STATE OF CALIFORNIA
California Energy Commission
Minutes of the May 8, 2013 Energy Commission Business Meeting

The meeting was called to order by Chair Robert B. 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

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. USDA FOREST SERVICE. Possible approval of Amendment 1 to Agreement *PIR-08-024 with US Forest Service Pacific Southwest Research Station for a no-*cost time extension of nine months for a new term of 45 months. Construction of the study site was delayed, necessitating the one year no-cost time extension to allow the post construction monitoring to be conducted. (PIER electricity funding) Contact: Joe O'Hagan.

   b. BERKELEY ENERGY SCIENCES. Possible approval of Amendment 1 to Agreement PIR-11-010 with Berkeley Energy Sciences Corporation for a novation to Amber Kinetics and to append the correct terms and conditions to the agreement. (PIER electricity funding) Contact: Kiel Pratt.

   c. SOUTHERN CALIFORNIA GAS COMPANY. Possible approval of Amendment 1 to Agreement PIR-11-023 with Southern California Gas Company (SoCal Gas) to modify the scope of work to substitute a key partner that will provide site and match funds; increase the amount of matching funds from SoCal Gas; and remove three subcontractors, expanding the role of the fourth subcontractor. No additional time or dollars are being requested. (PIER natural gas funding) Contact: Pablo Gutierrez.

   d. ASPEN ENVIRONMENTAL GROUP. Possible approval of Amendment 2 to Contract 800-10-001 with Aspen Environmental Group to add $60,000 to the contract for a new total of $2,460,000. This budget augmentation will provide additional technical support for current work authorizations under the contract. This proposed amendment will not affect the scope of work. (ERPA funding) Contact: Paul Deaver.

   e. LAWRENCE BERKELEY NATIONAL LABORATORY. Possible approval of Amendment 1 to Contract 500-11-025 with the U.S. Department of Energy's Lawrence Berkeley National Laboratory to modify the scope of work to allow for the use of sedans for the demonstration project and to modify the schedule to shorten the project term by three months in accordance with the liquidation of the funds. (ARFVTP funding) Contact: Kiel Pratt.

   f. SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. Possible approval Amendment 1 to Agreement ARV-10-054 with South Coast Air Quality

Management District to change station types, locations, and quantity of stations, adjust the budget to reflect these changes, and provide a 20-month no cost time extension from July 30, 2013 to March 31, 2015. ARFVTP funding. (Contact: Sarah Williams)

Chair Weisenmiller clarified that Item 1a is a nine month time extension. Commissioner Douglas moved and Commissioner McAllister seconded approval of the Consent Calendar. The vote was unanimous. (5-0)

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

   a. Blythe Solar Power Project Amendment (09-AFC-6C)

Chair Weisenmiller appointed Commissioners Douglas and Hochschild to the committee for the Blythe Amendment, Commissioner Douglas to preside. Commissioner Douglas moved and Commissioner Hochschild seconded approval of the appointment. The vote was unanimous. (5-0)

   b. Palen Solar Electric Generating System Amendment (09-AFC-7C)

No action was taken on Item 2b.

3. ENFORCEMENT PROCEDURES FOR THE RENEWABLES PORTFOLIO STANDARD FOR LOCAL PUBLICLY OWNED ELECTRIC UTILITIES (RPS Proposed Regulations) Possible approval of proposed regulations specifying rules and procedures for enforcement of the Renewables Portfolio Standard (RPS) for local publicly owned electric utilities (POUs) pursuant to Public Utilities Code section 399.30 (l). Contact: Angela Gould. (15 minutes)

Item 3 was removed from the agenda.

4. 2013-2014 INVESTMENT PLAN UPDATE FOR THE ALTERNATIVE AND RENEWABLE FUEL AND VEHICLE TECHNOLOGY PROGRAM. Possible adoption of the 2013-2014 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 allocations. Contact: Randy Roesser. (30 minutes)

Commissioner McAllister recused himself and left the room before consideration of Item 4, stating that his former employer will receive incentive funds if the investment plan is approved. Commissioner Douglas moved and Commissioner Hochschild seconded approval of the investment plant. The vote was unanimous. (4-0)

Commissioner McAllister returned to the dais following the vote.

5. PALOMAR ENERGY CENTER (01-AFC-24C). Possible approval of a petition to amend the California Energy Commission Certificate to change the wording in Air Quality Condition of Certification AQ-SC13, that limits the testing and maintenance of the critical services generator to one hour per week. Contact: Dale Rundquist (10 minutes).

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

6. RUSSELL CITY ENERGY CENTER PROJECT (01-AFC-7C) Possible approval of a petition to amend the California Energy Commission Decision to allow the project to change the onsite landscape planting time; reduce spacing requirements around a sulfuric acid tank; clarify language in Air Quality Conditions of Certification; and remove the requirement to install new trailside amenities. Contact: Bruce Boyer (10 Minutes)

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

At 12:20 p.m. the Commission recessed, reconvening at 1:30 p.m.

7. DEFAULT COOL ROOF PERFORMANCE VALUES FOR LOW-SLOPED ROOFS THAT USE AGGREGATE AS THE SURFACE LAYER. Possible approval of a proposed default aged solar reflectance and thermal emittance is a compliance option that can be used for showing compliance with the *Building Energy Efficiency Standards (Standards).* This proposal is consistent with the Compliance Options procedures in Section 10-109 of the Standards. Contact: David Ware. (15 minutes)

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

8. PLACER HILLS UNION SCHOOL DISTRICT. Possible approval of Agreement 012-12-ECD with Placer Hills Union School District for a $687,000 loan at one percent interest to install a 190 kilowatt roof-mounted solar electric system at Weimar Hills School. This project is estimated to save $52,981 annually and have a simple payback of 13 years. (ECAA Program funding) Contact: Anne Fisher. (5 minutes)

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

9. WINTERS JOINT UNIFIED SCHOOL DISTRICT. Possible approval of Agreement 014-12-ECD with Winters Joint Unified School District for a $150,000 loan at one percent interest to install a district-wide energy management system and retrofit various interior lighting at John Clayton School and the Administration Building. This project is estimated to save $46,838 annually and have a simple payback of 3.2 years. (ECAA Program funding) Contact: Anne Fisher. (5 minutes)

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

10. CITY OF FORT BRAGG. Possible approval of Agreement 013-12-ECD with the City of Fort Bragg for a $607,596 loan at one percent interest to install a gas boiler, variable speed drives, new energy efficient lights, a new condensing furnace and photovoltaic systems at six city facilities. The city will use this loan and PG&E rebate of $52,972 to install the energy efficiency measures. These projects are estimated to save about $80,634 annually and have a simple payback of 7.5 years. (ECAA Program funding) Contact: Joseph Wang. (5 minutes)

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

11. FARASIS ENERGY, INC. Possible approval of Agreement PIR-12-006 with Farasis Energy, Inc. for a $749,710 grant to develop and demonstrate a recycling technology known as Direct Recycling, which was designed for large lithium-ion battery systems such as those found in electric vehicles. The agreement will include $149,943 in match funding. (PIER electricity funding) Contact: Rhetta deMesa. (5 minutes)

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

12. LAWRENCE BERKELEY NATIONAL LABORATORY. Possible approval of Agreement PIR-12-015 with the U.S. Department of Energy's Lawrence Berkeley National Laboratory for a $250,290 grant to create large-scale recycling infrastructure scenarios for plug-in electric vehicle batteries and compare the potential life-cycle environmental implications of each scenario. The agreement will include $51,000 in match funding. (PIER electricity funding) Contact: Rhetta deMesa. (5 minutes)

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

13. SIERRA INSTITUTE FOR COMMUNITY & ENVIRONMENT. Possible approval of Agreement PIR-12-003 with Sierra Institute for Community and Environment for a $300,000 grant to develop an integrated renewable energy and energy efficiency action plan centered on integrating woody biomass and other renewable energy into existing infrastructure and aimed at reducing use of fossil fuel across Plumas County. The agreement will include $75,000 in match funding. (PIER electricity funding) Contact: Rizaldo Aldas. (5 minutes)

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

14. CITY OF DAVIS. Possible approval of Agreement PIR-12-011 with the City of Davis for a $300,000 grant to formulate a preliminary long-term renewable energy deployment roadmap for Davis, CA. The roadmap will be developed using state-of-the-art analytical tools and methods to identify the most cost-effective options for supplying all electricity and natural gas using locally available renewable sources. The agreement will include $75,000 in match funding. (PIER electricity funding) Contact: Rizaldo Aldas. (5 minutes)

Commissioner Douglas disclosed for the record that she is an adjunct professor at King Hall, the UC Davis School of Law. King Hall is a different department than the UC department interested in this agreement, and therefore there is no conflict of interest. She further disclosed that she is team teaching with Chief Counsel Michael Levy, and therefore the disclosure relates to him as well. This disclosure also relates to Items 22, 31, and 33.

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

15. SOUTH TAHOE PUBLIC UTILITY DISTRICT. Possible approval of Agreement PIR-12-018 with South Tahoe Public Utility District for a $139,830 grant to develop methods for rural communities to evaluate the potential value and extent of using water and waste water facilities across multiple local communities to cost-effectively generate and store localized renewable energy. The agreement will include $72,352 in match funding. (PIER electricity funding) Contact: Gail Wiggett. (5 minutes)

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

16. COGENRA SOLAR, INC. Possible approval of Agreement PIR-12-012 with Cogenra Solar, Inc. for a $525,000 grant to develop a novel advanced co-generation solar system that will generate electricity from photovoltaic solar cells in addition to capturing and delivering the heat in the form of hot water or cooling in a combined heat and power

configuration. The agreement is 22 months and will include $155,659 in match funding. (PIER electricity funding) Contact: Hassan Mohammed. (5 minutes)

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

17. CITY AND COUNTY OF SAN FRANCISCO. Possible approval of Agreement PIR-12-010 with the Department of the Environment- City and County of San Francisco for a $300,000 grant to fund the development of a community-specific renewable energy development plan for San Francisco's Central Corridor Eco-District. The agreement will include $300,000 in match funding. (PIER electricity funding) Contact: Jason Harville. (5 minutes)

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 17. The vote was unanimous. (5-0)

18. COOL EARTH SOLAR, INC. Possible approval of Agreement PIR-12-016 with Cool Earth Solar, Inc. for a $1,726,438 grant to demonstrate an innovative community-based clean energy system that includes cutting-edge concentrating photovoltaics; a novel high-resolution solar forecast model that utilizes an Energy Commission-funded sky imager technology; and an active building energy management system to increase efficiency and energy security in the Livermore Valley Open Campus community. The agreement will include $1,025,822 in match funding. (PIER electricity funding) Contact: Michael Sokol. (5 minutes)

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

19. REDWOOD COAST ENERGY AUTHORITY. Possible approval of Agreement PIR-12-022 with Redwood Coast Energy Authority for a $1.75 million grant to demonstrate a state-of-the-art woody biomass gasifier/fuel cell combined heat and power system and develop, demonstrate, and evaluate an innovative local energy efficiency program. This agreement is 22 months and will include $1,793,762 in match funding. (PIER electricity funding) Contact: Michael Sokol. (5 minutes)

Commissioner Douglas moved and Commissioner Scott seconded approval of Item 19. The vote was unanimous. (5-0)

20. CALNETIX TECHNOLOGIES. Possible approval of Agreement PIR-12-008 with Calnetix Technologies, LLC for a $1,645,856 grant to demonstrate a concentrating solar photovoltaic (PV) system that integrates a hot water heat storage system and an Organic Rankine Cycle turbine to effectively match solar PV generation to a community's load profile. The agreement will include $876,226 in match funding. (PIER electricity funding) Contact: Mike Kane. (5 minutes)

Item 20 was removed from the agenda.

21. SUN SYNCHRONY. Possible approval of Agreement PIR-12-019 with Sun Synchrony for a $475,095 grant to develop a new type of rooftop deployable PV module using light concentration to provide breakthrough power conversion efficiency. The agreement will include $350,692 in match funding. (PIER electricity funding) Contact: Prab Sethi. (5 minutes)

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 21. The vote was unanimous. (5-0)

22. UNIVERSITY OF CALIFORNIA, BERKELEY. Possible approval of Agreement PIR-12-014 with the Regents of the University of California on behalf of the Berkeley Campus for a $600,000 grant to develop an advanced natural gas engine. The agreement will include $125,600 in match funding. (PIER natural gas funding) Contact: Reynaldo Gonzalez. (5 minutes)

Commissioner McAllister moved and Commissioner Scott seconded approval of Item 22. The vote was unanimous. (5-0)

23. GAS TECHNOLOGY INSTITUTE. Possible approval of Agreement PIR-12-017 with the Institute of Gas Technology dba Gas Technology Institute for a $1 million grant to develop a 6.7 liter natural gas engine suitable for Class 3 through 7 vehicle applications. The agreement will include $2,164,735 in match funding. (PIER natural gas funding) Contact: Reynaldo Gonzalez. (5 minutes)

Commissioner Scott moved and Commissioner McAllister seconded approval of Item 23. The vote was unanimous. (5-0)

24. NATIONAL RENEWABLE ENERGY LABORATORY. Possible approval of Agreement 500-12-008 with the U.S. Department of Energy's National Renewable Energy Laboratory for a $313,000 contract to develop a natural gas vehicle research roadmap identifying the state of knowledge, research gaps, and recommended research pathways to defining research activities that remove barriers to deploying advanced natural gas vehicle technology and fueling infrastructure. The agreement will not include any match funding. (PIER natural gas funding) Contact: Reynaldo Gonzalez. (5 minutes)

Commissioner Scott moved and Commissioner Douglas seconded approval of Item 24. The vote was unanimous. (5-0)

25. DIAKONT ADVANCED TECHNOLOGIES, INC. Possible approval of Agreement PIR-12-009 with Diakont Advanced Technologies, Inc. for a $1 million grant to demonstrate and commercialize the multi-channel electromagnetic acoustic transducer sensor module that will enable pipeline inspection crawlers to accurately detect, locate and measure natural gas pipeline girth weld defects. The agreement will include $1.6 million in match funding. (PIER natural gas funding) Contact: Johann Karkheck. (5 minutes)

Commissioner Hochschild moved and Commissioner Douglas seconded approval of Item 25. The vote was unanimous. (5-0)

26. ACELLENT TECHNOLOGIES, INC. Possible approval of Agreement PIR-12-013 with Acellent Technologies, Inc., for a $622,622 grant to develop and demonstrate a Real-time Active Pipeline Integrity Detection (RAPID) System to continuously monitor and evaluate the integrity of natural gas pipelines. The agreement will not include any match funding. (PIER natural gas funding) Contact: Johann Karkheck. (5 minutes)

Commissioner McAllister moved and Commissioner Hochschild seconded approval of Item 26. The vote was unanimous. (5-0)

27. CLEANWORLD. Possible approval of agreement PIR-12-007 with CleanWorld for a $820,000 grant to fund the design, construction, and operation of a novel fertilizer production system to produce value-added co-products from digester effluent. The agreement will include $690,830 in match funding. (PIER natural gas funding) Contact: David Effross. (5 minutes)

Commissioner Douglas moved and Commissioner Scott seconded approval of Item 27. The vote was unanimous. (5-0)

28. UNIVERSITY OF CALIFORNIA, RIVERSIDE. Possible approval of Agreement PIR-12-020 with the Regents of the University of California on behalf of the Riverside Campus for a $359,847 grant to fund the development of cost effective and technologically robust carbon dioxide separation methods that results in value added co-products from renewable natural gas production projects. The agreement will not include any match funding. (PIER natural gas funding) Contact: David Effross. (5 minutes)

Commissioner McAllister moved and Commissioner Douglas seconded approval of Item 28. The vote was unanimous. (5-0)

29. INTERRA ENERGY, INC. Possible approval of Agreement PIR-12-021 with Interra Energy, Inc. for a $818,147 grant to develop a low-cost pyrolysis based biomass conversion technology called the Reciprocating Reactor which will produce renewable natural gas and biochar. The agreement will include $228,146 in match funding. (PIER natural gas funding) Contact: David Effross. (5 minutes)

Commissioner Douglas moved and Commissioner Scott seconded approval of Item 29. The vote was unanimous. (5-0)

30. US GEOLOGICAL SURVEY. Possible approval of Agreement 500-12-007 with US Geological Survey for $314,000 to address high priority siting and permitting for renewable energy development in the Desert Renewable Energy Conservation Planning (DRECP) area. This project will involve the development of a standardized protocol for surveying golden eagles to establish a consistent basis of population assessments and to provide energy developers and others with a consistent monitoring methodology. The project will also involve the assessment of golden eagles nesting success, food habits, prey abundance, and associated habitat to inform DRECP golden eagle management measures and the permitting renewable energy facilities. The agreement will include $14,700 in match funding. (PIER electricity funding) Contact: Joe O'Hagan. (5 minutes)

Commissioner Douglas moved and Commissioner McAllister seconded approval of Item 31. The vote was unanimous. (5-0)

31. UNIVERSITY OF CALIFORNIA, RIVERSIDE. Possible approval of Agreement 500-12-009 with the Regents of the University of California on behalf of the Riverside campus for a $400,963 contract to evaluate the impacts of various natural gas compositions on the performance and emissions of natural gas powered heavy/medium-duty vehicles. The length of this agreement is 22 months. (PIER natural gas funding) Contact: Marla Mueller. (5 minutes)

Commissioner Scott moved and Commissioner Douglas seconded approval of Item 31. The vote was unanimous. (5-0)

32. LAWRENCE BERKELEY NATIONAL LABORATORY. Possible approval of Agreement 500-12-010 with the U.S. Department of Energy's Lawrence Berkeley National Laboratory for a $575,423 contract to evaluate the potential for induced seismicity from geologic sequestration in the southern San Joaquin Valley of California. The proposed project will analyze information on the occurrence of oil and gas production-related induced seismicity, conduct laboratory measurements of the fracture permeability of natural cap rock samples and model pressure rise due to mixing of methane and supercritical CO_2. The agreement will not include any match funding. (PIER natural gas funding) Contact: David Stoms. (5 minutes)

Commissioner Douglas moved and Commissioner Scott seconded approval of Item 32. The vote was unanimous. (5-0)

33. CALIFORNIA STATE UNIVERSITY SAN DIEGO. Possible approval of the 13 highest ranking grant applications totaling $1,215,944 from the Public Interest Energy Research (PIER) program's Energy Innovations Small Grant Solicitation 12-02 administered by the Trustees of the California State University, San Diego. There are two projects totaling $178,383 under Transportation Electric, one project totaling $91,070 under Transportation Natural Gas, two projects under Natural Gas totaling $189,982 and eight projects under Electric totaling $756,509 (PIER electricity and natural gas funding). Contact: Raquel E. Kravitz (10 minutes)

a. Transportation Electric (12-02TE)

i) Peaker Conversions, Fullerton, CA, *Safe High Capacity Ultra Capacitor Storage System for Locomotives*, $83,383. This project is to determine the feasibility of a simple and inexpensive on-board electrical energy storage system using ultra capacitors instead of batteries to reduce the cost of energy storage in hybrid railroad locomotives. This technology will store more energy, operate at a higher peak voltage, and use a smaller number of cells, which will reduce the cost of energy storage in locomotives.

ii) Motiv Power Systems, Inc., Foster City, CA, *Flexible Inverter for Electric Accessories and Export Power in Trucks*, $95,000. This project is to determine the feasibility of a flexible power inverter for medium and heavy-duty trucks to electrify diesel truck accessories. The inverter will allow the hydraulic system to run off of electricity instead of the truck engines, decreasing fuel usage on diesel trucks and reducing air emissions.

b. Transportation Natural Gas (12-02TNG)

i) Energy Conversions Inc., Tacoma, WA, *Development of Turbulent Jet Ignition for Large Bore Locomotive Engines*, $91,070. This project is to determine the feasibility of improving combustion of railroad locomotive engines to increase thermal efficiency and reduce NOx emissions. This project will increase fuel injector turbulence as well as improve cylinder mixing during direct injection of natural gas into the engine, jump starting converting railroad locomotive engines to natural gas. More than 80 percent of the EISG funds will be spent in California through subcontractor work with Williams Machine, Inc. located in Lake Elsinore, CA, on project design and fabrication and with Napa Valley Wine Train, located in Napa, CA, on project testing.

c. Natural Gas (12-02G)

i) Santa Clara University, Santa Clara, CA, *Solar Thermoelectric Energy for Residential Scale Combined Heat and Electricity*, $94,982. This project is to determine the feasibility of developing inexpensive residential-scale electricity and heating by employing a heat pump and thermoelectric modules that use a low-profile solar tracker to convert solar energy into electricity and heating. The waste heat from this system will then be used in natural gas applications, reducing residential natural gas bills.

ii) University of California, San Diego, *Earth-Abundant and Scalable Nanostructured Thermoelectrics for Energy Harvesting*, $95,000. This project is to determine the feasibility of developing inexpensive thermoelectric materials that capture waste heat from various sources such as vehicular, solar thermal and industrial waste heat, and convert it to energy, providing a scalable and

inexpensive process to generate energy that will benefit the California ratepayers.

d. Electrical (12-02E)

i) GroundMetrics, Inc., San Diego, CA, *New Electromagnetic Method to Map Geothermal Resources*, $94,599. This project is to determine the feasibility of a new geothermal mapping method using borehole-to-surface electromagnetic reservoir imaging. Direct imaging of geothermal resources will dramatically change the nature of project development and increase the rate of finding geothermal wells, which is the biggest cost of exploration of geothermal resources.

ii) Schatz Energy Research Center, Arcata, CA, *Measurement of Critical Energy/Mass Balances for Stand-Alone Biomass Torrefaction*, $95,000. This project is to determine the feasibility of operating a commercial biomass torrefier in an energy self-sufficient manner that will convert woody biomass into an easily transportable, high-energy product such as biochar. This project will significantly reduce the cost of transporting biomass from the forest and converting it to power.

iii) University of California, Berkeley, *Model-predictive Smart Lighting Commissioning System for Emerging Demand Management*, $94,766. This project is to determine the feasibility of a low cost performance-oriented lighting commissioning system. This package will consist of reusable plug-and-play wireless sensor network platform, data processing and modeling software, which will be used to quickly commission lighting systems to verify their performance and allow for adjustments to be made in the field. This project will improve the efficiency and quality of lighting for California ratepayers.

iv) Bandgap Engineering, Palo Alto, CA, *Silicon Nanowire Solar Cells on Low-Cost Silicon Substrates*, $95,000. This project is to determine the feasibility of combining silicon nanowires with low-cost silicon materials to produce high-efficiency, low-cost solar cells with an efficiency goal of 17.5 percent. This project will reduce the price of solar electricity, making it competitive with non-renewable resources and reducing the costs to electricity ratepayers across all markets in California.

v) Engsys Research, Inc., San Diego, CA, *Adaptive Fan Demand Control for Low Energy Consumption Cleanrooms*, $95,000. This project is to determine the feasibility of drastic reduction of cleanroom fan energy consumption by dynamically adjusting the airflow with an adaptive controller, potentially saving 50 percent of the fan energy in cleanrooms.

vi) Visible Energy Inc., Palo Alto, CA, *Cloud-Based Refrigeration Control System*, $95,000. This project is to determine the feasibility of developing a Wi-Fi controller in a cloud-based control scheme to operate commercial refrigerators. This will insure proper functioning of refrigerated appliances, including demonstration of incorporating power consumption in the control method on a cloud-based platform, and will minimize overall energy usage of the refrigeration system.

vii) University of California, San Diego, *Estimation of Thermostatically Controlled Loads for Demand Response*, $92,144. This project is to determine the

feasibility of using practical differential equation techniques to monitor thermostatically controlled loads for demand response opportunities. This project will use a wireless sensor network to monitor real-time temperatures in a grouped system of thermostatically controlled loads rather than monitoring them piece-by-piece, reducing building energy consumption and electricity costs for California ratepayers.

viii) University of California, *Improving Solar Energy Conversion by Incorporating Broadband Absorption Upconversion Materials*, $95,000. This project is to determine the feasibility of incorporating broadband absorption conversion to improve solar efficiency. This technology will use rare earth nanoparticles to convert the infrared portion of solar radiation into photovoltaic-ready photons, improving the overall utilization of solar energy by 1.5 percent.

Commissioner Douglas moved and Commissioner McAllister seconded approval of Item 33. The vote was unanimous. (5-0)

34. COUNTY OF SANTA CLARA. Possible approval of Agreement ARV-12-043 with the County of Santa Clara for a $300,000 grant to purchase and install a publicly accessible Compressed Natural Gas (CNG) station at the project site in San Jose. This grant will increase the availability of CNG fueling stations in the San Jose area, reduce County fleet operating costs, facilitate new CNG bus and vehicle purchases by the County and reduce vehicle-related greenhouse gas emissions. The agreement will include $714,000 in match funding. (ARFVTP funding) Contact: James Zhang. (5 minutes)

Items 34-40 were presented as a group. Commissioner Hochschild moved and Commissioner Scott seconded approval of Items 34-40. The vote was unanimous. (5-0)

35. POWAY UNIFIED SCHOOL DISTRICT. Possible approval of Agreement ARV-12-044 with Poway Unified School District for a $299,157 grant to replace two compressed natural gas (CNG) station compressors and one control panel to provide reliable refueling of the District's thirty-five natural gas school buses and re-open services for public natural gas vehicle refueling. The agreement will not include any match funding. (ARFVTP funding) Contact: Darren Nguyen. (5 minutes)

36. MURRIETA VALLEY UNIFIED SCHOOL DISTRICT. Possible approval of Agreement ARV-12-045 with Murrieta Valley Unified School District for a $300,000 grant to construct Phase 1 of its planned compressed natural gas (CNG) fueling infrastructure. The infrastructure will support the District's plan to replace its aging fleet of 50 diesel school buses with natural gas buses. The agreement will include $175,000 in match funding. (ARFVTP funding) Contact: Darren Nguyen. (5 minutes)

37. CITY OF SACRAMENTO. Possible approval of Agreement ARV-12-047 with the City of Sacramento for a $600,000 grant to install two new modular liquefied natural gas (LNG) fueling skids at the Meadowview Corporate Yard and to refurbish two existing LNG fueling skids. A minimum of 30 percent of the LNG dispensed will be from renewable sources. The agreement will include $600,000 in match funding. (ARFVTP funding) Contact: John Mathias. (5 minutes)

38. CITY OF SANTA CLARITA. Possible approval of Agreement ARV-12-046 with the City of Santa Clarita for a $300,000 grant to install a self-serve, commercial, fast-fill compressed natural gas (CNG) fueling facility capable of fueling up to four vehicles simultaneously. The Santa Clarita Valley currently has one public CNG station located on the west side of the Valley in close proximity to Interstate 5. This project will increase

access to CNG along the State Route 14 corridor, reduce travel times to a CNG station for customers who work or live on the east side of the valley, and reduce the demand on existing infrastructure. The agreement will include $900,000 in match funding. (ARFVTP funding) Contact: Sarah Williams. (5 minutes)

39. WASTE MANAGEMENT COLLECTION AND RECYCLING. Possible approval of Agreement ARV-12-050 with Waste Management Collection and Recycling, Inc. (WM) for a $300,000 grant to upgrade an existing compressed natural gas (CNG) fueling station to support WM's existing and rapidly expanding fleet of CNG powered solid waste collection vehicles in the City of Moreno Valley, as well as numerous other fleets in the Inland Empire. This upgrade will allow WM to convert the rest of the Moreno Valley fleet to natural gas and serve numerous additional natural gas fleets. The agreement will include $398,564 in match funding. (ARFVTP funding) Contact: Sarah Williams. (5 minutes)

40. CITY OF ANAHEIM. Possible approval of Agreement ARV-12-048 with the City of Anaheim for a $292,760 grant to upgrade the existing compressed natural gas (CNG) infrastructure owned and operated by the City of Anaheim to support the City's existing 47-vehicle CNG fleet and provide fueling capacity for planned fleet growth for the next five years. The agreement will include $342,972 in match funding. (ARFVTP funding) Contact: Phil Cazel. (5 minutes)

41. CALIFORNIA CLEAN FUELS. Possible approval of Agreement ARV-12-049 with R. F. Dickson Co., Inc., dba California Clean Fuels, for an $83,000 grant to upgrade an existing 24-hour, 7-day per week public access compressed natural gas (CNG) station with a new 2,000 standard cubic foot per minute dispenser. This upgraded fuel dispenser will improve the station's ability to service increasing numbers of heavy-duty vehicles and provide faster service for existing CNG fleets. The agreement will include $91,543 in match funding. (ARFVTP funding) Contact: Phil Cazel. (5 minutes)

Item 41 was removed from the agenda.

42. GREEN CHARGE NETWORKS. Possible approval of Agreement ARV-12-052 with Green Charge Networks, LLC for a $2,087,153 grant to install, commission, collect data, and assess the performance of smart-grid enabled fast charging with battery storage back-up capability. The 16 sites will be associated with 7-Eleven convenience stores and will connect an area from Santa Barbara to San Diego and east to Pomona. The agreement will include $2.3 million in match funding. (ARFVTP funding) Contact: Lindsee Tanimoto. (5 minutes)

Commissioner McAllister moved and Commissioner Douglas seconded approval of Item 42. The vote was unanimous. (5-0)

43. ALTERNATIVE AND RENEWABLE FUEL VEHICLE BUY-DOWN INCENTIVES. Possible approval of $500,000 in vehicle buy-down incentive reservations for A-Z BUS SALES, INC. (OEM – Blue Bird Corporation) (BDIR-12-24), in the amount of $500,000 for the buy-down of 25 propane school buses of 14,001 gross pounds vehicle weight and greater. (ARFVTP funding). Contact: Andre Freeman (5 minutes)

Commissioner Scott moved and Commissioner Douglas seconded approval of Item 43. The vote was unanimous. (5-0)

44. **Minutes:** Possible approval of the April 30, 2013, Business Meeting Minutes.

Commissioner Douglas moved and Commissioner McAllister seconded approval of the Minutes. The vote was 4-0-1. Commissioner Hochschild abstained.

45. **Lead Commissioner or Presiding Member Reports**.

Commissioner Douglas announced May is Bike Month and challenged Energy Commission staff to participate.

Commissioner Hochschild reported on his recent site visits, his efforts to bring guest speakers on energy topics to the Commission, and the forthcoming California Clean Energy Tour website.

Chair Weisenmiller reported on the recent CFEE conference, which Commissioner McAllister also attended.

Commissioner McAllister commented on the CFEE conference, and acknowledged the retirement of Dick Norgaard from the Energy and Resources Group.

Commissioner Scott reported on yesterday's IEPR workshop.

46. **Chief Counsel's Report:** None

47. **Executive Director's Report.** None

48. **Public Adviser's Report.** None

49. **Public Comment:** None

Appearances:
Mr. Brian Asparro, Green Charge Networks
Mr. Jim Boyd, Clean Tech Advocates/Vopak
Mr. Dennis Brooks, County of Santa Clara (by telephone)
Mr. Tim Carmichael, California Natural Gas Vehicle Coalition
Mr. Jason Dobbs, San Diego Gas & Electric Company (by telephone)
Mr. Stuart Flashman, C.A.P.
Mr. John Gouveia, Hayward Area Recreation and Park District
Ms. Sarah Head, San Diego Gas & Electric Company
Ms. Bonnie Holmes-Gen, American Lung Association in California
Ms. Adrianna B. Kripke, San Diego Gas & Electric Company
Mr. Carl LaPeter, San Diego Gas & Electric Company
Mr. Larry Lepore, Hayward Area Recreation and Park District
Ms. Barbara McBride, Calpine Corporation
Mr. Ernest Pacheco, Sierra Club
Mr. Terry Schanz, Office of Assemblymember Isadore Hall III
Mr. Brad Vance, County of Santa Clara
Mr. Gregory Wheatland, Ellison Schneider Harris
Mr. Andrew Wilson III, California Pilots Association

There being no further business, the meeting was adjourned.

Respectfully submitted,

HARRIET KALLEMEYN
Secretary to the Commission