

State of California

California Energy Commission Minutes of the May 11, 2022, Energy Commission Business Meeting

The meeting was called to order by Chair Hochschild. The Pledge of Allegiance was led by Chair Hochschild.

Present:

David Hochschild, Chair
Siva Gunda, Vice Chair

Patricia Monahan, Commissioner

The California Energy Commission's (CEC) May 11, 2022, Business Meeting will be held remotely, consistent with Assembly Bill 361 (Rivas, Chapter 165, Statutes of 2021) as extended by Governor Newsom's Executive Order N-1-22 to improve and enhance public access to state meetings during the COVID-19 pandemic. The public can participate in the business meeting consistent with the direction provided below.

Please note that the CEC aims to begin promptly at the start time and the end time is an estimate based on the agenda proposed. The business meeting may end sooner or later than the time indicated depending on various factors.

Pursuant to the California Code of Regulations, title 20, section 1104(e), any person may make an oral comment on any agenda item. To ensure the orderly conduct of business, such comments will be limited to three minutes or less per person. Any person wishing to comment on information items or reports (non-voting items) shall speak during the public comment portion of the meeting and have three minutes or less to address all remaining comments.

THE CEC WILL CONSIDER AND MAY TAKE ACTION ON THE FOLLOWING:

1. Consent Calendar.

Items will be taken up and voted on as a group. A commissioner may request that an item be moved and discussed later in the meeting.

- a. Governor's Office of Business and Economic Development (GO-Biz). Proposed resolution approving Agreement 600-21-008 with GO-Biz for a \$246,636 contract to fund a Zero-Emission Vehicle (ZEV) Permitting and Development Specialist for two years to streamline the ZEV infrastructure permitting process, which will help accelerate ZEV infrastructure deployment in California, and adopting staff's determination that this action is exempt from California Environmental Quality Act (CEQA). (General Fund Funding) Contact: Jennifer Masterson
- ~~b. California Department of Transportation (Caltrans). Proposed resolution approving Agreement RMB600-21-010 for Caltrans to provide \$326,293 to the CEC to support Caltrans efforts in the continued deployment of and increased access to ZEVs and ZEV infrastructure by performing data analysis and research for Caltrans, and adopting staff's determination that this action is exempt from~~

~~CEQA Contact: Soham Mistry~~

- c. Solar Energy Generating System VIII (SEGS VIII) (88-AFC-01C). Proposed order terminating the CEC's certification of SEGS VIII, and finding that this action is not a project under CEQA. The SEGS VIII facility Decommissioning Plan was approved by the CEC on August 20, 2020, and all work was completed by April 15, 2022, consistent with the Decommissioning Plan. Upon termination of the CEC's jurisdiction, the County of San Bernardino will assume jurisdiction over the SEGS VIII site. Contact: Elizabeth Huber
- d. Clean Energy States Alliance, Inc. (CESA). Proposed resolution approving Agreement 500-21-002 with CESA for a two-year Core Membership invoiced annually at \$50,000. CESA is a national, nonprofit coalition of state, municipal, and regional clean energy agencies and organizations working together to advance clean energy markets and the development of clean energy technology. This membership provides benefits that include a seat on the CESA Board of Directors. (ERPA Funding) Contact: Jim Folkman
- e. American Council for an Energy Efficient Economy (ACEEE). Proposed resolution approving Agreement 100-21-002 with ACEEE for a \$25,000 contract to co-sponsor the 2022 Summer Study on Energy Efficiency in Buildings to be held August 21-26, 2022, at Asilomar Conference Grounds in Pacific Grove, California. This preeminent conference attracts a diverse group of professionals to discuss cutting-edge technologies, strategies, and programs for reducing energy use in buildings and addressing climate impacts. (ERPA Funding) Contact: Laura Castaneda

Before the Pledge of Allegiance was heard, Chair Hochschild announced Commissioner McAllister and Commissioner Vaccaro will not be joining the business meeting.

Vice Chair Gunda moved to approve Item 1. Commissioner Monahan seconded. The vote was (3-0).

2. Thomas Gates, Ph. D.

Proposed resolution recognizing and commending Thomas Gates for his contributions to the CEC. Contact: Noemi Gallardo (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 2. Commissioner Monahan seconded. The vote was (3-0).

3. Information Item on Reliability Update.

Staff will provide an update on the CEC analysis conducted in support of summer and mid-term reliability and share information about the May 20 Summer and Midterm Reliability Workshop. Contact: David Erne (Staff Presentation: 10 minutes)

David Erne presented an overview on reliability update. Informational item only, no vote was taken.

4. STACK Trade Zone Park (21-SPPE-02).

Proposed order appointing a committee of two commissioners to preside over the small power plant exemption (SPPE) proceeding and any other proceedings arising

from the application filed by STACK Infrastructure between December 10, 2021, and April 11, 2022. The STACK Trade Zone Park, proposed at 2400 Ringwood Avenue and 1849 Fortune Drive in San Jose, would include the SVY Backup Generating Facility (SVYBGF), which would include 36 3-megawatt (MW) and two 1-MW diesel-fired emergency backup generators, providing up to 90 MW of backup emergency generation if electricity cannot be supplied by the utility, Pacific Gas and Electric Company. As the lead agency under the Warren-Alquist Act and CEQA, the CEC will prepare the appropriate environmental document. If an SPPE is granted, SVYBGF would be exempt from CEC jurisdiction and the STACK Trade Zone Park would be subject to permitting by the City of San Jose and other agencies. Contact: Eric Knight (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 4. Commissioner Monahan seconded. The vote was (3-0).

5. La Paloma Generating Plant (LPGP) Petition to Amend (98-AFC-02C).

Proposed order amending the CEC's certification of LPGP to allow for the installation of a diesel-fired emergency standby electrical generator to power the existing West Kern Water District pump station water pumps for process/cooling water at LPGP in the event of electrical grid power loss, and adopting staff's determination that this action would not have a significant adverse impact on the environment and is exempt from CEQA. Contact: Elizabeth Huber (Staff Presentation: 10 minutes)

Vice Chair Gunda moved to approve Item 5. Commissioner Monahan seconded. The vote was (3-0).

6. Delegation of Geothermal Certification Authority Regulations (Docket No. 21-OIR-02).

Proposed resolution approving amendments of geothermal certification authority regulations to simplify the process for the CEC to delegate full authority for the certification of geothermal power plants within a county that has adopted a geothermal element for its general plan and demonstrates that it has an equivalent certification program (California Code of Regulations, title 20, sections 1860-1870), and finding this action is exempt from CEQA. This action comes after a 45-day public comment period and a public hearing on April 14, 2022. Contact: Reneé Webster-Hawkins (Staff Presentation: 5 minutes)

Commissioner Monahan moved to approve Item 6. Vice Chair Gunda seconded. The vote was (3-0).

7. Field Verification and Diagnostic Testing Program.

Proposed order instituting two related rulemaking proceedings: 1) to consider updates and amendments to the Home Energy Rating System (HERS) program regulations (California Code of Regulations, title 20, sections 1670-1675), and 2) to consider updates and amendments to the Building Energy Efficiency Standards (California Code of Regulations, title 24, parts 1 and 6, as necessary to improve regulatory alignment, improve CEC oversight, improve program performance, and

amend and clarify other sections as necessary. Contact: Ronnie Raxter (Staff Presentation: 5 minutes)

Commissioner Monahan moved to approve Item 7. Vice Chair Gunda seconded. The vote was (3-0).

8. Certification of the 2022 Energy Code Compliance Manuals.

Proposed resolution certifying the *2022 Single-Family Residential Compliance Manual* and the *2022 Nonresidential and Multifamily Compliance Manual* for the 2022 Building Energy Efficiency Standards, as required by Public Resources Code section 25402.1(e), and adopting staff's determination that this action is exempt from CEQA. The compliance manuals are a part of a package of guidance documents that are required by Public Resources Code section 25402.1(e), and act as a reference and instructional guide to aid in the design and construction of energy-efficient buildings. Contact: Bach Tsan (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 8. Commissioner Monahan seconded. The vote was (3-0).

9. National Lighting Contractors Association of America (NLCAA) Amendment to Provider Application.

Proposed resolution approving the NLCAA amendment to their acceptance test technician certification provider application. The proposed amendment would alter the quality assurance and accountability onsite audit procedures included in the application to allow NLCAA to continue to meet requirements contained in the 2019 Building Energy Efficiency Standards. Contact: Daniel Wong (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 9. Commissioner Monahan seconded. The vote was (3-0).

10. United States Department of Energy (DOE).

Proposed resolution ratifying MOU-21-001 to add the CEC as a participant in a DOE-led memorandum of understanding (MOU). The MOU establishes a collaboration for accelerating the development and commercialization of vehicle-to-everything (V2X) technologies. The collaboration is expected to include automakers, charging equipment providers, industry associations, labor unions, utilities, national labs, public agencies, and other V2X-related stakeholders. Contact: Jeffrey Lu (Staff Presentation: 10 minutes)

Commissioner Monahan moved to approve Item 10. Vice Chair Gunda seconded. The vote was (3-0).

11. innos Inc.

Proposed resolution approving Agreement 600-21-009 with innos Inc. for a \$910,000 contract to conduct an electric vehicle (EV) charging interoperability testing symposium in California, and adopting staff's determination that this action is exempt from CEQA. (CTP Funding) Contact: Jeffrey Lu (Staff Presentation: 5 minutes)

Commissioner Monahan moved to approve Item 11. Vice Chair Gunda seconded. The vote was (3-0).

After Item 11 was heard, Chair Hochschild announced we will go through Item 12 then break for lunch and reconvene.

12. Charging Access for Reliable On-Demand Transportation Services (GFO-21-601).

This solicitation sought proposals to fund the expanded availability of EV charging infrastructure for high mileage on-demand transportation services including services such as ride-hailing, taxis, and meal and grocery delivery. (CTP and General Fund Funding) Contact: David Wensil (Staff Presentation: 10 minutes)

- a. The Latino Equity Advocacy & Policy Institute (LEAP). Proposed resolution approving Agreement ARV-21-063 with The LEAP Institute for a \$415,288 grant to install four direct current fast chargers, solar carports, and storage batteries in Huron, California, to support the Green Raiteros EV fleet and public, and adopting staff's determination that this action is exempt from CEQA.
- b. TeraWatt Infrastructure, Inc. Proposed resolution approving Agreement ARV-21-065 with TeraWatt Infrastructure, Inc. for a \$1,996,481 grant to install EV charging infrastructure for ride-hailing fleets in Santa Ana, California, and adopting staff's determination that this action is exempt from CEQA. The proposed project will install seven direct current fast chargers and 12 dual-port Level 2, 48A chargers.
- c. KIGT, Inc. Proposed resolution approving Agreement ZVI-21-019 with KIGT, Inc. for a \$1,999,425 grant to design and build an EV charging plaza in Ontario, California, and adopting staff's determination that this action is exempt from CEQA. The plaza will serve transportation network company (TNC) drivers and other EV drivers, reduce deadhead miles (miles driven with no passenger or cargo) for TNC drivers, and demonstrate a replicable business model. In addition, the project includes a match-funded microgrid with 2 MW of solar PV and 500 kWh of battery storage. Signage for existing EV chargers to be dedicated to TNC drivers will be placed in three locations: Los Angeles, San Diego, and Riverside.
- d. EVgo Services LLC. Proposed resolution approving Agreement ZVI-21-020 with EVgo Services LLC for a \$1,698,515 grant to provide 30 direct current fast charger stalls for high mileage on-demand transportation services at two sites in San Francisco and at the Oakland International Airport, and adopting staff's determination that this action is exempt from CEQA.

Commissioner Monahan moved to approve Item 12. Vice Chair Gunda seconded. The vote was (3-0).

After Item 12 was voted on, Chair Hochschild announced a lunch break and reconvene at 1:30 p.m.

Chair Hochschild reconvened the meeting at 1:30 p.m.

13. San Diego Community College District (SDCCD).

Proposed resolution approving Amendment 2 to Agreement 600-18-005 with SDCCD to increase funding by \$1,800,000, revise the Scope of Work to add training for incumbent fleet technicians, add up to six colleges as sub-recipients to augment existing medium-and heavy-duty truck programs to develop zero-emission truck and infrastructure curricula, extend the term of the Agreement by 24 months, and add special terms and conditions due to the new term extending beyond the liquidation deadline for the original funds. (CTP Funding) Contact: Larry Rillera (Staff Presentation: 5 minutes)

Commissioner Monahan moved to approve Item 13. Vice Chair Gunda seconded. The vote was (3-0).

14. IDEAL ZEV Workforce Pilot Project (GFO-21-602).

This solicitation sought proposals for workforce training and development that support ZEV, ZEV infrastructure, and ZEV-related commercial technologies in priority communities of California. (CTP Funding) Contact: Larry Rillera (Staff Presentation: 10 minutes)

- a. Fresno City College (FCC). Proposed resolution approving Agreement ARV-21-056 with FCC for a \$500,000 grant to develop curricula and conduct ZEV instruction and training for high school and college automotive students in the Fresno region, and adopting staff's determination that this action is exempt from CEQA.
- b. Housing Authority of the County of San Joaquin (HACSJ). Proposed resolution approving Agreement ARV-21-057 with the HACSJ for a \$500,000 grant to conduct ZEV training and workforce development and conduct outreach, and adopting staff's determination that this action is exempt from CEQA.
- c. County of Los Angeles. Proposed resolution approving Agreement ARV-21-058 with the County of Los Angeles for a \$499,530 grant to develop and conduct EV charging infrastructure training, Electric Vehicle Infrastructure Training Project (EVITP) training and certification, and adopting staff's determination that this action is exempt from CEQA.
- d. National Indian Justice Center, Inc. (NIJC). Proposed resolution approving Agreement ARV-21-059 with NIJC for a \$500,000 grant to develop and conduct ZEV and EVITP workforce training and certification for California Native American Tribal trainees in Humboldt and San Diego counties, and adopting staff's determination that this action is exempt from CEQA.
- e. California State University Long Beach (CSULB) Research Foundation. Proposed resolution approving Agreement ARV-21-060 with CSULB Research Foundation for a \$499,908 grant to develop ZEV engineering curricula and conduct instruction and lab training for students, and adopting staff's determination that this action is exempt from CEQA.
- f. Los Angeles Pierce College. Proposed resolution approving Agreement ARV-21-061 with Pierce College for a \$500,000 grant to develop a ZEV Technology

Training Program with curriculum and instruction for students, and adopting staff's determination that this action is exempt from CEQA.

- g. Cal State Los Angeles University Auxiliary Services, Inc. (UAS). Proposed resolution approving Agreement ARV-21-062 with UAS for a \$499,994 grant to develop curriculum and instruct and train engineering students on ZEV and hydrogen refueling stations, and adopting staff's determination that this action is exempt from CEQA.
- h. Green Paradigm Consulting, Inc. Proposed resolution approving Agreement ARV-21-064 with Green Paradigm Consulting, Inc. for a \$250,000 grant to develop and conduct an EV Charging Technician Training Program for military personnel and facilitate job placement, and adopting staff's determination that this action is exempt from CEQA.
- i. West Oakland Job Resource Center (WOJRC). Proposed resolution approving Agreement ARV-21-066 with WOJRC for a \$350,000 grant to develop curriculum and conduct ZEV training for the transportation, distribution, and logistics industry workforce at and adjacent to the Port of Oakland, and adopting staff's determination that this action is exempt from CEQA.

Commissioner Monahan moved to approve Item 14. Vice Chair Gunda seconded. The vote was (3-0).

15. NORESKO, LLC.

Proposed resolution approving Agreement 400-21-004 with NORESKO, LLC for a \$7,500,000 contract to lead a team of professional architectural and engineering consultants to provide technical support for developing, updating, and maintaining the California Energy Code for nonresidential, single-family residential, and multifamily buildings. (ERPA and COIA Funding) Contact: Elizabeth Thomsen (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 15. Commissioner Monahan seconded. The vote was (3-0).

16. Bruce A. Wilcox, P.E. Inc.

Proposed resolution approving Agreement 400-21-003 with Bruce A. Wilcox, P.E. Inc. for a \$4,500,000 contract to lead a team of professional architectural and engineering consultants to provide technical support for developing, updating, and maintaining residential and nonresidential compliance documents, performance modeling tools, and related materials to support the California Energy Code. (COIA Funding) Contact: Elizabeth Thomsen (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 16. Commissioner Monahan seconded. The vote was (3-0).

17. Advancing Cost and Efficiency Improvements for Low Carbon Hydrogen Production (GFO-21-502).

This solicitation sought proposals for applied research and development and technology demonstration and deployment projects that will address the technical

and economic challenges of producing hydrogen from carbon-neutral production pathways in accordance with the Emerging Renewable Hydrogen Production research initiative in the Fiscal Year 2020-2021 Natural Gas Budget Plan. (Gas R&D Funding) Contact: Baldomero Lasam (Staff Presentation: 5 minutes)

- a. The Regents of the University of California at on behalf of the Los Angeles (UCLA). Proposed resolution approving Agreement PIR-21-004 with UCLA for a \$749,999 grant to advance a novel technology that uses solar energy to convert low carbon hydrogen gas into clean hydrogen, and adopting staff's determination that this action is exempt from CEQA.
- b. Technology & Investment Solutions, LLC. Proposed resolution approving Agreement PIR-21-005 with Technology & Investment Solutions, LLC, for a \$1,926,287 grant to demonstrate and deploy a pilot-scale low carbon, hydrogen production system in Southern California, and adopting staff's determination that this action is exempt from CEQA. This project will build upon the existing anaerobic digestion and catalytic reformer system. The project will integrate proven process components consisting of a water gas shift reactor, pressure swing adsorption system, and hydrogen storage systems. The integration of these technologies will increase hydrogen production, achieve high hydrogen purity, and allow pipeline injection or local distribution.

Commissioner Monahan moved to approve Item 14. Vice Chair Gunda seconded. The vote was (3-0).

18. The Next EPIC Challenge: Reimagining Affordable Mixed-Use Development in a Carbon-Constrained Future – GFO-20-305.

This solicitation sought proposals to fund a design-build competition that will challenge multi-disciplinary project teams to design and build a mixed-use development using cutting-edge energy technologies, tools, and construction practices that is affordable, equitable, emissions-free, and resilient to climate change impacts and extreme weather events. (EPIC Funding) Contact: Rachel Salazar (Staff Presentation: 5 minutes)

- a. Association for Energy Affordability, Inc. Proposed resolution approving Agreement EPC-21-030 with Association for Energy Affordability, Inc., for a \$999,315 grant to fund a zero-carbon alternate design for an eight-story, 100 percent affordable housing project in San Jose, California, and adopting staff's determination that this action is exempt from CEQA. The design will be scalable, grid-resilient, and reduce costs and emissions by islanding from the main grid from 4:00 to 9:00 p.m. and reserving a minimum of 20 percent of the building's peak load to be managed or curtailed in response to grid conditions, while safeguarding resident health and autonomy.
- b. Self-Help Enterprises. Proposed resolution approving Agreement EPC-21-031 with Self-Help Enterprises for a \$1,000,000 grant to engage a multidisciplinary team to design a zero net energy, all-electric, mixed-use, transit-oriented affordable housing community in Visalia, California, and adopting staff's determination that this action is exempt from CEQA. This project will enable the

evaluation and integration of emerging energy technologies and construction practices using advanced analysis methods to create an affordable, equitable, decarbonized, resilient, and replicable development.

- c. SoLa Impact Opportunity Zone Fund, LP. Proposed resolution approving Agreement EPC-21-032 with SoLa Impact Opportunity Zone Fund, LP, for a \$1,000,000 grant to design the Making Green Accessible affordable housing project with 50 or more sustainable, low-impact, zero-emissions homes in Compton, California, and adopting staff's determination that this action is exempt from CEQA. Centered around a mixed-use Resilience Hub, the project will provide innovative green technologies combined with an environmentally and socially conscious financial structure to establish a self-sustaining, resilient ecosystem.

Vice Chair Gunda moved to approve Item 18. Commissioner Monahan seconded. The vote was (3-0).

19. Lawrence Berkeley National Laboratory.

Proposed resolution approving Agreement EPC-21-033 with Lawrence Berkeley National Laboratory for a \$4,000,000 grant to investigate the impact of cooking electrification, ventilation, and other interventions on indoor air quality and the respiratory health of children with asthma in under-resourced communities in California, and adopting staff's determination that this action is exempt from CEQA. This research will help guide policies related to building electrification, investments in low-income housing retrofits, and asthma and healthy homes programs to mitigate the environmental and health impacts of energy end uses in California. (EPIC Funding) Contact: Maninder Thind (Staff Presentation: 5 minutes)

Vice Chair Gunda moved to approve Item 19. Commissioner Monahan seconded. The vote was (3-0).

20. CalSEED Concept and Prototype Small Grant Awards 2022.

Proposed resolution approving 23 "Concept Award" small grants totaling \$3.45 million and 7 "Prototype Award" follow-on grants totaling \$3.15 million from the EPIC California Sustainable Energy Entrepreneur Development (CalSEED) Initiative administered by CalCEF Ventures, and adopting staff's determination that this action is exempt from CEQA. These grants were competitively selected by the CalSEED Technical Advisory Committee and are recommended for funding. Individual Concept Awards are for a maximum of \$150,000 each and Prototype Awards are for a maximum of \$450,000 each. (EPIC Funding) Contact: Josh Croft and Anthony Ng (Staff Presentation: 15 minutes)

a. CalSEED Initiative (21-01)

- i. Kepler Energy Systems, Inc., Kepler Extensible Energy System, Michelle Lau, \$150,000. The goal of this project is to build a full-scale prototype of a compressed air energy storage system that utilizes a machine learning controller and historical and real-time data to continuously shape operations to meet peak demands. Storage tanks will be configured to maximize ambient heat transfer and minimize thermodynamic losses.

- ii. Modulum Inc, Modular Thermo-electric Refrigeration Systems, Anahat Sahay, \$150,000. The goal of this project is to develop a modular thermo-electric refrigeration unit that can efficiently preserve perishable items of concern such as medicines, dairy, vaccines, and produce. The innovation utilizes solid-state Peltier coolers that can be individually activated depending on total cooling needs, which enhances energy efficiency.
- iii. Summation Lab, ERS Multi-Stage-Gasifier Powergen: For Small Particle and High Moisture-Content Biomass, Milan Alex, \$150,000. The goal of this project is to develop a multistage gasifier system that transforms biomass like wood chips and almond shells into renewable energy in the form of a fuel gas (syngas) and electricity without incinerating the biomass. This innovation can process low-grade biomass with high fines (up to 20 percent) and moisture content (up to 40 percent) to produce renewable energy in a cost-effective manner compared to existing gasification technologies.
- iv. HyVerde LLC, Hybrid Battery Management System, Ricardo Castro, \$150,000. The goal of this project is to design and demonstrate a hybrid battery management system that can be integrated into an EV to enable multiple types of battery chemistries and reduce temperature and charge variations across a battery. The innovation, “hybrid battery balancing,” can control the power to or from each battery module at a greater level of granularity, introducing new degrees of freedom that can change the design and operation of battery-based electric powertrains to improve the sustainability, energy efficiency, longevity, and safety of battery-based EV.
- v. Perch Sensing Inc., Distributed Real-Time Monitoring and Control for Resilient Power Infrastructures, Dominic Gaiero, \$150,000. The goal of this project is to develop a distributed real-time monitoring and control system that significantly improves the resiliency of power infrastructure. The proposed system is based on novel self-energized low-cost distributed sensors that are “perched” on utility infrastructure and provide fine-grained power and environmental data more efficiently than existing approaches. This innovation will significantly improve power-infrastructure resiliency by helping utilities 1) predict and prevent potential utility-based ignition events, 2) more efficiently manage power flow during preemptive and emergency shutoffs, and 3) increase the integration of microgrids, distributed energy storage, and power-electronics devices.
- vi. kWh Bot, kWhBot – EV Charging Autonomous Robots, Robert Freeman, \$150,000. The goal of this project is to engineer autonomous robotic EV chargers that will deliver charge to EVs automatically at any parking spot in the service area. kWhBot robots will shuttle kWhBot battery slates from charging stations to parking spots within any lot equipped with the technology. These autonomous robots are developed using Segway and NVidia tech, and will navigate batteries to EVs, charge the vehicle, and later return the battery to the station as coordinated through the kWhBot software, partner apps, and Microsoft platform cloud-hosted services.

- vii. Horizon PV Inc., Semitransparent Organic Solar Panels for Building-Integrated Photovoltaics, Yang Yang, \$150,000. The goal of this project is to develop a thin-film solar cell, which is semi-transparent, flexible, and can be laminated to glass surfaces or on walls, capable of generating clean renewable electricity from solar windows in buildings and vehicles. Made from a novel polymer, semi-transparent organic photovoltaic panels, this technology allows the visible portion of sunlight to penetrate through while utilizing the infrared portion of sunlight to generate electricity.
- viii. Ariya LLC dba Ariya Energy, Low-cost Solid-State Sodium Battery for Stationary Energy Storage, Arthur Kariya, \$150,000. The goal of this project is to develop a solid-state polymer electrolyte for low-cost sodium batteries. This polymer electrolyte has high ionic conductivity and enables the use of sodium (rather than the more expensive lithium) while simplifying manufacturing.
- ix. RCAM Technologies, Inc., Low Cost, Additively Manufactured Marine Pumped HydroElectric Storage, Gabriel Falzone, \$150,000. The goal of this project is to develop Marine Pumped Hydroelectric Storage pods that can integrate with California's floating offshore wind farms to create offshore renewable hybrid energy systems. The proposed innovation is a long-duration energy storage technology that stores and releases energy in 3D concrete printed spheres arranged in a rigid pod of spheres connected to a pump/turbine/generator module installed on the seafloor.
- x. OmniFlow Inc., Low Pressure, Low Flow, Anti-Clogging Irrigation Device, Frank Zhu, \$150,000. The goal of this project is to develop a water and energy-saving irrigation device with a terminal control component for precision irrigation that has anti-clogging abilities and lowers cost. The self-cleaning irrigation emitter uses topological space design to achieve high-level resistance to blockage in small spaces. This special material structure can make the flow channel close to the size of the particles and can ensure the continuity and stability of the space when the particles are passed through.
- xi. Discrete Lattice Industries, LLC, Discrete Cellular Building Systems, Benjamin Jenett, \$150,000. The goal of this project is to develop a modular construction system for cellular building systems that offer significant cost and material savings through mass production and automation while offering novel combinations of performance and sustainability. The proposed innovation is based on unique, man-made materials whose properties are controlled by modifying the internal cellular structure rather than just the composition. This allows for structures with record-setting stiffness at super low density.
- xii. Rivieh, Inc., Rivieh Smart Building Platform, Mustafa Homs, \$150,000. The goal of this project is to develop a smart building energy management system designed for residential buildings. This innovation will integrate a new sensor technology, millimeter-wave radar, within the form factor of light switches. The additional perception level acquired by this sensor will allow a distributed autonomous controller to be deployed among identical light switches to

manage most of the building's loads using existing infrastructure and without adding additional complexity or cost.

- xiii. Community Energy Labs, Inc., Easy Does It - Automated Model Input for Building Control, Tanya Barham, \$150,000. The goal of this project is to develop a low-cost grid-interactive building control platform that can autonomously and flexibly manage energy and shape electricity demand for K-12, municipal, and small to mid-sized buildings. The innovation utilizes a dynamic model of predictive control that autonomously optimizes energy, pricing, and comfort without placing an undue burden on control professionals or building operators to set up or maintain. This proposal is for architecture and a method for automating the selection and collection of appropriate inputs, outputs, constraints, and training data needed to accurately instantiate a model-based controller for load shaping and management, saving customers' time, labor, and tens of thousands of dollars compared to standard approaches to model-predictive control setup and calibration.
- xiv. Solarflux Energy Technologies, Inc., Solar Thermal Energy Powered Water Desalination and Purification System, Naoise Irwin, \$150,000. The goal of this project is to develop a modern, low-cost distributed water treatment solution using an energy efficient membrane distillation process that is powered by a solar thermal concentrator, providing a source of potable water in a compact, turnkey package. Membrane distillation is an emerging water desalination and purification process relying on thermal energy at low pressures and temperatures, facilitating safe, low-cost distributed water treatment.
- xv. Tyfast Energy Corp., Unifying Vehicles and Grid with Ultralong Cycle Life Solid-State Batteries, GJ la O', \$150,000. The goal of this project is to develop a long-lasting, solid-state battery cell with a novel anode material that allows for ultrafast charging without sacrificing safety and energy density. The proposed innovation will replace graphite with a disordered-rocksalt $\text{Li}_3\text{V}_2\text{O}_5$ (DRS-LVO) anode that provides higher Li-transport in the structure for fast cycling, a low material expansion for electrode stability and long cycle life, and ideal anode operating voltage for enhanced battery safety.
- xvi. Benchmark Labs, Inc., In-Situ Evapotranspiration Forecasts to Improve Farm Water Demand Estimates, Carlos Gaitan Ospina, \$150,000. The goal of this project is to develop a forecasting system that will provide hourly and daily forecasts of evapotranspiration and other environmental variables like temperature and relative humidity that are relevant for saving irrigation water. The proposed in-situ forecasting system is based on IoT sensor data, publicly available weather information, and a nonlinear bias-correction method, providing forecasts at the point of a specific in-situ sensor, not average conditions over a wider area like traditional approaches.
- xvii. Aeromutable Corporation, Controller and Sensor Integration for Optimized Electric Heavy-Vehicle Range Extension, David Manosalvas-Kjono, \$150,000. The goal of this project is to develop a device that will provide continuously optimized aerodynamic performance of heavy vehicles, reducing

energy consumption, and improving safety for the trucking industry while increasing their profitability through improved electric tractor range. A three-part system will have the ability to measure the micro-climate surrounding the vehicle and determine the optimum air injection configuration to change the tire pressure signature in the back of the trailer. This enhancement will reduce the energy consumption of the vehicle and allow for an increase in range using the same battery pack.

- xviii. ElectricFish Energy, Inc., 100 kW DC Microgrid with Interoperable Charging (200-950V Vehicle Architectures), Vince Wong, \$150,000. The goal of this project is to develop a direct current microgrid that can accommodate agnostic EV charging for current and future-ready voltage architectures with a minimal grid connection. The proposed innovation is a containerized microgrid, using one chipset that can support multiple brands of EV chargers with mini grid-scale batteries that can be charged at high- renewable-energy hours of the day to store clean energy – a single module that can support ultrafast charging but acts as a resource, rather than a liability for the grid.
- xix. Aepnus Technology Inc., Electrifying the Mining Industry, Lukas Hackl, \$150,000. The goal of this project is to develop an electrochemical technology platform that can synthesize critical battery minerals using electricity instead of carbon-intensive reagent chemicals. The proposal is a design concept termed “Electrochemical Lithium Conversion” for the electrified, single-step conversion of lithium extracted from domestic ore and brine deposits into industrially relevant salts (for use in EV) with minimal carbon, energy, and water footprint.
- xx. DarmokTech, Solid-State Cell and Packaging Designed for Recyclability and Cycle Life, Deepak Upadhyaya, \$150,000. The goal of this project is to develop a cell and packaging design to make solid-state batteries a viable replacement for conventional Li-ion technology for EVs and short-duration storage, which are fire-prone and difficult to recycle. The innovation is based on prismatic cell design with stacked electrodes and aluminum casing that will improve cycle-life by reducing interfacial resistance and Li- dendrite formation.
- xxi. TECSI Solar, Arcadia SR - Solar Simplified, Samuel Truthseeker, \$150,000. The goal of this project is to develop a solar panel for asphalt shingle roofs that integrates racking, flashing, hardware, and power electronics to simplify all rooftop components to a single unit, installed using a single tool. The fully integrated nature of the product means all necessary components are onboard the PV module, and only one tool is required. This makes installation simpler and significantly faster than current technologies.
- xxii. Korganotech Inc, Affordable Filter That Improves HVAC Efficiency and Kills Airborne Pathogens, Tim Leong, \$150,000. The goal of this project is to develop an energy-efficient and highly effective air-filtration system that consumes less energy compared to other air-purification technologies that are being applied to combat the spread of pathogens. Newer HVAC solutions

employ 100 percent fresh air instead of recirculated air, which doubles energy consumption. The proposed innovation is a reusable air filter that will contain a nanowire mesh embedded with bioactive nanoparticles to kill pathogens. This low-cost solution will allow the use of recirculated air while consuming almost no energy providing the most energy-efficient option to combat airborne pathogens.

- xxiii. Climformatics Inc., Localized Near-To-Long Term Climate Prediction to Prepare and Protect Communities, Subarna Bhattacharyya, \$150,000. The goal of this project is to build a predictive near-term forecasting tool with increased accuracy for localized fire weather forecasting that will help predict, prepare, and protect the energy grid infrastructure, utilities, and consumers from future wildfires. The goal of the product is to improve localized climate and weather predictions by developing technology that will compensate for missing sub-grid scale processes that are not yet included in weather and climate models by using available observations from the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration data products.
- xxiv. Tolo Inc., Remote Inspection Platform for Utility Infrastructure, Thomas Karagianes, \$450,000. The goal of this project is to continue to demonstrate a remote inspection platform for utility infrastructure using immersive photogrammetric imagery. Tolo pairs state-of-the-art cameras with unmanned aerial vehicles and collects thousands of detailed photos from every angle of a utility tower, capturing images with greater detail than what is visible to an inspector in the field at a lower cost.
- xxv. RePurpose Energy, Inc., Lithium-Ion Battery Fire Suppression System, Joe Lacap, \$450,000. The goal of this project is to continue to validate a system that tests, reassembles, and redeploys used EV batteries to store solar energy, creating lower-cost, more sustainable energy storage systems. The process begins by precisely measuring EV battery health in less than 90 seconds using machine learning. Then, battery reassembly is optimized into new circuits to maximize safety, efficiency, and longevity. Finally, the batteries are equipped with proprietary controls and fire suppression systems. This allows for repurposing used EV batteries safely for 7-10 years in “second-life” energy storage systems at roughly half the cost of new battery alternatives.
- xxvi. ALD Technical Solutions LLC, Novel Composites to Increase Power Lines Capacity and Decrease Sag, Davoud Zamani, \$450,000. The goal of this project is to build an installer of a lightweight, long-lasting, and cost-effective structural composite reinforcement system that will be wrapped around existing transmission lines to increase power capacity, extend lifespan, decrease sag, and improve reliability and resiliency of grid infrastructure with no downtime and minimal capital investment. The Composite Wire Wrap is a lightweight, high strength, long-lasting, cost-effective composite reinforcement system that withstands high temperatures. The product can be installed quickly and easily by this innovative robotic technology system and secured in

place around existing power lines.

- xxvii. Hago Energetics, Inc., Green Hydrogen from Biogas, Wilson Hago, \$450,000. The goal of this project is to demonstrate a technology that uses renewable energy to convert agricultural waste to green hydrogen for the transportation sector. This technology works by processing biogas generated from manure waste into a novel chemical reactor that produces hydrogen. This process uses minimal amounts of electricity or natural gas to create green hydrogen and uses agricultural waste as raw material, so more carbon is taken out of the atmosphere than is produced by the process. This feature, along with a special process that uses waste wood as a catalyst for this chemical conversion, makes this process unique.
- xxviii. Parthian Energy, Rapid Artificial Intelligence Screening to Significantly Reduce Cost of Battery Manufacturing, Michelle Mahshid Roumi, \$450,000. The goal of this project is to continue to develop a new class of advanced battery sensors, with applications in manufacturing quality control, ultrafast charging, and evaluating second-life capabilities. The Parthian Electromagnetic Sensor (PES) detects internal defects in lithium-ion battery cells by evaluating the change in the battery's electromagnetic signature. This process reduces unnecessary scrap, enhances safety, and enables higher energy density cells to be deployed into EVs and grid storage with decreased risk of thermal runaway.
- xxix. Leap Photovoltaics Inc., Cost and CapEx Reduction of Silicon Photovoltaics through Streamlined Manufacturing, David Berney Needleman, \$450,000. The goal of this project is to further develop a process to manufacture crystalline silicon solar cells without wafers. This additive manufacturing approach directly deposits a layer of silicon microparticles to a surface that absorbs sunlight and converts it to electricity, achieving the same performance and reliability as traditional solar cells at half the cost while enabling the use of local supply chains. This unique combination addresses the thin margins and supply chain disruptions of solar manufacturing and is more sustainable. Furthermore, this process makes direct integration of solar energy generation with new products like vehicles and roofing materials easier, opening new markets for solar energy.
- xxx. Gridware Inc., Improving Situational Awareness of Distribution Equipment during Extreme Weather Conditions, Tim Barat, \$450,000. The goal of this project is to demonstrate a system of low-cost, solar-powered, sensor platforms that are deployed across a distribution grid to provide real-time monitoring and fault anticipation. Gridware's solution is centered around a primarily mechanical sensor package that characterizes and monitors the behavior of the electric distribution system. This introduces a way to mechanically monitor the system as opposed to the traditional electrical monitoring that is currently employed by utilities. Mechanical monitoring can reveal the weakening of the system as it ages, identify components that have loading beyond normal conditions, and indicate precursors to critical failures.

The solution can further be deployed into real-time control to de-energize the system before failure.

Vice Chair Gunda moved to approve Item 20. Commissioner Monahan seconded. The vote was (3-0).

21. Minutes.

Possible approval of the April 26, 2022, Business Meeting minutes.

Vice Chair Gunda moved to approve Item 21. Commissioner Monahan seconded. The vote was (3-0).

22. Lead Commissioner or Presiding Member Reports.

The Commissioners reported on their recent activities.

23. Executive Director's Report.

The Executive Director gave a report.

24. Public Advisor's Report.

The Public Advisor had nothing to report.

25. Public Comment.

No public comment.

26. Chief Counsel's Report.

Pursuant to Government Code section 11126(e), the CEC may adjourn to closed session with its legal counsel to discuss any of the following matters to which the CEC is a party:

- i. *Interlink Products International, Inc. v. Xavier Becerra, Drew Bohan, Melissa Rae King (United States District Court for the Eastern District of California, Case No. 2:20-cv-02283).*

Pursuant to Government Code section 11126(c)(3), the CEC may hold a closed session to deliberate on a decision to be reached in a proceeding required to be conducted pursuant to Chapter 5 (commencing with Section 11500) or similar provisions of law:

- i. *In the matter of Pecho Energy Storage Center (Docket No. 21-AFC-01).*
- ii. *In the matter of Gem Energy Storage Center (Docket No. 21-AFC-02).*

The Chief Counsel had nothing to report, but recommended the Commissioners break for a closed session to discuss agenda Item 26(i).

Appearances:

Scott Galati, DayZen, LLC

Armando Ramirez

Sarah Blair, NORESKO, LLC

Alanna Torres, California Statewide Codes and Standards Enhancement Team

Chris Ochoa, Esq., California Building Industry Association [statement read into the record] Rima Oueid, DOE

André Kaufung, innos Inc.

Jatomis Stevenson

Rey Leon, LEAP

David Schlosberg, TeraWatt

Jonathan Kropp, SDCCD

Tarecq Amer, West Oakland Job Resource Center

Raquelle Myers, National Indian Justice Center 14

Paul Sumal

Kristin Ainley, Self-Help Enterprises

Brett Singer, LBNL

Denise Rushing, New Energy Nexus

Gabriel Falzone, RCAM Technologies

Claire Warshaw

There being no further business meeting was adjourned.

Respectfully submitted,

LIZA LOPEZ
Secretariat