturing distribution benefits where applicable (not part of this study) are key to improving program outcomes.
    - Valuing long term resilience from a financial standpoint significantly improves the commercial benefits, but competition for capital and high interest rates is a challenge in practice.
- Sensitivity analysis demonstrates that scaling the programs (increasing adoption), and reducing upfront administrative and operational costs can improve the cost benefits ratio
- Preliminary findings include:
    - Solar and battery systems outperform battery only systems, and provide a positive net present value for commercial customers and a nearly positive net present value for residential customers
        - Solar and battery systems are also integral to realizing long-term resilience benefits for outages over 24 hours
    - Commercial battery systems outperform residential due to economies of scale, lower capital costs, and a higher value of resilience for commercial customers
    - Vehicle to grid programs differ from battery energy storage systems due to varying charging schedules that limit energy arbitrage, as well as other factors like reserve depths and program adoption rates.
    - Demand response programs require little up-front investment from customers but requires high level of customer participation for utility programs to be cost effective .
    - Thermal storage is not cost effective at the scale of system considered most applicable for a broad programs.

Table 1: Community Cost-Benefit Summary

Program	Benefits	Costs	Net Present Value	Benefit-Cost Ratio (Baseline)
100 Residential Battery Installations	$819,113	$1,887,713	-$1,068,600	0.43
100 Residential Solar + Battery	$4,437,355	$4,861,920	-$424,565	0.91
35 Commercial Battery	$6,899,110	$7,684,423	-$785,313	0.90
35 Commercial Solar + Battery	$21,152,538	$19,684,930	$1,467,608	1.07
100 Residential VTX Installations	$379,929	$848,215	-$468,286	0.45
35 Commercial VTX Installations	$156,512	$464,283	-$307,771	0.34
250 Demand Response	$534,927	$1,023,664	-$488,737	0.52
75 Commercial Demand Response	$1,926,455	$2,255,989	-$329,533	0.85
35 Thermal Storage Installations	$196,310	$2,652,299	-$2,455,989	0.07

Figure 1: Cost-Benefit Results - Residential Programs

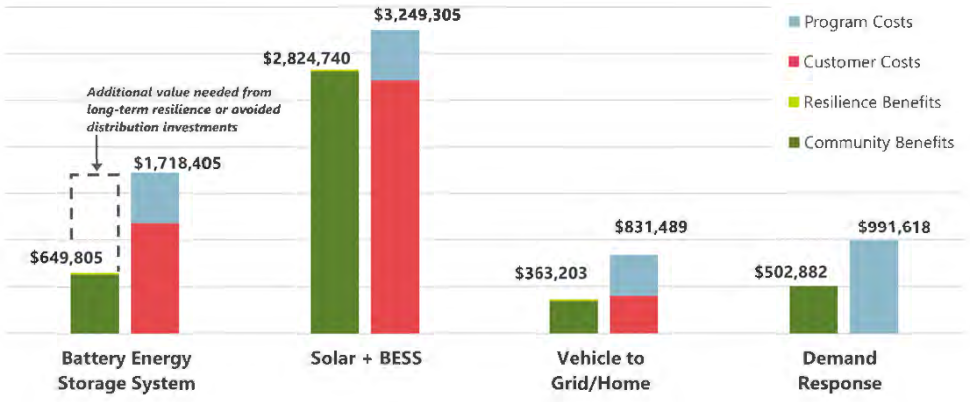
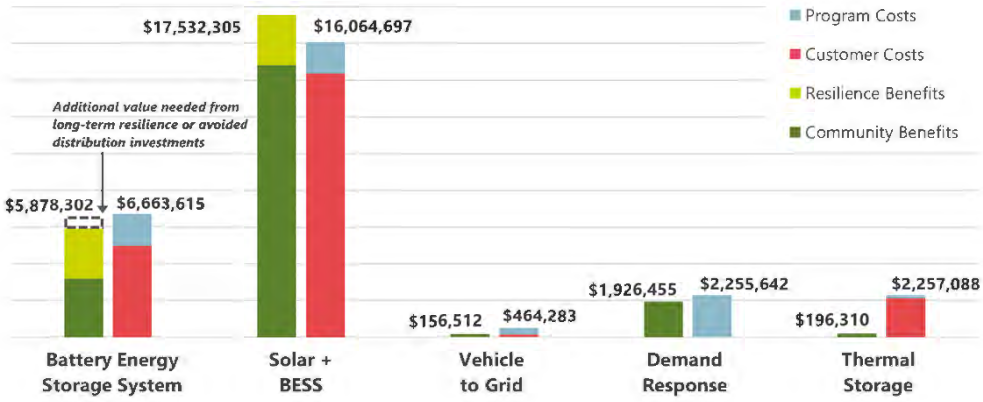


Figure 2: Cost-Benefit Results - Commercial Programs



**Note: community benefits are customer savings net of distribution and commodity impacts.*

Time of Use Rates

- Time of use (TOU) rates are a key enabling factor for flexible energy technologies and demand response programs, providing incentives to shift or shed end-use load.
    - In addition to enabling demand flexibility, grid reliability, and efficient use of electricity, price-based signals can provide cost savings for participating customers while creating a net benefit to utilities implementing them.
- Demand response programs, enabled by price-based signals like TOU, are increasingly being considered for their technical potential to provide additional resource capacity for utilities through future load forecasting and integrated resource planning.
    - However, the current lack of data and experience with TOU programs limits their broader application in utility distribution system plans.
    - Currently, there is no widespread consensus of how assumptions of price-based DR load reductions from TOU should be incorporated into resource planning.
- California's 2018 TOU pilot (including PG&E, SCE, and SDG&E) averaged 4.6% in peak period load reductions
- Of nearly 150 programs assessed by the Lawrence Berkeley National Laboratory, 20% reported outcomes on demand reductions, and 14% reported outcomes on program spending.
    - Utilities realized an estimated average demand reduction of 0.06 to 0.9 kW/participant/event.
    - Residential reductions for TOU programs ranged from 1-6% per participant
    - Commercial and Industrial TOU reductions ranged from 1.5-5%
    - Utilities spent approximately $40-100 per kW for first-year costs

Program Design

- Various program design typologies have been considered, with different designs being suited to different technologies. These considerations also inform program costs and implementation mechanics.
- The current program designs under consideration include:
    - Battery energy technologies could utilize a 3rd party administered incentives/grant structure or a feed-in tariff, or be rolled into a demand response program
    - Demand response would be best suited to a third-party aggregator administered program
    - Vehicle to grid could be best administered by 3rd party incentives, or be rolled into a demand response program
- For all program designs, the smaller scale of Palo Alto is a particular challenge as administrative costs risk being a significant portion of the overall costs and benefits.
    - Reducing program costs could be achieved by leveraging existing grants of state funding (more research is needed to determine availability and eligibility) or by integrating technologies into existing programs.
- Scaling incentives for, or specifically targeting, low-income residents may also be necessary to address inherent equity issues associated with programs, given that those with means are more likely to adopt flexible energy technologies and utilize program incentives.

- More generally, Palo Alto programs for strategic communication and outreach to increase adoption of flexible technologies may be worthwhile to improve community awareness and overall community resilience, especially to the extent that these efforts improve access to enabling technologies to low-income/vulnerable residents.
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Alternate Cost-Benefit Summaries

Figure 3: Cost-Benefit Summary - Residential Programs

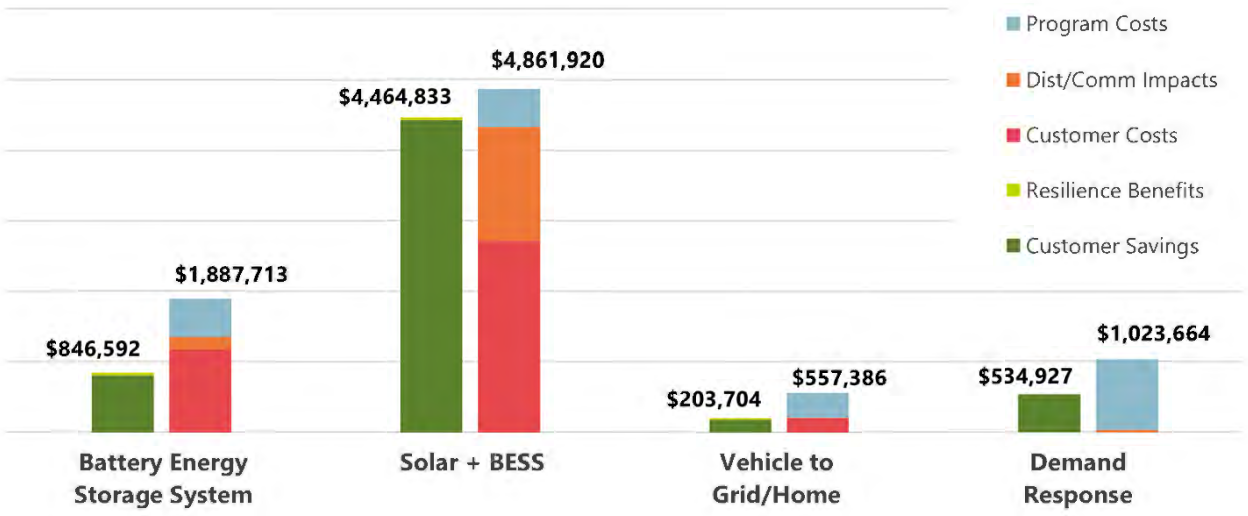
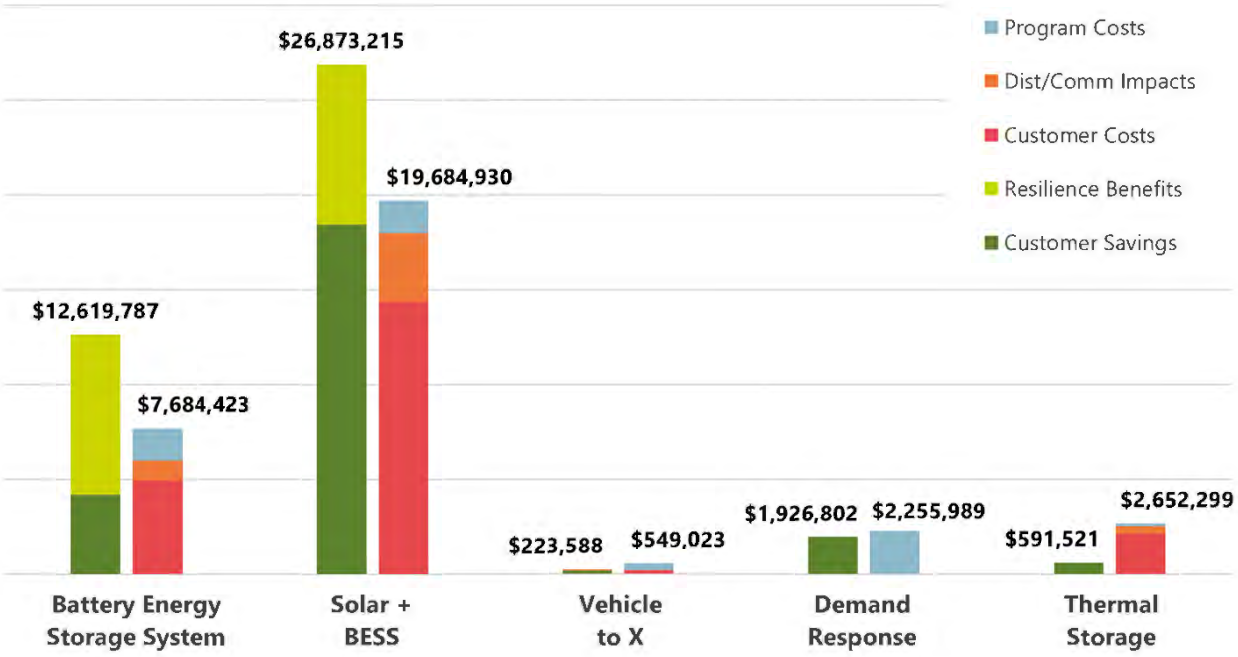


Figure 4: Cost-Benefit Summary - Commercial Programs



Results of Preliminary Distribution Study

Goal: Complete a preliminary analysis to determine the need for a full analysis of the potential for batteries, vehicle to grid, and efficient electrification to defer electric distribution system investment.

Results:

In an optimistic scenario, staff identified potential savings from deferral of infrastructure investment from 326 transformers. If these could be deferred without cost the savings would be equal to about $1 million per year in avoided debt service costs or about a 0.55% reduction in rates. Staff estimated that 2,400 energy storage systems at well over 1,000 homes would be required to achieve this deferral, however, at a debt service cost of about $1.3 million per year, exceeding the potential savings. When combined with the additional considerations below, especially those related to the novelty and complexity of such a program, the analysis points to there being minimal or negative value to pursuing deferral through utility-controlled flexible energy technologies.

Additional Considerations:

- This program depends on the use of transformer-level microgrid controllers that are not extensively used in the utility world at this time, leading to some operational risk due to use of an earlier-stage technology, and likely staff time and ongoing cost impacts that may not be accounted for in the estimates above
- It would require very rapid launch of a major program effort to deploy utility-controlled batteries at homes
- It also results in less efficient infrastructure investment and may involve higher operational costs from maintaining a diversity of equipment
- And lastly, if construction inflation continues to exceed general inflation, deferring investments in infrastructure could mean the real cost is greater later on, meaning higher rates for future Palo Altans.

Methodology:

Staff did a simple calculation to estimate the number of 13.5 kWh, 3.375 kW four-hour batteries needed to manage any grouping of homes that exists on the City's electric system. Staff used the grid modernization coincident peak load assumption of 6 kVA per home to evaluate the peak transformer loading, then calculated the number of batteries needed to reduce the total loading below the transformer limit. An underlying assumption of this method is that the energy capacity of the batteries is sufficient to discharge at all hours needed to keep the transformer loading below the load limits. A Monte Carlo simulation using actual AMI data found that this assumption did not hold in all scenarios,

meaning this methodology yields an optimistic outcome, and in reality, more batteries would likely be needed to achieve the program's goals.

Staff then identified candidate transformers for deferral: those less than 20 years old and that are not being replaced as part of a 4 kV -> 12 kV upgrade, 326 transformers. Staff ran the calculation for each transformer and found the following:

Number of connected homes	Number of transformers with these characteristics (transformer size and number of homes)	
	25 kVA	37.5 kVA
4	22	
5	24	11
6	33	5
7	30	21
8	32	15
9	21	16
10	11	31
11		13
12		30
13		11
TOTAL	173	153
GRAND TOTAL: 326		

In this preliminary analysis, the City is assumed to pay for these batteries because they are used exclusively for distribution management. Staff estimated the total up-front cost of the batteries needed, then calculated the cost of debt financing those costs over 20 years. Staff then compared that to the debt service cost of upgrading the transformers instead of doing the program. The results are shown below:

Average cost per transformer upgrade	$50,000
Avoided upgrades	326
Total avoided capital investment	$16.3 million
Debt service (30 years, 4.5% interest rate)	$1.0 million per year savings
Cost per battery	$5,900
Batteries	2,400
Total required capital investment	$14.3 million
Debt service (20 years, 6.5% interest rate)	$1.3 million per year cost

The ongoing debt service for the batteries in this case exceeds the savings generated by deferring distribution investment. This back of the envelope analysis also does not include the cost of battery controllers to match battery charge and discharge to transformer loading, program costs to deploy the batteries, and staffing for ongoing maintenance of the battery controller system. The high-level analysis also does not account for degraded

battery performance overtime, losses incurred during battery charging cycles, possible benefits from shifting consumption (thru battery charging/discharging) to periods of lower-cost and/or cleaner energy production, potential of higher customer peak demands due to electrification, and changes in construction pricing. In general, further sensitivity analysis is expected to result in a higher cost to pursue the battery storage alternative.

Current Policies on Microgrids and Long-term Resiliency and Potential Alternatives

This is an overview of current City rules, regulations, and activities that affect solar plus battery microgrids and community backup power planning to ensure longer-duration resiliency in major emergencies.

Microgrids

A microgrid is an on-site generator that can run both when the grid is up and running, replacing non-local power transmitted from outside Palo Alto, and when the grid is down, replacing a traditional diesel backup generator. The value of a microgrid can be compared to the cost of the avoided power purchased outside Palo Alto and transmitted to the community to serve electric load plus the avoided cost of a diesel backup generator.

And advantage of a solar and battery microgrid is that solar generators do not run out of fuel. A disadvantage is that they are limited in the amount of generation by the amount of available roof space, the season, and the weather, so they require more complex planning.

It is possible to have more complex microgrids that include a variety of generating sources (e.g. solar plus natural gas engines) but this overview focuses on solar-only microgrids.

Utility On-Site Solar Generation Policies and Programs

The City's electric utility provides two programs for customers who install on-site solar and batteries: Net Energy Metering[1] or the PaloAltoCLEAN feed-in tariff[2]. The Net Energy Metering program enables customers to avoid the full retail rate for energy used on site, while paying for energy exported to the electric distribution system and used to serve other electric utility customers based on the avoided cost of the imported energy and transmission services that would otherwise have been needed to serve those customers. Under the PaloAltoCLEAN feed-in tariff program the utility buys all the energy from a solar system under a power purchase agreement and uses it to serve electric utility customers in Palo Alto. The City's electric utility pays a price based on the avoided cost of the imported energy and transmission services that the local solar generation replaces.

Typically neither program provides enough value to repay the cost of the solar and battery system. This is because it generally costs more to build solar locally than to

[11] https://www.paloalto.gov/Departments/Utilities/Electrification/Residential-Electrification/Consider-Solar/Net-Energy-Metering
[22] https://www.paloalto.gov/Departments/Utilities/Electrification/Business-Electrification/CLEAN

import it from outside Palo Alto. However, a local solar and battery microgrid can provide additional value in the form of long-term and short-term resiliency. Those who value that resiliency highly enough are willing to pay the cost to install solar and batteries even if they do not recover the full value just from the City's programs. The City's electric utility does not currently provide additional subsidies for local solar and batteries for the purpose of creating additional local resiliency.

Current Long-term Electric Resiliency Activities

City's Office of Emergency Services (OES) coordinates City response to a major emergency, coordinates with other emergency operations teams regionally, provides information to residents, and coordinates community preparation efforts, such as Emergency Services Volunteers.

As part of its planning efforts OES will note gaps it identifies in the backup power plans made for critical City facilities, though responsibility for identifying backup power needs is shared across all City staff managing facilities. OES maintains a solar plus battery backup power trailer to flexibly provide backup power portably.

Backup power decisions for private entities are typically made by those individual facility owners. The City does not currently involve itself in those decisions. OES provides information on disaster planning, but does have the resources to actively push private facility owners to ensure they have adequate backup power.

Potential Additional Actions

If the City wanted to extend its support for community emergency planning, the following additional actions could be considered, and would require additional resources:

- Incentives or other subsidies for solar and battery generation. If these incentives were to be provided, the purpose of the program should be well-defined. Some possibilities include:
    - Make incentives for on-site solar and battery resiliency available to all (or to all residents). This option would likely require a very large funding source that would raise electric rates or require additional taxes.
    - Make incentives available to low-income residents. This would also require funding sources. Further analysis would be needed on the amount.
    - Provide incentives for facilities that serve community needs in an emergency. This would require both funding for incentives and resources for OES to develop criteria for identifying such facilities.
- Instead of (or in addition to) providing incentives, additional resources could be provided to OES for identifying critical community facilities and facilitating development of backup power at those sites (both solar and battery and traditional backup power).

- Alternatively, OES could use existing networks and resources to promote the electric utility's existing NEM and PaloAltoCLEAN programs even if a new electric utility incentive program were not created.

Overview of Preliminary Airport Microgrid Study Results

The City's consultant, Burns-McDonnell, has studied a potential microgrid at the airport in sufficient detail to assess a few potential options for City consideration.

Alternative 1: Microgrid serving the airport alone

A small microgrid serving the airport alone would not require significant site development. Under 1 MW of solar would be needed for the airport to withstand a multi-day outage in any season. Potential alternatives are being provided to the airport management team for consideration. No utility involvement is needed for this scenario beyond the usual interconnection review and solar rate designation provided by the electric utility for all utility customers putting solar on a site.

Alternative 2: Maximum airport solar and storage buildout under a power purchase agreement (PPA) with the City's electric utility

Under this scenario the City would have 6.6 MW of solar capacity built at the airport along with sufficient battery capacity to optimize the value for the electric utility. The City could own the system or hire a developer to build and own it, most likely the latter. The estimated price for such a PPA is (very preliminarily) $235/MWh + $27/kW-mo, more than avoided cost of buying renewable energy remotely and transporting it to the City ($80-$90/MWh + $14-$18/kW-mo). To make this project a net value to the electric utility another revenue source would be needed to monetize the resiliency value, paying for a share of the project and lowering the PPA price to the electric utility.

Alternative 3: Maximum airport solar and storage buildout with electric utility PPA and resiliency services

To lower the PPA price to the electric utility staff identified three potential users of resiliency services for the project. The final PPA price to the electric utility would depend on how much one or more of those users would be willing to pay for those services.

Alternative 3A: Airport Resiliency Services

One potential user of resiliency services could be the airport. Resiliency service from a fully-built-out solar and storage system could replace the need for other backup power or a standalone smaller microgrid just serving the airport (as in Alternative 1).

Alternative 3B: Regional Water Quality Control Plant (RWQCP)

With its large electric load, the RWQCP would be another potential user. The RWQCP currently has 1-3 days of diesel backup in an emergency. The City's consultant estimated that connecting the RWQCP to a maximized solar and storage microgrid at the airport could provide 1-5 additional days of power in January (when solar energy is at a minimum), on average, and at least 45 days of additional power in September

(when solar energy is at maximum). This solution for the RWQCP should be compared against dual fuel diesel and natural gas backup generation, which could provide even greater resiliency during the winter.

Alternative 3C: EV Charging Depot

Another option for raising revenue and providing resiliency is an EV charging depot. This would be a bank of high-speed chargers located at the airport intended to raise revenue from EV drivers day to day or, if feasible, provide charging for City fleet vehicles. Electric aviation may be another possible source of revenue. For this analysis the City's consultant evaluated a bank of ten 100kW EV chargers that could be used in an emergency. A 6.6 MW solar and battery system at the airport could provide 400 40 kWh charging sessions per day (over a 24-hour period) for up to three days in January and any number of days in September. Other configurations would be possible, and further analysis would be needed to determine the economically optimal configuration.

Draft Criteria for When to Consider Cross-Parcel Microgrids

Staff intends to use the following criteria when considering whether a cross-parcel (neighborhood) microgrid should be considered:

- A site has a critical electricity use that requires long duration backup power capability
- Lack of availability of diesel fuel in an extended emergency is a concern
- The site may not be prioritized by emergency planners for limited diesel supplies (e.g. a high priority use like a hospital trauma center may have fewer concerns about diesel availability than a medium priority use)
- The critical electricity use cannot be served adequately just using solar on the property
- Site is near other parcels with roof and/or land space for solar panels in excess of that needed for any critical electric uses on those parcels
- Site owner is able and willing to pay for additional solar + storage and the physical infrastructure to connect across parcels to supplement diesel backup

Dual-fuel backup generation (natural gas + diesel) should be considered as an alternative to cross-property solar + storage microgrids when addressing diesel fuel concerns.

Attachment B: Reliability & Resiliency Strategic Plan – Progress Update July 2025

Strategy/Action	Status	Cost
Strategy 1: Replace and Modernize Infrastructure		
1.1 Replace aging infrastructure	Strategies 1.1 – 1.3, the grid modernization project, will replace aging infrastructure and install a modern network infrastructure to meet future home electrification needs. Changes to the equipment on the network will include replacing/installing transformers, installing new protective devices to improve reliability, and the installation of system controls to allow for the import and export of energy from homes on the network. A pilot project to replace and upgrade aging infrastructure serving approximately 1000 residents was completed in 2025. Staff is evaluating results from this pilot before moving to the rest of Phase 1 of the project.	Electric Fund CIP EL-24000 (Grid Modernization): $300 million (of which staff very preliminarily estimates 40% - 50% is for existing infrastructure replacements that would occur regardless of electrification)
1.2 Upgrade capacity to accommodate new loads		
1.3 Improved feeder switching capabilities		
1.4 Second transmission connection	Staff, with consultant help, continues to work with the California Independent System Operator (CAISO) and PG&E to build a second transmission corridor from the broader electricity grid to Palo Alto. In May 2025 CAISO approved construction of this second corridor in the form of a new 115 kV line from Ames to Palo Alto to be completed in 2034 as part of the CAISO transmission planning process. Staff and consultants are working with PG&E and CAISO to move the completion date to closer to 2030 as loads are increasing faster than expected.	Electric Fund CIP EL-06001 (115 kV Electric Intertie): $250,000 for planning and design work for application to CAISO
1.5 Foothills undergrounding	A key wildfire mitigation activity is undergrounding approximately 49,200 feet of electric overhead distribution lines and fiber optic cable in the Foothills area. This iterative project consists of multiple phases 1-5 and is expected to be complete in 2025. Phases 1,2, 3, and 5 were completed in May 2025, and 10,000 Feet remaining in the MidPen Phase 4 area are scheduled for completion by August 30, 2025.	Electric Fund CIP EL-21001 (Foothills Rebuild): $8 million

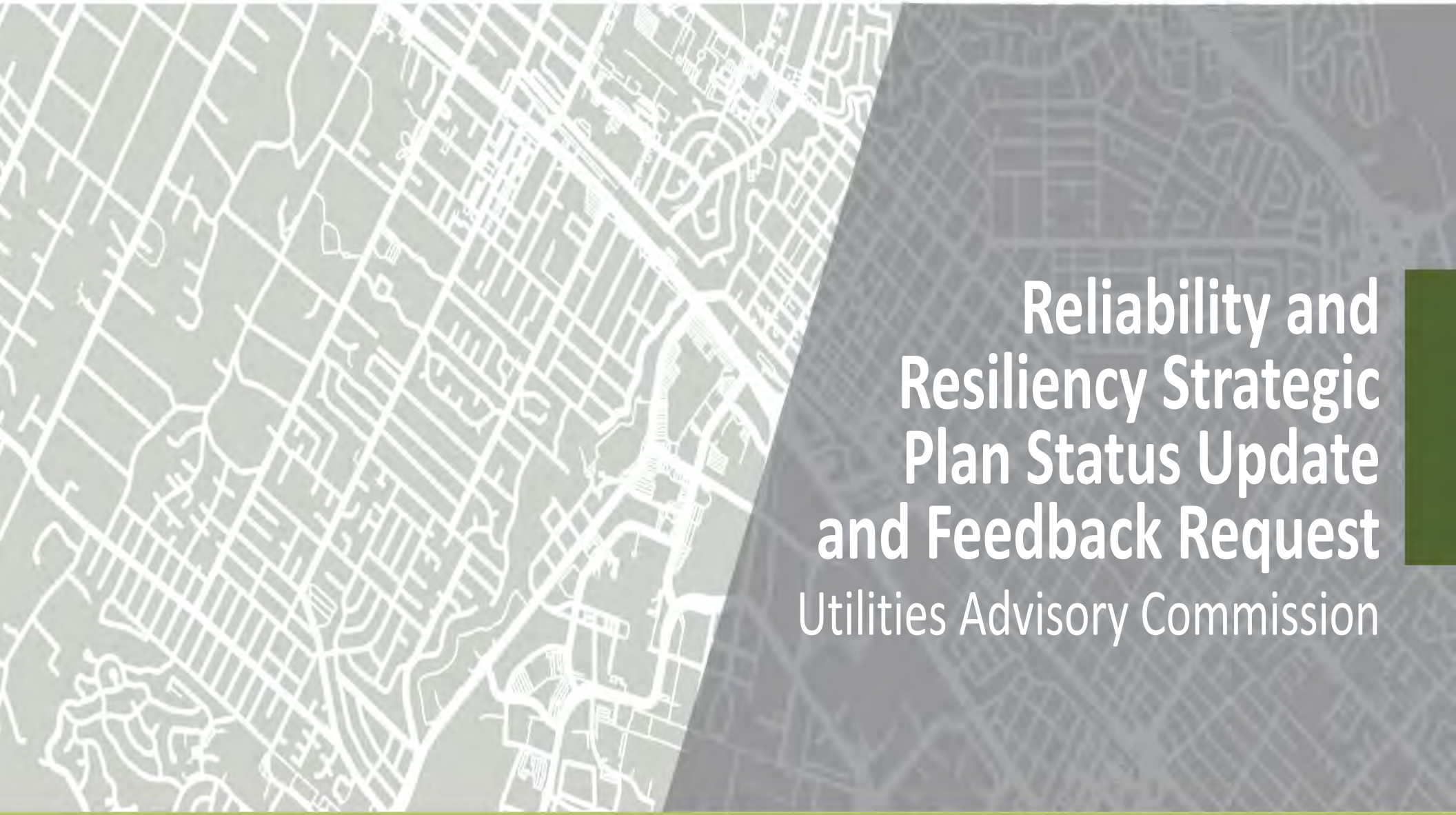
Strategy/Action	Status	Cost
1.6 Reliability Metrics	Research and metric development to commence in Q4 of 2025.	0.05 FTE of staff time for research and metric development
Strategy 2: Operational Strategies to Improve Reliability and Manage Outages Effectively		
2.1 Strengthen the workforce	Concerted efforts are currently underway to recruitment, train, and retain lineworkers, system operators, engineers, inspectors to maintain system and respond to outages effectively. Staff have also contracted with third-party contractors to supplement staff to undertake emergency response, maintenance, and capital improvement projects. In FY 2024, 45 vacancies were filled. Between January to May 2025, CPAU has 11 new hires and 12 promotions. As of May 2025, CPAU 38 vacant positions or 14% vacancy rate of the authorized 267 FTEs. 20 of the vacant positions are in-progress recruitments. Significant progress has been made in filling critical vacancies like director, assistant director, lineworker, and engineer.	1.0 FTE (spread among three people) for additional recruitment and retention work
2.2 Wildfire protection maintenance practices	Staff regularly updates its Wildfire Mitigation Protection Plan to protect power lines in the Foothills, and is exploring innovative software to make vegetation management more efficient.	Implementation requires $150,000 to $200,000 for vegetation clearance annually
2.3 Communicate effectively during outages	The new OMS allows CPAU to more quickly detect and respond to power outages and provide customers with timely notifications and updates. In FY 2025, OMS sent approximately 103,500 text messages for planned and unplanned outages and restorations. Staff has incorporated OMS texting features to support outbound communications during potential and active PSPS events. Staff will explore other uses for OMS, such as customer non-payments.	$73,000 was spent to develop the system. Ongoing maintenance involves 0.25 FTE and ongoing system costs of $108,000 per year.

Strategy/Action	Status	Cost
Strategy 3: Effectively Integrate and Ease Adoption of New Technologies		
3.1 Configure the distribution system to accommodate high penetrations of solar, batteries, and other technologies	Staff has completed an evaluation of the distribution improvements needed to accommodate high penetrations of solar and storage and is currently evaluating whether these same improvements will also accommodate vehicle to grid technologies, smart panels, and flexible loads.	$30,000 to 50,000 in consultant studies from electric utility operating budgets
3.2 Review, communicate, and streamline permitting and other regulatory rules for efficient and flexible electrification technologies	Staff completed an inter-departmental internal review of various technologies to establish clear rules and guidelines for implementation: • Planning and Development Services updated Intake forms for electrical load calculations were updated. Status: Complete. • Utilities is updating transformer upgrade fees and evaluating the role of flexible technologies and strategies for single-family. Expected completion: Q4 2025 • Utilities transformer upgrade policies for multi-family and non-residential properties take into account efficient and flexible technologies and strategies. Status: Complete.	0.25 FTE in staff effort from existing staff resources
3.3 Communicate how to electrify efficiently	• Time of use (TOU) rates and a transition plan for these rates are currently being developed in parallel with the City's rollout of advanced metering infrastructure. The voluntary residential TOU rates are expected to be approved by Council in August 2025. Staff plans an update to the UAC on implementation details in October 2025. Initial Launch Planned: Q1 2026 • Utility staff has hired Redwood Energy to develop an electrification guide for single family homes and is working on how to roll it out. Expected completion: Q3 2025 • Utilities launched an electrification expert service which can provide guidance to residents on efficient electrification. Status: Complete	
3.4 Communicate how to use technologies in a grid-friendly way		

Strategy/Action	Status	Cost
Strategy 4: Value the benefits of flexible technologies to the utility and community		
4.1 Value the utility benefit of flexible technologies on electric supply costs	Staff has hired a consultant to perform these analyses, as well as the analysis of Actions 4.3, 4.4, and the analyses in Strategy 5. Staff expects study completion by end of 2025. Staff is reviewing preliminary results with the UAC in July 2025 and Council Climate Action and Sustainability Committee (CASC) in August 2025.	Consulting assistance at a cost of $213,250, and 0.25 FTE in staff effort.
4.2 Value the utility benefit of flexible technologies on electric distribution costs and capacity	Staff was unable to complete a contract with an academic partner for this study and is working on a preliminary analysis to determine whether a more expensive private consultant study is warranted. Staff is reviewing the results of the preliminary study with the UAC July 2025 and the CASC in August 2025.	Estimated $15,000 to $200,000 in consulting assistance, 0.1 FTE in staff effort
4.3: Explore estimating the value of resiliency for the community	See status update for 4.1, above.	See status update for 4.1, above.
4.4: Estimate the cost of various community resiliency approaches		
Strategy 5: Evaluate the resource needs for various demand reduction and resiliency programs		
5.1: Evaluate utility-driven programs to enhance resiliency and lower the demand on the grid	Staff has hired a consultant to develop a list of potential programs, as well as the analysis of Actions 4.1, 4.3, and 4.4, above. The study is expected to be completed by the end of 2025. Staff is reviewing a preliminary program list with the UAC in July 2025 and Council Climate Action and Sustainability Committee (CASC) in August 2025.	See status update for 4.1, above
5.2 Evaluate equity-based and need-based versions of the programs		

Strategy/Action	Status	Cost
5.3: Evaluate community-based versions of the programs		
5.4: Evaluate other resiliency approaches like neighborhood-level microgrids		
Strategy 6: Implement any demand reduction or resiliency programs chosen by the community		
No actions planned until Strategies 4 and 5 are completed and policy direction is received from Council		

CITY OF PALO ALTO



Reliability and Resiliency Strategic Plan Status Update and Feedback Request

Utilities Advisory Commission

July 9, 2025

www.paloalto.gov

Overview

- Review Flexible Technologies Analyzed
- Preliminary Results of **Supply** and **Short-term Resiliency** Cost and Benefit Analysis
- Preliminary Results – **Distribution Investment Deferral** Cost-Benefit Analysis
- **Microgrids, Long-term Resiliency** – overview of current policies, possible alternatives
- **Airport Microgrid** Analysis – Preliminary Results
- Summarize feedback requested

Flexible Technologies & Strategies and their Value

	Can Reduce Utility Supply Cost	Provides Short-term Resiliency	Could Defer Distribution Investment	Provides Long-term Resiliency
Time of Use Rates	X			
Demand Response	X			
Battery-only (e.g. ESS, V2G)	X	X	X	
Battery + Solar	X	X	X	X
Efficient Electrification			X	

Time of Use Insights

- Consultant reviewed literature on impacts of time of use rates
- Residential TOU impacts – 1% - 6% reduction in peak demand in programs studied
- Commercial TOU impacts – 1.5% - 5% reduction
- California IOU TOU studies: 4.6% peak period load reduction
- Based on past CPA pilot, peak demand reduction will likely be on the lower end (less air conditioning load)

Preliminary Results: Supply and Short-term Resiliency

Programs analyzed for cost-benefit analysis:

Demand Response

1. 250 Residential Projects
2. 75 Commercial Projects

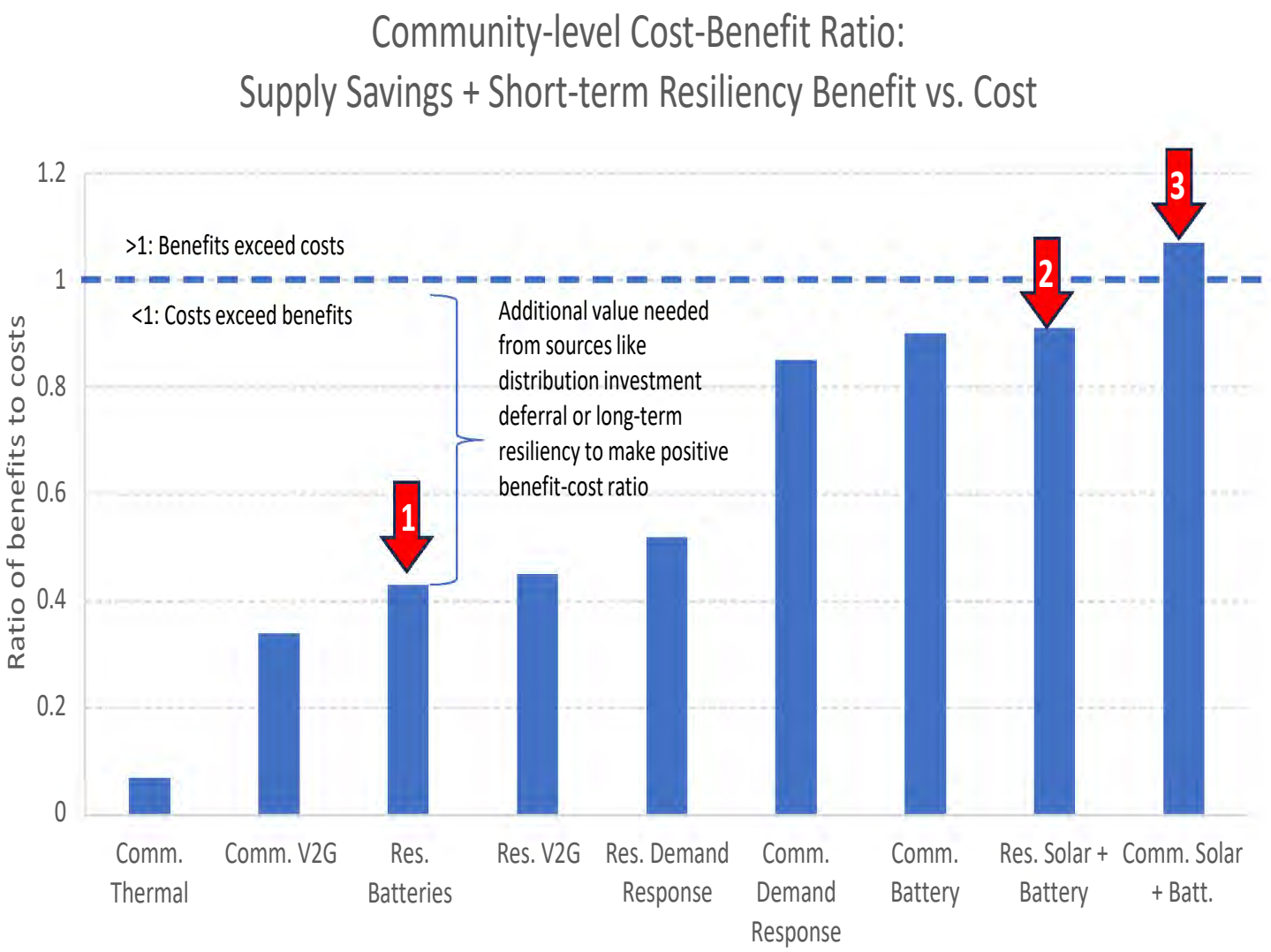
Standalone Battery Projects

3. 100 residential battery-only projects
4. 100 residential V2G projects
6. 35 commercial V2G projects
7. 35 commercial thermal storage projects
8. 35 commercial battery projects

Solar + Battery Projects

9. 100 residential solar + battery projects
10. 35 commercial solar + battery projects

Preliminary Results: Supply and Short-term Resiliency



Staff Investigated Further:

1. Res. batteries to defer distribution investment
2. Residential solar + batteries for long-term resiliency and/or for distribution investment deferral
3. Comm. solar + batteries for public-private partnerships

Preliminary Distribution Deferral Results

- Did preliminary analysis to evaluate whether a more expensive in-depth analysis is warranted
- Assessed the most promising transformers for deferral:
  - Not in a 4 kV -> 12 kV upgrade area
  - Less than 20 years old
- Identified 362 transformers (of about 1,750) for consideration
- Most transformers had between 4 and 13 homes connected
  - Only about 30% had six or fewer homes – the higher the number of connected homes, the more measures needed to defer investment

Preliminary Distribution Deferral Results

- Max savings (all 362 transformer replacements deferred at no additional cost): $1M/year (0.55% avoided rate increase)
  - More in-depth analysis may find more savings (e.g. feeders, substations)
- Over 2,400 batteries needed to avoid all 362 replacements
  - Cost of these batteries (about $1.3M/year) exceeds the savings
  - Using efficient electrification might lower costs – needs more analysis
- Other considerations
  - This approach is cutting edge – challenging for small utility
  - Deferring transformer replacements reduces grid mod efficiency
  - Program expenses not included
  - Rapid program implementation would be required
  - Simulations using real world AMI data showed more batteries needed

Solar + Storage Microgrids

Microgrid = day to day power generation + backup power – all in one package

Microgrid cost can be benchmarked against cost of non-local power + backup generator

Solar + Battery Microgrid

is like

Non-local power

+

Backup Generator

Policies: Microgrids and Long-term Resiliency

- Current policies:
  - Value of replacing grid power with local solar + battery is passed on in net energy metering rate, PaloAltoCLEAN feed-in tariff program
  - Cost of solar + battery exceeds direct energy benefit in most cases
  - Community members who value resiliency highly enough will spend the extra money for the backup power
  - City does not facilitate community-wide backup power planning
- Potential alternatives:
  - Subsidize, pay extra, or otherwise facilitate local solar + battery projects to promote local resiliency - but who may participate?
  - Options: 1) everybody (raises electric rates), 2) critical community facilities in an emergency (e.g. grocery stores), 3) first come first served, limited funding (creates equity issue), 4) income-qualified, or 5) those willing to pay extra (reflects current practice)

Airport Microgrid Study – Preliminary Results

- Maximum potential: ~7 MW of solar (~12,000 MWh of annual generation, about 1% of community load) + an amount of batteries needed to match each purpose below
- Three potential purposes for large scale microgrid:
  - Power Purchase Agreement - $235/MWh + $27/kW-mo – costs more than avoided remote renewables + transmission ($80-$90/MWh + $14-$18/kW-mo)
  - RWQCP backup power – 4-8 days of operation in Jan (lowest solar generation), at least 45 extra days in summer (highest)
    - Currently the RWQCP has only 1-3 days of diesel
  - EV charging depot (10 100-kW chargers) – 200 80-kWh vehicle charges per day for three days in January (lowest solar generation), unlimited September use
- Alternatively could just build small microgrid to power airport
- Analysis provided insights on cross-parcel microgrids

Staff Request

Staff requests UAC provide majority (or consensus) feedback on next steps. Staff's straw proposal for UAC feedback:

1. Promote ways community members can save money by reducing peak period load (helping the electric grid) under time of use (TOU) rates once those rates are launched.
2. Monitor demand response technologies for positive benefit-cost opportunities but continue existing City practice of not pursuing demand response (unless benefit to cost ratios change in the future).
3. Promote residential solar and battery adoption, standalone batteries and thermal storage, but continue the City's current policies of not providing technical assistance programs or incentives due to the fact costs exceed benefits.
4. Promote electric vehicle to home/grid as it becomes more available, but continue the City's current policies of not providing technical assistance or incentives (unless benefit-to-cost ratios change in the future).

(continues)

Staff Request (Continued)

5. Further explore the cost-effectiveness of local larger-scale commercial solar + battery programs and bring to the UAC and City Council for consideration as part of the report on Strategies 4 and 5 if cost-effective options can be identified, while continuing to pursue utility-scale solar and storage and other renewables in parallel.
6. Monitor opportunities for distribution investment deferral using flexible technologies and efficient electrification but do not pursue additional analysis or new policies or programs at this time.
7. Maintain City's current policies on microgrids and backup power (long-term resiliency).
8. Explore electric utility / treatment plant partnership on airport microgrid.

CITY OF
PALO
ALTO

Date: July 9, 2025

FORECAST
12-MONTH ROLLING CALENDAR

	Utilities Advisory Commission	City Council
July 2025	• Battery Energy Storage System Services Agreement • Gas COSA Principals and Guidelines • Reliability and Resilience Strategic Plan Update • Gas Utility Transition Study Scoping	**COUNCIL SUMMER BREAK**
August 2025	**UAC SUMMER BREAK**	• *Connection Fee Update (FCM and CCM)* • *Electric Time of Use Rates* • *Gas COSA Principles and Guidelines (FCM and CCM)* • *Rules and Regs Update* • *Dahl and Park Engineering Seismic Assessment* • *Utility Trench & Substructure Installation Contract* • Gas Main Replacement 25 Project • *Battery Energy Storage System Services Agreement (FCM)* • *Tier 2 Water Allocation During Drought* • Grid Mod Bond Financing and Project Update (FCM) •
September 2025	• COSA Study Results and Rate Changes	• Battery Energy Storage System Services Agreement • Electric Time of Use Rates • Updated Standard Form Master Agreements for Electric and Gas • Water System Leak Detection Survey • Accept Electric System Reliability Key Performance Indices • Overhead Fiber Optic Service Drops to Customers Premises (FTTP) Contract • Professional Engineering/Design Services for Electric Substations & Distribution System • Long Term Okinite Amendment • GoMo Consulting Contract • Metropolitan Transportation Commission Grant for EV Charging for PAUSD
October 2025	• FY25-Q3 & Q4 Annual Report • Electric Time of Use Rates Implementation Check-in • Preliminary Analysis of the Infrastructure Impacts Associated with Gas Decommissioning • Grid Modernization Bond Financing and Project Update	• COSA Study Results and Rate Changes (FCM) • Gas Main Replacement 25 • Grid Modernization Bond Financing and Project Update (FCM)
November 2025	• Preliminary FY 2027 Rates • Legislative and Regulatory Update	• Grid Modernization Bond Financing and Project Update • Legislative and Regulatory Update • COSA Study Results and Rate Changes
December 2025		• Preliminary FY 2027 Rates
January 2026	• FY26-Q1 Quarterly Report	• Q1 Fiber Pilot Report Out (FCM)

February 2026	• FY 2027 Utility Rates & 5 Year Forecasts • Credit Card Fees	• FY 2027 Utility Rates & 5 Year Forecasts (FCM)
March 2026	• Water Quality Update – Regional sampling of microplastics • Q1 Fiber Pilot Report Out	
April 2026	• Urban Water Management Plan	• Sanitary Sewer 5-year CCTV
May 2026	• FY 2027 Utilities Budget	• Urban Water Management Plan • FY 2027 Utilities Budget
June 2026	•	• FY 2027 Rates and Financial Forecast • FY 2027 Utilities Budget
July 2026	•	•

Previous Month Council Recap on Utility Items
Approved By Council: • Rates and Financial Forecast • On Call Traffic Control Services • Professional Consulting Services for Electric Utility Engineering, Grid Mod • FY 2026 Utilities CIP and Operating Budget • 10 Year Energy Efficiency Goals • Water Supply & Demand Assessment • Sanitary Sewer Management Plan (SSMP)n • Okinite Term Extension • MP NexLevel Change Order 3. To incorporate FTTP

Reoccurring Items	Items to Be Scheduled
- Educational Update on any Type of New Technology or Terminology - Projects with a Resiliency Component - Quarterly Reports (Q1-3 Info Rpts)(*Q4 Discussion Summary of the year*) Financial Report Utilities Programs Update Informational EV Charger Installation Updates Informational Bucket 1 REC Sales Updates Informational Fiber Updates	- Data Center Competitiveness - Grid Mod Strategy