

State of California
California Energy Commission
Minutes of the September 21, 2018, Energy Commission Business Meeting

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

Present:

Robert B. Weisenmiller, Chair
Karen Douglas, Commissioner

J. Andrew McAllister, Commissioner
David Hochschild, Commissioner

THE COMMISSION WILL CONSIDER AND MAY TAKE ACTION ON THE FOLLOWING ITEMS:

1. CONSENT CALENDAR. (Items on the Consent Calendar 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. SUTTER ENERGY CENTER (SEC) PETITION TO AMEND (97-AFC-02C). Proposed order approving CCFC Sutter Energy, LLC's petition to amend existing Air Quality Condition of Certification AQ-32 to enhance operational flexibility and conformance with Sutter Energy Center's (SEC) Title V Operating Permit issued by the Feather River Air Quality Management District. The modification would impose a cumulative maximum limit on the duration of startups and shutdowns for both Combined-Cycle Gas Turbine Generators, replacing existing per-unit maximums. No changes to permitted emission limits are proposed, and the refinement to AQ-32 does not affect SEC's ability to comply with all applicable laws, ordinances, regulations and standards. Contact: John Heiser.
 - b. LA PALOMA GENERATING PLANT (98-AFC-02C). Proposed order granting the petition to transfer the ownership of the La Paloma Generating Plant from La Paloma Generating Company, LLC to CXA La Paloma, LLC. Contact: Mary Dyas.
 - c. ~~PIO PICO ENERGY CENTER (11-AFC-01C). Proposed order granting the petition to transfer the ownership of the Pio Pico Energy Center from Pio Pico Energy Center, LLC to Southwest Generation Operating Company, LLC. Contact: Joseph Douglas.~~
 - d. SEGS VIII PROJECT (88-AFC-01C). Proposed order granting the petition to transfer the ownership of the SEGS VIII Project, from Luz Partners Ltd. VIII to Terra-Gen, LLC. Contact: Joseph Douglas.
 - e. SEGS IX PROJECT (89-AFC-01C). Proposed order granting the petition to transfer the ownership of the SEGS IX Project, from Luz Partners Ltd. IX to Terra-Gen, LLC. Contact: Joseph Douglas.
 - f. PECHANGA BAND OF LUISEÑO INDIANS. Proposed resolution approving Agreement 700-18-002 with Pechanga Band of Luiseño Indians for \$4,999 to cofund the 2018 Tribal Energy Summit. The event will feature a dialogue among state agencies and California Native American tribal leadership concerning the identification, planning, and development of tribal renewable energy consistent with the state renewable energy goals. (ERPA funding) Contact: Jessica Bonitz.

- g. PROSPECT SILICON VALLEY. Proposed resolution approving Amendment 1 to mutually terminate Agreement EPC-15-064 with Prospect Silicon Valley. The grant was to demonstrate the installation of innovative technologies to retrofit an existing, low-income property to become zero net energy. The project can no longer be completed within the agreement term and meet the solicitation requirements. Contact: Jackson Thach.
- h. ASSOCIATION OF WOMEN IN WATER, ENERGY AND ENVIRONMENT (AWWEE). Proposed resolution approving a \$2,100 purchase order with AWWEE for a one-year, commission-wide membership. This membership level allows up to 20 Energy Commission staff to attend any given AWWEE event during the membership year. AWWEE provides its members with multiple venues for learning, sharing, and professional development while connecting with industry experts from the state, local, and private sectors. (ERPA funding) Contact: Tiffany Solorio.
- i. ASSOCIATION OF WOMEN IN WATER, ENERGY AND ENVIRONMENT (AWWEE). Proposed resolution approving a \$4,999 purchase order with AWWEE to co-sponsor the 2018 Member-Only Leadership & Professional Development Conference in La Jolla, California taking place November 1-2, and approving use of the California Energy Commission logo in co-sponsorship advertisements. This co-sponsorship will provide members opportunities to promote Energy Commission programs while they develop skills and strategies to support their professional growth, and enhance their effectiveness within their organizations. (ERPA funding) Contact: Tiffany Solorio.

Commissioner Douglas moved Item 1 and Commissioner McAllister seconded. The Chair announced Commissioner Scott is absent. The vote was 4-0.

- 2. INFORMATIONAL PRESENTATION ON CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT. On August 27, 2018, California released new climate science and planning tools to prepare for climate change impacts. The compilation of original climate research includes 44 technical reports and 13 summary reports on climate change impacts to help ready the state for a future punctuated by severe wildfires, more frequent and longer droughts, rising sea levels, increased flooding, coastal erosion and extreme heat events. The peer-reviewed research translates global models into scaled-down, regionally relevant reports to fill information gaps and support decisions at the local, regional, and state levels. Contact: Susan Wilhelm. (Staff presentation: 10 minutes)

Staff presented Information Item 2.

- 3. CALIFORNIA PUBLIC UTILITIES COMMISSION AGREEMENT. Proposed resolution approving Amendment #1 to Agreement RMB700-17-001 (CPUC Agreement 17IA5007) with the California Public Utilities Commission (CPUC) that has the Energy Commission providing technical consulting services required for review of transmission projects in compliance with the California Environmental Quality Act (CEQA). This amendment adds other types of CPUC jurisdictional infrastructure projects seeking permits to build, which include natural gas storage and pipelines, and water and telecommunication projects. The environmental review will be conducted pursuant to CEQA and CPUC procedures. Contact: Al Alvarado. (Staff presentation: 5 minutes)

Commissioner Douglas moved Item 3 and Commissioner McAllister seconded. The vote was 4-0.

- 4. ASPEN ENVIRONMENTAL GROUP. Proposed resolution approving Agreement 700-18-001 with Aspen Environmental Group for a \$950,000 contract to assist in evaluating applications for energy facilities and transmission corridor designations; monitoring

compliance for permitted facilities; reviewing petitions to amend or modify permitted facilities; greenhouse gases and global climate change and natural gas pipeline safety assessments; and supporting other activities in the areas of environmental impact assessment, engineering, and related regulatory matters. (EFLCF funding) Contact: Angelique Juarez. (Staff presentation: 5 minutes)

Commissioner Douglas moved Item 4 and Commissioner McAllister seconded. The vote was 4-0.

5. ~~2019 UPDATE TO THE VOLUNTARY BUILDING ENERGY EFFICIENCY STANDARDS. Proposed resolution approving the 2019 update to the voluntary Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 11, also published as the California Green Building Standards (CALGreen). The California Building Standards Commission is expected to approve the Energy Commission amendments to Part 11 as part of their triennial update to the Title 24 California Building Standards Code by January 2019; approved updates will have an effective date of January 1, 2020. Contact: Ingrid Neumann. (Staff presentation: 5 minutes)~~

No discussion of or action taken on Item 5.

6. CITY OF DEL MAR. Proposed resolution finding that the city of Del Mar's locally adopted building energy standards will require equal or greater energy efficiency than the 2016 Building Energy Efficiency Standards. The ordinance requires all new non-residential construction and non-residential remodels with a construction valuation over \$150,000, as verified by the city building official, to adhere to the 2016 CALGreen Tier 1 standards. These local amendments do not apply to residential construction or to non-residential construction projects under \$150,000 valuation. Contact: Ingrid Neumann. (Staff presentation: 5 minutes)

Commissioner McAllister moved Item 6 and Commissioner Douglas seconded. The vote was 4-0.

7. NORESCO, LLC. Proposed resolution approving Agreement ~~400-17-007~~ 400-18-002 with NORESCO, LLC, for a \$3,750,000 agreement to provide technical support for the Nonresidential Building Energy Efficiency Standards process. (ERPA and COIA funding) Contact: Adrian Ownby. (Staff presentation: 5 minutes)

Commissioner McAllister moved Item 7 and Commissioner Douglas seconded. The vote was 4-0.

8. FIRSTELEMENT FUEL, INC. Proposed resolution approving Agreement ARV-18-001 with FirstElement Fuel, Inc. for a \$300,000, three-year grant to cover operation and maintenance costs of the existing hydrogen refueling station located at 3102 Thousand Oaks Boulevard, Thousand Oaks, CA 91362. The Recipient will collect and report data about the station equipment, operation, and utilization for a period of three years. The station serves the growing number of fuel cell electric vehicles deployed in California. (ARFVTP funding) Contact: Mark Johnson. (Staff Presentation: 5 minutes)

Commissioner McAllister moved Item 8 and Commissioner Douglas seconded. The vote was 4-0.

9. ELECTRIC POWER RESEARCH INSTITUTE, INC. Proposed resolution approving Agreement EPC-18-001 with Electric Power Research Institute, Inc. (EPRI) for a \$4,998,345 grant to demonstrate a standardized, high-DER microgrid to support a server farm building at the Naval Surface Warfare Center-Port Hueneme Division near Oxnard, CA. The data obtained on capital cost, operating cost, performance, and lessons learned

will support commercial deployment for both military and non-military applications. EPRI is providing \$3,502,754 in match funding. (Electric Program Investment Charge Program funding) Contact: David Erne.

Commissioner Douglas moved Item 9 and Commissioner McAllister seconded. The vote was 4-0.

10. CALIFORNIA CLEAN ENERGY FUND DBA CALCEF VENTURES. Proposed resolution approving 18 grant applications totaling \$2,639,000 from the EPIC Program's California Sustainable Energy Entrepreneur Development (CalSEED) Initiative Solicitation 18-01 administered by CalCEF Ventures, Contract 300-15-007. These grants are the first set of competitively selected awards from Solicitation 18-01 and are capped at \$150,000 each. (EPIC funding) Contact: Joshua Croft (15 minutes)
- a. CalSEED Initiative (18-01)
- i. Perigo Welding Works, Strathmore, CA, Perigo Hybrid Low Pressure Water Filtration System, PI: Steve Perigo, \$150,000. The goal of this project is to design and demonstrate a unique filtration system hardware component that has the potential to reduce energy consumption for agricultural micro/drip irrigation systems by 25-50%. By utilizing multiple filtering functions in one complete unit, this technology can operate and self-clean at about 75% less pressure than most current common systems.
 - ii. DTE Materials Incorporated, San Luis Obispo, CA, DTE Engineered Cellulose Insulation, PI: Jose Urizar, \$150,000. The goal of this project is to continue prototyping and product development for a building insulation material with improved performance, fire-resistance, and cost. The material is made with natural fiber additives instead of fiberglass but addresses the cost and settling issues common with natural fiber-based insulation.
 - iii. Stasis Group, Inc., Modesto, CA, Ducted Phase Change Material Cooling Proof of Concept, PI: Rob Morton, \$150,000. The goal of this project is to build a prototype of a ducted thermal energy battery integrated into a HVAC system, using phase change materials with instrumentation and variable heat and air flow inputs, to optimize the battery for energy savings. This technology aims to reduce the amount of energy required to condition the spaces we live and work in by eliminating up to 25% of the peak heating and cooling load of space conditioning systems.
 - iv. Empow Lighting, Sacramento, CA, LED Lighting Film for Low-Cost Retrofits of Fluorescent Lights, PI: Nick Masalitin, \$150,000. The goal of this project is to design and create a prototype for thin and flexible LED lighting sheets that can snap into existing fluorescent light fixtures. This technology solution is cheaper and more efficient than competing LED retrofit technologies such as TLEDs (tubular LEDs). Retrofitting linear light fixtures that still use fluorescent tubes with the proposed LED-based technology will result in more than a 50% energy savings.
 - v. University of California, Riverside, Riverside, CA, Enhancing Renewable Fuel Production with CO2 Microbubbles, PI: Arun Raju, \$150,000. The goal of this project is to demonstrate a low-cost way to double the rate of methane production during anaerobic digestion by using CO2 microbubbles. This technology can improve the financial viability of anaerobic digestion and enable cheaper fuel sources for power generation.

- vi. University of California, Riverside, Riverside, CA, Graphite-coated High Energy Density Powder, PI: Lorenzo Mangolini, \$150,000. The goal of this project is to increase the total energy capacity of commercial lithium-ion batteries by developing a silicon-carbon composite which will be used in place of graphite as an anode material. The team will also demonstrate a novel manufacturing process that addresses prior weaknesses associated with silicon-carbon composite for energy storage with a cost effective, scalable-by-design fabrication routine.
- vii. Smartville Energy LLC, Carlsbad, CA, Low-cost, Easy-to-integrate, Reliable Grid Energy Storage with 2nd Life Batteries, PI: Antonio Tong, \$150,000. The goal of this project is to develop a prototype plug-and-play inverter matrix that is able to independently control and monitor the health of a non-uniform set of aggregated second life batteries. The technology allows for batteries with different chemistries, form factors, and aging statuses. This will result in a low-cost grid energy storage solution that is easier to upkeep and maintain over the long term.
- viii. Ocean Motion Technologies, San Diego, CA, Hydrokinetic Power Buoy for Local and Grid-Scale Generation and Storage, PI: Jack Pan, \$139,000. The goal of this project is to develop a prototype mechanical buoy system that can harness oceanic wave energy to create compressed air. The compressed air can be used on demand to produce electricity through a turbine generator. This technology can support power resiliency in coastal California and at industry locations such as ports.
- ix. Crossno & Kaye, LLC, Santa Barbara, CA, Automated Thermal Flywheeling for the Cold Chain, PI: Jesse Crossno, \$150,000. The goal of this project is to further develop a software-based refrigeration control that safely overcools a temperature-controlled space based on the needs of the customer and peak hours. This will reduce the need for other forms of energy storage in industry as California moves to a renewable energy future.
- x. ETC Solar, LLC, Pasadena, CA, Invisible Front Contacts for Solar Cells, PI: Thomas Russell, \$150,000. The goal of this project is to develop a prototype front contact for solar cells that mitigates shading losses while increasing power output. This technique increases the power output of solar cells by 5% and therefore, can lower the dollar-per-watt performance of solar modules by 5%.
- xi. Cal State University Fullerton, Fullerton, CA, Low-Cost Portable Smart Wi-Fi Programmable Learning Bio-Mimicking Solar Shrub, PI: Sagil James, \$150,000. The goal of this project is to design "solar shrubs" that use thin film PV in bio-mimicking leaf designs. The technology will be created and prototyped using advanced multi-material 3D printing. The team hopes to later commercialize this technology as an easy-to-install and easy-to-move sustainable solar product for California homes.
- xii. Pronoia, Inc., Los Angeles, CA, Pronoia Energy Storage Device, PI: Daniel Lie, \$150,000. The goal of this project is to develop a novel energy storage prototype that uses quantum dipole technology to attempt to achieve exponential increases in energy capacity compared to lithium-ion batteries. Unlike conventional batteries, this technology has no electrolyte and separator and may introduce a new class of energy storage that has minimal capacity loss and decreased manufacturing costs in the long term.

- xiii. Pick My Solar, Los Angeles, CA, SolarBlock, PI: Gordon Algermissen, \$150,000. The goal of this project is to continue development on a block chain-based transaction platform for community solar projects. This technology will lower transaction costs while increasing reliability, speed, and accuracy for the community members buying and selling electricity.
- xiv. InPipe Energy, Manhattan Beach, CA, In-PRV (Pressure Recovery Valve) Renewable Energy Generation System, PI: Gregg Semler, \$150,000. The goal of this project is to demonstrate a technology that captures lost energy associated with pressure reduction valves in industrial water systems. The system fits onto existing pipeline infrastructure and will also increase the ability to dynamically and accurately control water pressure.
- xv. SkyCool Systems, Inc., Burlingame, CA, Cooling Mobile Data Centers with the Sky, PI: Eli Goldstein, \$100,000. The goal of this project is to develop a passive modular data center cooling system that uses radiative cooling. The panels cool without evaporating water and only require enough electricity to run a small circulating pump. This innovation will reduce data center energy and water use while reducing maintenance requirements.
- xvi. Palo Alto Research Center, Inc., Palo Alto, CA, Adaptive Current-Collectors for High-Efficiency Electric Vehicles, PI: Sean Dorris, \$150,000. The goal of this project is to develop and demonstrate a new class of printed electronics that can be coated onto battery current-collectors to limit the current and heating that occur during internal short-circuits, which could dramatically decrease the amount of crash protection EV batteries require and enable an increase in EV efficiency and range. This innovation will enable EV manufacturers to eliminate hundreds of kilograms in crash protection which will lower transportation-related electricity consumption and strain on the electric grid.
- xvii. GenH, San Jose, CA, The Mobile Envelope Dam Electrification System (MEDES), PI: Ron Freda, \$150,000. The goal of this project is to develop and test a prototype device that can retrofit irrigation canals and non-powered dams to produce electricity. The technology is designed to be rapidly deployable, taking 2-4 weeks instead of the 24+ months other hydropower installations take.
- xviii. FerroPower Technologies, Berkeley, CA, Near-Isothermal Liquid Piston Air Compressor/Expander with Magnetically Stabilized Ferro fluid, PI: Mohsen Saadat, \$150,000. The goal of this project is to prototype a near-isothermal air compressor/expander system that would enable Compressed Air Energy Storage technologies to achieve higher efficiency, higher power density, and meet a cost target of \$150/kWh. Instead of a solid piston, this technology uses a magnetically stabilized Ferro fluid-based liquid column. This method reduces the energy required to compress air and causes the system to operate at a higher round-trip efficiency.

Commissioner Hochschild moved and Commissioner McAllister seconded approval of Item 10. The vote was 4-0.

- 11. **Minutes.** Possible approval of the August 28, 2018 Business Meeting minutes.

Commissioner Douglas moved and Commissioner McAllister seconded approval of Item 11. Commissioner Hochschild abstained. The vote was 3-0.

12. **Lead Commissioner or Presiding Member Reports.** The Commissioners reported on their recent activities.
13. **Chief Counsel's Report:** None.
 - a. Pursuant to Government Code section 11126(e), the Energy Commission may adjourn to closed session with its legal counsel to discuss any of the following matters to which the Energy Commission is a party:
 - i. *In the Matter of U.S. Department of Energy (High Level Waste Repository)*, (Atomic Safety Licensing Board, CAB-04, 63-001-HLW); *State of California v. United States Department of Energy* (9th Cir. Docket No. 09-71014).
 - ii. *Communities for a Better Environment and Center for Biological Diversity v. Energy Resources Conservation and Development Commission, and California State Controller* (Alameda County Superior Court, Case No. RG13681262).
 - iii. *State Energy Resources Conservation and Development Commission v. Electricore, Inc. and ZeroTruck* (Sacramento County Superior Court #34-2016-00204586)
 - iv. *Natural Resources Defense Council, Inc., et al. v. United States Department of Energy* (Federal District Court, Northern District of California, #17-cv-03404).
 - v. *City of Los Angeles, acting by and through, its Department of Water and Power v. California Energy Resources Conservation and Development Commission* (Los Angeles Superior Court, Case No. BS171477).
 - vi. *State Energy Resources Conservation and Development Commission v. City of San Jose, JUM Global, L.L.C.* (Sacramento Superior Court, Case No. 34-2018-00230652).
 - b. Pursuant to Government Code section 11126(e), the Energy Commission may also discuss any judicial or administrative proceeding that was formally initiated after this agenda was published; or determine whether facts and circumstances exist that warrant the initiation of litigation, or that constitute a significant exposure to litigation against the Commission.
14. **Executive Director's Report.** The Executive Director gave a report.
15. **Public Adviser's Report.** None.
16. **Public Comment.** None.

Appearances:

(*by telephone)

*Paul Kristler, United States Navy

Dimitri Contoyannis, Noresco

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Shane Stephens, FirstElement Fuel, Inc.
Tenley Ann Dalstrom, California Clean Energy Fund
Zach Denning, EnerDapt

There being no further business, the meeting was adjourned.

Respectfully submitted,

CODY GOLDTHRITE
Secretariat