

State of California
California Energy Commission
Minutes of the April 12, 2017, 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

Janea A. Scott, Commissioner

Commissioner McAllister disclosed that his wife is a professor at UC Davis King Hall and that UC Davis is involved in Items 8, 16a and 16c. Commissioner Douglas disclosed that she is a professor at UC Davis King Hall and that UC Davis is involved in Items 8, 16a and 16c. The Chair announced that Item 1 will be held.

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

1. ENERGY COMMISSION COMMITTEE APPOINTMENTS. Possible approval of appointments to the Energy Commission's Standing Committees and Siting Case Committees. Contact: Kevin Barker. (Staff presentation: 5 minutes)

Item 1 was held. No action taken.

2. HUNTINGTON BEACH ENERGY PROJECT PETITION TO AMEND (12-AFC-02C). Consideration and possible order adopting the Presiding Member's Proposed Decision (PMPD) and Errata on the Petition to Amend the Huntington Beach Energy Project. The Committee issued the PMPD on February 24, 2017. The Amended Huntington Beach Energy Project is an 844 megawatt (MW) power generation facility. The proposed project would be located on the site of the existing Huntington Beach Generating Station, located at the northeast corner of the intersection of Pacific Coast Highway and Newland Street in Huntington Beach. Contact: Susan Cochran. (Staff presentation: 5 minutes)

Commissioner McAllister moved and Commissioner Douglas seconded approval of Item 2. The vote was unanimous (5-0).

3. ALAMITOS ENERGY CENTER APPLICATION FOR CERTIFICATION (13-AFC-01). Consideration and possible order adopting the Presiding Member's Proposed Decision (PMPD) and Errata on the Alamitos Energy Center Application for Certification. The Committee issued the PMPD on February 13, 2017. The Alamitos Energy Center Project is a 1040 megawatt (MW) power generation facility. The proposed project would be located on the site of the existing Alamitos Generating Station, located at 690 North Studebaker Road in the city of Long Beach, Los Angeles County, California. Contact: Kenneth Celli. (Staff presentation: 10 minutes)

Commissioner Douglas moved and Commissioner Scott seconded approval of Item 3. The vote was unanimous (5-0).

4. DISCUSSION OF RENEWABLE ENERGY DIVISION STREAMLINING EFFORTS. Informational presentation on program streamlining strategies implemented by the Renewable Energy Division to improve customer service and internal business processes across several key programs. The presentation will highlight specific examples from the New Solar Homes Partnership Program, Senate Bill 1 Solar Equipment Lists, and the Renewables Portfolio Standard Program. Contact: Le-Huy Nguyen. (Staff presentation: 10 Minutes)

Staff presented Information Item 4.

5. 2017-2018 INVESTMENT PLAN UPDATE FOR THE ALTERNATIVE AND RENEWABLE FUEL AND VEHICLE TECHNOLOGY PROGRAM. Proposed resolution approving the 2017-2018 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. The purpose of the program is to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change goals. The annual Investment Plan Update determines priorities and opportunities for the program, describes how funding will complement existing public and private efforts, and serves as a guide for funding decisions. Contact: Jacob Orenberg. (Staff presentation: 15 minutes)

Commissioner Scott moved and Commissioner Douglas seconded approval of Item 5. The vote was unanimous (5-0).

6. UPDATE TO DRIVING TO CLEANER TRANSPORTATION TOUR WEBPAGE. Overview of update to "Driving to Cleaner Transportation" webpage, which showcases the successes and benefits provided by projects funded under the Alternative and Renewable Fuel and Vehicle Technology Program. Contact: Amber Moran. (Staff presentation: 5 minutes)

Staff presented Information Item 6.

7. ZERO-EMISSION VEHICLE REGIONAL READINESS AND PLANNING SOLICITATION, GFO-16-601. This solicitation sought proposals to fund projects that will support new and existing planning efforts for zero-emission vehicles (battery-electric vehicles and hydrogen fuel cell electric vehicles, and including plug-in hybrid electric vehicles). (ARFVTP funding) Contact: Sharon Purewal. (Staff presentation: 5 minutes)
 - a. SAN LUIS OBISPO COUNTY AIR POLLUTION CONTROL DISTRICT. Proposed resolution approving Agreement ARV-16-015 with San Luis Obispo County Air Pollution Control District for a \$299,280 grant to implement their Zero Emission Vehicle (ZEV) regional readiness Plan. Activities include: creating an ombudsman position, conducting ZEV siting analysis, and conducting outreach to increase consumer acceptance of ZEVs and fleet adoption of medium- and heavy-duty ZEVs in the Central Coast region.
 - b. MONTEREY BAY UNIFIED AIR POLLUTION CONTROL DISTRICT. Proposed resolution approving Agreement ARV-16-016 with Monterey Bay Unified Air Pollution Control District for a \$289,942 grant to implement an updated Zero Emission Vehicle regional readiness plan. Implementation activities include site planning for electric vehicle (EV) chargers and efforts to increase public awareness and adoption of EVs that target disadvantaged communities within the Monterey region.

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 7. The vote was unanimous (5-0).

8. CENTER FOR SUSTAINABLE ENERGY. Proposed resolution approving Agreement ARV-16-017 with the Center for Sustainable Energy for an up to \$200,000,000 block grant to design, implement, and fund with Energy Commission oversight various electric vehicle charger incentive projects throughout California. The Energy Commission is currently providing \$15,254,225 in grant funds, and additional funds may be added up to \$200,000,000 at future dates. (ARFVTP funding) Contact: Brian Fauble. (Staff presentation: 5 minutes)

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 8. The vote was unanimous (5-0).

9. BERRYESSA UNION SCHOOL DISTRICT. Proposed resolution approving Agreement 003-16-ECG with Berryessa Union School District for a \$911,000 loan at zero percent interest to install more efficient interior lights, exterior lights and lighting controls. Annually, the project will save 202,035 kilowatt hours. By the end of the maximum loan repayment term, the project will have reduced utility bills by \$1,016,515. Based on the loan amount, the simple payback will be 17.8 years. (ECAA Funding) Contact: Monica Rudman. (Staff presentation: 5 minutes)

Commissioner McAllister moved and Commissioner Hochschild seconded approval of Item 9. The vote was unanimous (5-0).

10. 2016 NATURAL GAS ENERGY EFFICIENCY RESEARCH GRANTS FOR RESIDENTIAL AND COMMERCIAL BUILDINGS, GFO-16-502. This solicitation sought proposals to research, develop, validate, demonstrate and document advanced energy savings technologies and strategies to reduce natural gas use and greenhouse gas and other emissions in the Buildings End-Use Sector. (PIER NG funding) Contact: David Weightman. (Staff presentation: 5 minutes)

- a. UNIVERSITY OF CALIFORNIA, IRVINE. Proposed resolution approving Agreement PIR-16-017 with The Regents of the University of California, on behalf of the Irvine campus for a \$250,000 grant to evaluate the emissions, stability and operational performance of residential and commercial appliances that can use both pipeline quality natural gas and biogas.

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 10. The vote was unanimous (5-0).

11. OFF-ROAD HEAVY-DUTY NATURAL GAS VEHICLE RESEARCH AND DEVELOPMENT, GFO-16-506. This solicitation sought proposals to fund the development, integration and demonstration of advanced natural gas engine and engine technologies suitable for various off-road vehicle applications. (PIER NG funding) Contact: Pilar Magana. (Staff presentation: 10 minutes)

- a. GLADSTEIN, NEANDROSS & ASSOCIATES, LLC. Proposed resolution approving Agreement PIR-16-016 with Gladstein, Neandross & Associates, LLC for a \$1,399,681 grant to develop and demonstrate two natural gas off-road port yard hostlers in the Port of Los Angeles. The yard hostlers will operate on low carbon renewable natural gas and integrate an innovative fuel gas sensor to optimize emission performance.
- b. OLSON-ECOLOGIC ENGINE TESTING LABORATORIES, LLC. Proposed resolution approving Agreement PIR-16-018 with Olson-Ecologic Engine Testing Laboratories, LLC for a \$1,500,000 grant to integrate natural gas engines into two heavy-duty off-road vehicles for construction applications. Demonstrations will be conducted in the South Coast Air Basin.

- c. TERZO POWER SYSTEMS, LLC. Proposed resolution approving Agreement PIR-16-019 with Terzo Power Systems, LLC for a \$1,497,400 grant to research, develop, and demonstrate a compressed natural gas powered hybrid system for an off-road heavy-duty agricultural vehicle with the goal of improving efficiency and air quality and increasing operational safety.

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 11. The vote was unanimous (5-0).

- 12. FEDERAL COST SHARE UNDER THE ELECTRIC PROGRAM INVESTMENT CHARGE, PON-14-308. This solicitation sought proposals to provide cost share funding to eligible applicants that apply for and receive an award from eligible Federal Funding Opportunity Announcements (FOAs) and meet the requirements stipulated in this solicitation. (EPIC funding) Contact: Katharina Snyder. (Staff presentation: 5 minutes)

- a. SUNPREME, INC. Proposed resolution approving Agreement EPC-16-035 with Sunpreme, Inc. for a \$2,430,000 grant to develop a next-generation manufacturing tool for low-cost, high-performance copper patterning on solar silicon-PV using technologies from printed circuit board manufacturing, reducing costs by up to 35%, and increasing efficiency by 15%.

Commissioner McAllister moved and Commissioner Scott seconded approval of Item 12. The vote was unanimous (5-0).

- 13. IMPROVING PERFORMANCE AND COST EFFECTIVENESS OF SMALL HYDRO, GEOTHERMAL AND WIND ENERGY TECHNOLOGIES, GFO-16-301. This solicitation sought proposals to fund applied research and development projects to develop advanced technologies and strategies that will help expand California's use of in-conduit hydrokinetic power, improve the cost-effectiveness of geothermal energy generation, and upgrade California's aging wind turbines. The agreements will enable higher penetrations of renewable energy into California's electricity mix. (EPIC funding) Contact: Silvia Palma-Rojas. (Staff presentation: 5 minutes)

- a. AMADOR WATER AGENCY. Proposed resolution adopting California Environmental Quality Act Findings for Amador Water Agency's Ione Small Hydroelectric Project, and grant agreement for Amador Water Agency's In-Conduit Hydropower Development Project.
 - i. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS. Proposed resolution finding that based on the lead agency Amador Water Agency's September 22, 2016 Initial Study, Mitigated Negative Declaration (MND), and the lead agency's September 22, 2016 Resolution approving and adopting the MND, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered.
 - ii. Proposed resolution approving Agreement EPC-16-037 with Amador Water Agency for a \$750,000 grant to design, test, develop and demonstrate a high-efficiency Pelton turbine runner at a pressure reducing station in Ione, California. The goal of the agreement is to reduce the cost of energy and improve the economic performance and viability of small hydropower sites to expand the use of in-conduit hydropower in California and improve understanding of its benefits to the grid.
- b. NATEL ENERGY, INC. Proposed resolution adopting California Environmental Quality Act Findings for Natel Energy, Inc. Cost-Effective and Climate Resilient

In-Conduit Hydropower and Civil Works Innovation, and grant agreement for Natel's In-Conduit Hydropower project.

- i. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS. Proposed resolution finding that based on the lead agency Yolo County Flood Control and Water Conservation District's January 30, 2017 Environmental Checklist, Initial Study, Mitigated Negative Declaration (MND), and the District's March 7, 2017 Resolution approving and adopting the MND, the work under the proposed project presents no new significant or substantially more severe environmental impacts beyond those already considered.
- ii. Proposed resolution approving Agreement EPC-16-043 with Natel Energy, Inc. for a \$954,715 grant to scale in-canal hydropower retrofits by lowering project footprint and civil works costs. The goal of the agreement is to design and implement a modular powerhouse and standard plant design that can be replicated across irrigation drops in California. Using a simpler and more easily scalable design will support the installation of the system to scale across the 500 MW-1 GW of identified in-canal potential at low-head sites across California.

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 13. The vote was unanimous (5-0).

14. ADVANCE BREAKTHROUGH AND PIEZOELECTRIC-BASED SYSTEMS DEVELOPMENT TO INCREASE MARKET PENETRATION OF DISTRIBUTED RENEWABLE GENERATION, GFO-16-302. This solicitation sought proposals to fund applied research and development activities to advance breakthroughs in distributed renewable energy technologies to dramatically increase efficiencies, reduce costs, and enable additional renewable resources. The solicitation will also help develop piezoelectric-based systems for harvesting energy to maximize efficient use of emerging energy sources in California. (EPIC funding) Contact: Prab Sethi. (Staff presentation: 10 minutes)
 - a. ALTAROCK ENERGY, INC. Proposed resolution approving Agreement EPC-16-036 with AltaRock Energy, Inc. for a \$1,280,000 grant to demonstrate the use of a thermoelectric generator in a geothermal reservoir. Thermoelectric generator technologies have the potential to help small scale (< 5 MW) geothermal power generation be more cost effective by avoiding infrastructure such as turbines and steam piping, thus making small scale production and geothermally-sourced power generation both practicable and affordable.
 - b. DOE-LAWRENCE BERKELEY NATIONAL LABORATORY. Proposed resolution approving Agreement EPC-16-042 with the Department of Energy's Lawrence Berkeley National Laboratory for a \$2,000,000 grant to develop a cost-effective process for creating advanced thermoelectric materials constructed from silicon nanowire arrays. If successful, the project will create a cost-effective system that will recover waste heat to generate supplemental electricity and help reduce energy use in the industrial sector.
 - c. UNIVERSITY OF CALIFORNIA, MERCED. Proposed resolution approving Agreement EPC-16-049 with The Regents of the University of California, on behalf of the Merced campus for a \$1,270,000 grant to investigate the energy recovery potential of multi-layer piezoelectric generators to create roadway piezoelectric energy harvesting systems with high power density and efficiency such that over 50% of the mechanical energy can be harvested as electricity. This project will demonstrate, in the laboratory and on a section of a road, the high

capacity of electric power generation and determine feasibility for future large-scale demonstrations on highways and streets with piezoelectric under-pavement.

- d. UNIVERSITY OF CALIFORNIA, SAN DIEGO. Proposed resolution approving Agreement EPC-16-050 with The Regents of the University of California, on behalf of the San Diego campus for a \$1,450,000 grant to develop a long-lasting, low-cost, and high-efficiency next-generation perovskite solar cells with the potential to cut the cost of solar power in half.
- e. PYRO-E, LLC. Proposed resolution approving Agreement EPC-16-052 with Pyro-E, LLC for a \$1,000,000 grant to demonstrate smart pavement that harvests energy from overpassing motor vehicles on the road. The system consists of materials that exhibit piezoelectric effect - the ability to generate an electric charge in response to applied mechanical stress.

Commissioner McAllister moved and Commissioner Scott seconded approval of Item 14. The vote was unanimous (5-0).

15. ADVANCING CUTTING-EDGE TECHNOLOGIES AND STRATEGIES TO REDUCE ENERGY USE AND COSTS IN THE INDUSTRIAL, AGRICULTURE AND WATER SECTORS, GFO-16-305. This solicitation sought proposals to fund applied research and development projects that will advance and test pre-commercial energy efficiency and/or demand response technologies and strategies for the industrial, agricultural and water sectors. (EPIC funding) Contact: Kevin Mori. (Staff presentation: 10 minutes)

- a. TERZO POWER SYSTEMS, LLC. Proposed resolution approving Agreement EPC-16-044 with Terzo Power Systems, LLC for a \$2,311,050 grant to demonstrate an advanced technology for hydraulic power systems that includes integration of a highly efficient liquid cooled permanent magnet motor, efficient motor controller, and liquid cooling loop. This technology could improve the hydraulic power unit's efficiency by 80% in industrial and agricultural applications.
- b. POLARIS ENERGY SERVICES INC. Proposed resolution approving Agreement EPC-16-045 with Polaris Energy Services Inc. for a \$2,884,912 grant to develop and demonstrate a two-way communication system that growers can use to operate and pre-program irrigation pump controllers with response strategies to facilitate participation in demand response programs and/or time-of-use electricity tariffs. The system will also provide growers with energy use and performance data on their equipment for diagnostic and monitoring purposes.
- c. GAS TECHNOLOGY INSTITUTE. Proposed resolution approving Agreement EPC-16-046 with Institute of Gas Technology dba Gas Technology Institute (GTI) for a \$2,570,946 grant for the development and field testing of a novel efficient air compressor that will use less electricity to meet the same performance as existing air and gas compressors. If successful, the technology could reduce energy consumption by 50% and be applicable to a broad spectrum of industrial applications.
- d. ELECTRIC POWER RESEARCH INSTITUTE, INC. Proposed resolution approving Agreement EPC-16-048 with Electric Power Research Institute, Inc. (EPRI) for a \$2,406,054 grant to demonstrate and pilot-test an advanced natural refrigerant based cooling system for an industrial food processing application. This technology has the potential of 20% energy savings compared to conventional cooling systems using hydrofluorocarbons.

- e. POWWOW ENERGY, INC. Proposed resolution approving Agreement EPC-16-051 with PowWow Energy, Inc. for a \$2,992,660 grant to develop and test an automated, programmable irrigation management system that will integrate continuous pump testing and remote pump and valve control, and programmable irrigation and fertilization for specific soil types and plant varieties on farms located in disadvantaged communities in California. The technology is estimated to provide energy and water savings over existing commercial irrigation systems.

Commissioner McAllister moved and Commissioner Scott seconded approval of Item 15. The vote was unanimous (5-0).

- 16. ADDRESSING AIR QUALITY AND ENVIRONMENTAL IMPACTS OF CONVENTIONAL AND EMERGING ELECTRICITY SECTOR TECHNOLOGIES IN A CHANGING CLIMATE, GFO-16-306. This solicitation sought proposals to fund projects that will explore pathways to reduce the environmental, public health, and air quality impacts of electricity generation, distribution, and storage and improve overall resiliency of the electricity system. Additionally, funded projects will develop tools to inform projections of climate change impacts on the energy sector and analyze the energy efficiency and climate impacts of alternative refrigerants. (EPIC funding) Contact: Katharina Snyder. (Staff presentation: 10 minutes)

- a. UNIVERSITY OF CALIFORNIA, DAVIS. Proposed resolution approving Agreement EPC-16-038 with The Regents of the University of California, on behalf of the Davis campus for a \$493,089 grant to compare the effectiveness of indoor versus outdoor rearing methods of juvenile Mojave Desert tortoises for mitigation of localized impacts from renewable energy projects.
- b. UNIVERSITY OF CALIFORNIA, IRVINE. Proposed resolution approving Agreement EPC-16-039 with The Regents of the University of California, on behalf of the Irvine campus for a \$600,000 grant to perform a life-cycle assessment of the environmental impacts and resource usage associated with the deployment of emerging grid-scale energy storage technologies with a focus on different chemistries of flow batteries.
- c. UNIVERSITY OF CALIFORNIA, DAVIS. Proposed resolution approving Agreement EPC-16-040 with The Regents of the University of California, on behalf of the Davis campus for a \$700,000 grant to measure PM2.5 and PM10 emissions across the spray drift plume from two separate power plant cooling towers utilizing fresh water and brackish water. The model developed based on these measurements will be used to minimize the PM2.5 and PM10 effects of brackish water use in cooling towers.
- d. DOE-LAWRENCE BERKELEY NATIONAL LABORATORY. Proposed resolution approving Agreement EPC-16-041 with the Department of Energy's Lawrence Berkeley National Laboratory for a \$500,000 grant to identify barriers and technical issues that limit the adoption of low global warming potential (GWP) A3 refrigerants in residential and commercial cooling equipment. Transitioning to low-GWP refrigerants and higher efficiency cooling equipment could lower greenhouse gas emissions and electricity consumption.
- e. HUMBOLDT STATE UNIVERSITY SPONSORED PROGRAMS FOUNDATION. Proposed resolution approving Agreement EPC-16-047 with Humboldt State University Sponsored Programs Foundation for a \$1,000,000 grant to develop a methodology addressing critical knowledge gaps in the assessment of the carbon neutrality of forest and agriculture residues when used for the production of electricity and process heating.

Commissioner Douglas moved and Commissioner McAllister seconded approval of Item 16. The vote was unanimous (5-0).

17. **DISCUSSION OF ENERGY COMMISSION PROGRESS RE IMPLEMENTATION OF THE CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350).** Staff presentation regarding progress on implementation of SB 350 requirements, including administration of the California Renewables Portfolio Standard program, review of local publicly owned electric utility integrated resource plans, revision of Commission data collection regulations to improve demand forecasting, identification of progress in meeting the bill's goals of 50% renewables procurement and doubling of energy efficiency, implementation of widespread transportation electrification, and preparation and publication of the study required by Public Resources Code section 25327 regarding barriers for low-income customers to energy efficiency, weatherization, and renewable energy investments. Contact: Michael Sokol. (Staff presentation: 5 minutes)

Staff presented Information Item 17.

18. **Minutes:** Possible approval of the March 8, 2017 Business Meeting minutes.

Commissioner Scott moved and Commissioner Douglas seconded approval of Item 18. The vote was unanimous (5-0).

19. **Lead Commissioner or Presiding Member Reports.** The Commissioners reported on their recent activities.
20. **Chief Counsel's Report.** The Chief Counsel gave a report. The Chair announced the Commissioners will go into closed session with Legal Counsel pursuant to Government Code Section 11126(e) on the following items set forth in the agenda: Item 20, The U.S. Department of Energy's actions to delay effective dates and failure to complete certain energy conservation standards and test procedures for appliances. Upon returning from closed session the Chair announced the Commission authorized the Chief Counsel's Office to take appropriate legal action including initiating or joining litigation to address the U.S. Department of Energy's actions to delay effective dates and failures to complete certain energy conservation standards and test procedures for appliances.
21. **Executive Director's Report.** The Executive Director gave a report.
22. **Public Adviser's Report.** The Public Adviser gave a report.
23. **Public Comment.** None.

Appearances:

(*by telephone)

*Vincent McDonald, UC Irvine

*Bhaskar Chandan, South Coast Air Quality Management District

Stephen O'Kane, AES

Melissa Foster, Stoel Rives, LLP

Jeffery D. Harris, Ellison, Schneider & Harris, LLP

Jim Castelaz, Motiv Power Systems

Colin Santilli, Center for Sustainable Energy

Ben Bartlett, California Clean Energy Fund

Alecia Ward, Berkeley Lab

Taylor Jones, Go Biz (Governor's Office of Business & Economic Development)

Peter Christensen, Air Resources Board

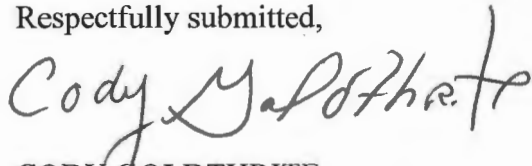
Justin Ward, California Fuel Cell Partnership

Thomas Lawson, California Natural Gas Vehicle Coalition

Kent Leacock, Protera

There being no further business, the meeting was adjourned.

Respectfully submitted,



CODY GOLDTHRITE
Secretariat

