California Energy Commission
December 11, 2024 Business Meeting
Backup Materials for California Clean Energy Fund DBA CALCEF Ventures

The following backup materials for the above-referenced agenda item are available as described below:

1. Proposed Resolution, attached below.
2. Project Summaries and California Environmental Quality Act (CEQA) Analysis for Proposed Concept Small Grant Awards Under the California Sustainable Energy Entrepreneur Development (CalSEED) Initiative, Agreement No. 300-15-007(attached below)

[Proposed]

RESOLUTION NO: 24-1211-13

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: California Clean Energy Fund DBA CalCEF Ventures

WHEREAS, pursuant to Public Resources Code section 25710 et seq. the State Energy Resources Conservation and Development Commission ("CEC") is authorized to establish and administer the Electric Program Investment Charge ("EPIC") Program; and

WHEREAS, the CEC has recognized that California's electricity ratepayers benefit from energy research, development and demonstration ("RD&D") activities conducted by individuals, small businesses, academics and small non-profit institutions; and

WHEREAS, the CEC has created the California Sustainable Energy Entrepreneur Development ("CalSEED") Initiative within the EPIC Program to provide funding for the aforementioned public interest RD&D activities**;** and

WHEREAS, New Energy Nexus dba California Clean Energy Fund or CalCEF Ventures ("CalCEF") is the administrator of the CalSEED Initiative under CEC Agreement Number 300-15-007 and is responsible for soliciting grant applications, recommending grant awards to the CEC, and managing approved grant projects; and

WHEREAS, CalCEF, in compliance with its duties under Agreement Number 300-15-007, in Quarter 3 of 2024 held a competitive solicitation, and as a result has proposed to CEC small grant projects for funding; and

WHEREAS, CEC staff has reviewed the small grant projects CalCEF has proposed, and recommends the following 17 small grant projects for funding:

1. $200,000 is being requested for the Polyi Gan Power Platform project with Three Rivers Power, LLC, a project to create a system that combines the AC inverter, battery charger, battery monitoring, management and cell-balancing functions onto a small circuit card component which attaches to a small group of battery cells; and
2. $200,000 is being requested for the Woven-Graphite Anodes by Direct Solar-Thermal Deposition for Recyclable Lithium-Ion Batteries project with SolGrapH, Inc., a project to demonstrate the efficacy of a newly discovered form of clean, cylindrically-layered graphite to significantly enhance the life and recyclability of lithium-ion batteries via a single-component woven anode produced by solar synthesis; and

3. $200,000 is being requested for the Advanced Data and Controls for Multi-Function Multi-Family Heat Pump Systems project with Aris Hydronics Inc., a project to design and test a multi-function air-to-water heat pump system for heating, cooling, and domestic hot water; and
4. $200,000 is being requested for the Recyclable Immersion-Cooled Battery Energy Storage System project with Wayside, a project to design and build a full-scale unit to test power and thermal characteristics of a battery energy storage system; and
5. $200,000 is being requested for the Circular Economy via Recovery Critical Metals from Alternative Sources project with We Think Global Inc., a project to deploy up to three mobile, decentralized wastewater and sludge management technologies to recover certain critical minerals such as copper from alternative sources; and
6. $200,000 is being requested for the Heavy Duty Electric Trailers: Reliable Electric Drives replacing Diesel Engines project with Cryodrives, LLC, a project to develop a high-powered, ultra-rugged AC to AC power based power system for electrifying existing diesel systems that power on-board trailer motors such as the refrigerator on a grocery truck trailer; and
7. $200,000 is being requested for the AI-Driven Optimization Modeling for Efficient Fleet Charging Management project with AmpTrans Inc., a project to enhance theoretical models and develop software for an electric vehicle fleet charging management system; and
8. $200,000 is being requested for the Hybrid Additive and Advanced Manufacturing of Metals project with KVA Technologies, a project to develop real-time temperature mapping capabilities for improved process control and traceability on an existing proof-of-concept bench scale integrated metal 3D printing device; and
9. $200,000 is being requested for the Electrifying 700-1600 C Process Heat with Thermal Energy Storage project with Calectra, Inc, a project to develop and validate the thermal energy storage material that is critical to the successful implementation of a high-temperature thermal storage technology that uses renewable electricity to generate high-temperature heat, which can then be stored and used to power industrial processes for the production of materials like steel, cement, and glass at low-cost; and
10. $200,000 is being requested for the OpenRoad Accessible EV Fast-chargers and Platform project with OpenRoad Technologies Inc., a project to design and revise electronic circuit boards and components, and assemble them within printed enclosures, with the goal of completing a prototype EV charger that provides high-speed charging from standard consumer-grade electrical outlets; and
11. $200,000 is being requested for the Modular, On-site, Green Ammonia Production from Variable Renewable Energy project with 17, Inc., a project to develop small-scale, modular ammonia production units for location onsite solar/wind plants enabling excess clean energy to be converted into a transportable, multi-market zero carbon commodity; and

12. $200,000 is being requested for the Modular Solar EV Charging Stations to Rapidly Electrify California Fleets project with Gridwave, PBC, a project to design, build and test an intelligent energy controls system architecture on a modular solar electric vehicle charging station platform; and
13. $200,000 is being requested for the Sodium-ion Battery Powered MWh Rapid charger for Electric Trucks project with Navion Energy, Inc., a project to fabricate and optimize a battery management system integrated with a 600V 120kWh sodium-ion battery pack and validate it in a state-of-the-art testing facility; and
14. $200,000 is being requested for the Safer, Lower Cost, High Power Charging, Heavy-Duty Vehicle Batteries project with Coulomb Technology, a project to continue to optimize 5Ah pouch cells and then scale up to at least 20Ah prismatic cells; and
15. $200,000 is being requested for the Wireless Charging from Power Lines for Autonomous Fire-Threat Detection EVs project with Sol Robotics, Inc., a project to develop a wireless charging technology that harnesses the magnetic field from overhead power lines for the primary purpose of recharging autonomous fire-threat detection electric vehicles in remote areas of California; and
16. $200,000 is being requested for the Solid-State Battery Design for Non-Shredding Disassembly and Recycling Efficiency project with EcoRecycleTech, a project to design a solid-state lithium-ion battery cell and pack that enables its facile repair, repurposing, and automated disassembly without shredding, in order to maximize its circular economics and ecofriendliness; and
17. $200,000 is being requested for the A Green-Solvent Critical Materials Separation Technology for Novel Battery Cathode Materials project with Manara Materials LLC, a project to optimize a novel separation method relying on inorganic green solvents to recover battery critical materials from oil refinery domestic wastes that can then be repurposed for high energy density cathode materials for energy storage applications; and

WHEREAS, CEC staff has reviewed the projects and determined that each project is exempt from the California Environmental Quality Act, as described in CEC staff's "Project Summaries and California Environmental Quality Act (CEQA) Analysis For Proposed Concept Small Grant Awards Under the California Sustainable Energy Entrepreneur Development (CalSEED) Initiative" Memorandum ("Memorandum") dated November 1, 2024, a document that is included in the backup materials to this Business Meeting item.

THEREFORE, BE IT RESOLVED, that the CEC adopts CEC staff's CEQA findings contained in the Memorandum for the 17 small grant projects; and

FURTHER BE IT RESOLVED, that the CEC approves the 17 small grant projects for a total of $3,400,000; and

FURTHER BE IT RESOLVED, that the CEC directs CalCEF to execute grant agreements with the approved awardees pursuant to the requirements of Agreement Number 300-15-007.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the CEC held on December 11, 2024.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

_____
Kristine Banaag
Secretariat

State of California **California Natural Resources Agency**

M e m o r a n d u m

To: Chair David Hochschild
Vice-Chair Siva Gunda
Commissioner Noemí Gallardo
Commissioner Patty Monahan
Commissioner Andrew McAllister

Date: November 1, 2024

From: Josh Croft
Electric Generation System Specialist

Telephone: (916) 314-3930

Subject: **PROJECT SUMMARIES AND CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS FOR PROPOSED CONCEPT SMALL GRANT AWARDS UNDER THE CALIFORNIA SUSTAINABLE ENERGY ENTREPRENEUR DEVELOPMENT (CALSEED) INITIATIVE**

New Energy Nexus dba California Clean Energy Fund or CalCEF Ventures (CalCEF) is the administrator of the Energy Commission's CalSEED Initiative under Agreement No. 300-15-007. The CalSEED Initiative awards small grants in the form of "Concept Awards" or "Prototype Awards" and provides access to business and technical services for entrepreneurs seeking to develop a technical feasibility case for their technologies.

CalCEF held an open application period, Solicitation 24-01, in Q3 2024 and received 97 applications. As a result of the open application, 17 projects are being proposed for $200,000 per project in "Concept Award" grant funding at the December 11, 2024 Energy Commission Business Meeting.

I am an Electric Generation System Specialist in the Energy Research and Development Division of the California Energy Commission. I have reviewed the project information and CEQA compliance forms submitted by each applicant. Below are project summaries and my CEQA analysis for each proposed project:

Concept Awards

1. PROJECT TITLE: POLYI GAN POWER PLATFORM

Applicant: Three Rivers Power, LLC
Principal Investigator: Drew Adams
Subcontractors and Vendors: TBD

Project Summary: This project will create a system that combines the AC inverter, battery charger, battery monitoring, management and cell-balancing functions onto a small circuit card component which attaches to a small group of battery cells. The project will design, build and test an innovative and highly compact energy storage platform, which maximizes the power and energy density through the use of wide-bandgap semiconductors (GaN), further advancing the density and capacity, which will enable deployment of large amounts of energy storage onto the grid, and bring the innovation closer to commercialization.

The physical setup of the project will include bench top testing and analysis of small electric power modules including GaN power module printed circuit board (PCB); 5kW 120VAC phase-leg test platforms, consisting of approximately 15-20 GaN power modules each, plus a main controller PCB, EMI filter assembly, switchgear, protective components, and fusing and surge suppressors.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities"

Reason Why Project is Exempt: This project is exempt under CEQA because the project is limited to research, development and testing of small electric power modules in an existing laboratory. The project involves no construction or related activities and will not require any modifications to the existing laboratory facility.

2. Project Title: Woven-Graphite Anodes by Direct Solar-Thermal Deposition for Recyclable Lithium-Ion Batteries

Applicant: SolGrapH, Inc.
Principal Investigator: Charlene Salamat
Subcontractors and Vendors: TBD

Project Summary: This project will demonstrate the efficacy of a newly discovered form of clean, cylindrically-layered graphite to significantly enhance the life and recyclability of lithium-ion batteries (LIBs) via a single-component woven anode produced by solar synthesis. The project will validate the enhanced cell lifetime of the woven graphite anode and focus on recycling process steps including the physical extraction of anode from a battery cell and regenerative annealing to heal cycle-induced damage to the woven anode. Testing will occur in an existing laboratory facility and will not have a significant effect on the environment.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities"

Reason Why Project is Exempt: This project is exempt under CEQA because the project is limited to a laboratory-scale solar simulator process at an existing facility. The project team will focus on post-processing methods and battery cycling which will utilize battery electrolyte and components in small quantities and will be disposed of safely, per UCLA California NanoSystems Institute's environmental health and safety guidelines and protocols.

3. Project Title: Advanced Data and Controls for Multi-Function Multi-Family Heat Pump Systems

Applicant: Aris Hydronics Inc.
Principal Investigator: Robert Benjamin
Subcontractors and Vendors: TBD

Project Summary: This project will design and test a multi-function air-to-water heat pump system for heating, cooling, and domestic hot water. It will use high-capacity central thermal storage tanks and distributed thermal storage. Aris Hydronics will engage a specialized team to conduct targeted research and development work through to software development and

hardware bench tests to advance the state of the art in combi-system data and controls for multi-family buildings. The hardware testing will consist of wiring and powering a number of low voltage controls, sensors, relays, data loggers, and WiFi modules in various combinations - connected to PC computers running a series of iterative control and data programs.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities", 14 CCR 15303 "Installation of Small Equipment"

Reason Why Project is Exempt: This project is exempt under CEQA because project activities consist of computer work, market research, and small component testing and monitoring of a heat pump system including controls, sensors and associated software. These activities will occur in existing facilities and consist of data collection activities that will not affect the environment.

4. Project Title: Recyclable Immersion-Cooled Battery Energy Storage System

Applicant: Wayside
Principal Investigator: James Werbe
Subcontractors and Vendors: TBD

Project Summary: This project will design and build a full-scale unit to test power and thermal characteristics of a battery energy storage system. The project will also test a passive immersion fire suppression system to gather safety data. The supervised safety test of the selected biodegradable immersion coolant will be conducted in collaboration with local fire departments.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities", 14 CCR 15303 "Installation of Small Equipment", 14 CCR 15311 "Small or Portable Structures"

Reason Why Project is Exempt: This project includes two activities. The project will design, build, and test a battery energy storage system in an existing small, controlled laboratory facility using biodegradable and non-toxic chemicals. The project will also conduct fire safety testing of the biodegradable coolant and fire suppression system at an existing fire training center. This project involves no construction or related activities.

5. Project Title: Circular Economy via Recovery Critical Metals from Alternative Sources

Applicant: We Think Global Inc.
Principal Investigator: Arpita Banerjee
Subcontractors and Vendors: TBD

Project Summary: This project will deploy up to three mobile, decentralized wastewater and sludge management technologies to recover certain critical minerals such as copper from alternative sources. The project setup will also include solar and battery storage.

CEQA Exemption Status: 14 CCR 15301 "Existing Facilities", 14 CCR 15303 "Installation of Small Equipment", 14 CCR 15311 "Small or Portable Structures"

Reason Why Project is Exempt: This project is exempt under CEQA because it is limited to temporary, small-scale installation of equipment designed to extract metals from wastewater. The extraction will be conducted on wastewater streams that are not suitable and not used as drinking water sources. The treatment method will use EPA approved green chemicals to isolate and extract the metals. The treatment is commonly used on wastewater treatment and does not add anything to the waste. All sampled wastewater will be poured into large contains and will not touch the ground.

6. Project Title: Heavy Duty Electric Trailers: Reliable Electric Drives replacing Diesel Engines

Applicant: Cryodrives, LLC
Principal Investigator: Christopher Boyden
Subcontractors and Vendors: TBD

Project Summary: This project will develop a high-powered, ultra-rugged AC to AC power based power system for electrifying existing diesel systems that power on-board trailer motors such as the refrigerator on a grocery truck trailer. This system will be deployed on an array of test bench skids that will demonstrate the suitability of the power electronics to drive the pump load, including a non-toxic, closed loop water pump acting as a Cryogenic Liquid Nitrogen pump simulator. This project will also include the rental of a battery energy storage substitute. Power from the grid, including the installation of a power pole, may be needed or, alternatively, a temporary 40-foot storage container with solar PV fed battery energy storage will be utilized.

CEQA Exemption Status: 14 CCR 15303 “Installation of Small Equipment”, 14 CCR 15302 “Replacement with Similar Purpose”, 14 CCR 15304 “Minor Alterations to Land”, 14 CCR 15311 “Small or Portable Structures”

Reason Why Project is Exempt: This project is exempt under CEQA because project activities are limited to the design, build and testing of a heavy-duty variable frequency drive inverter (HD-VFD) and power filter for heavy mobility trailer applications. No significant waste will be produced and noise generated will be in line with the ambient noise from the rurarl community where the project will take place. Additionally, the project materials, such as the power system, will be removed once the project has concluded.

7. Project Title: AI-Driven Optimization Modeling for Efficient Fleet Charging Management

Applicant: AmpTrans Inc.
Principal Investigator: Zuzhao Ye
Subcontractors and Vendors: TBD

Project Summary: This project will enhance theoretical models and develop software for an electric vehicle fleet charging management system. The development and testing of the IntelliCharge system will be conducted using existing computer equipment and charging infrastructure. The pilot testing phase will utilize existing charging stations, solar panels, and battery systems at partner locations to validate the effectiveness of the IntelliCharge system.

CEQA Exemption Status: 14 CCR 15306 “Data Collection, 14 CCR 15301 “Existing Facilities”, 14 CCR 15061 (b)(3) “Common Sense Exemption”

Reason Why Project is Exempt: This project is exempt under CEQA because it involves software development, data analysis, and optimization of existing charging infrastructure, which will not cause any significant direct physical change in the environment. The project utilizes existing facilities and equipment for development and testing, and while it may alter the operation of charging stations, it does not require physical modifications or other construction-type activities that could potentially impact the environment beyond the existing footprint of the charging infrastructure.

8. Project Title: Hybrid Additive and Advanced Manufacturing of Metals

Applicant: KVA Technologies
Principal Investigator: Danny Codd
Subcontractors and Vendors: TBD

Project Summary: This project will develop real-time temperature mapping capabilities for improved process control and traceability on an existing proof-of-concept bench scale integrated metal 3D printing device. The project will also confirm technoeconomic benefits, and consistent, repeatable performance in prototype test parts. R&D activities include prototype system design, computer technoeconomic modeling, fabrication and testing, all of which take place at the existing engineering/fabrication facility and associated home offices for computer work.

CEQA Exemption Status: 14 CCR 15306 “Data Collection, 14 CCR 15301 “Existing Facilities”

Reason Why Project is Exempt: This project is exempt under CEQA because project activities are limited to the design, modeling, fabrication and testing of prototype metal 3D printing and heat treatment equipment in an existing engineering/fabrication facility. The project will not require any modifications to the facility and involves no expansion of the existing or former use. Project activities will be in full compliance with applicable city and state codes.

The project does not involve unusual circumstances that might have a significant effect on the environment, as activities are consistent with existing welding and fabrication activities already in place at the project location; no hazardous waste will be generated.

9. Project Title: Electrifying 700-1600 C Process Heat with Thermal Energy Storage

Applicant: Calectra, Inc.
Principal Investigator: Nathaniel Weger
Subcontractors and Vendors: TBD

Project Summary: This project will develop and validate the thermal energy storage material that is critical to the successful implementation of a high-temperature thermal storage technology that uses renewable electricity to generate high-temperature heat, which can then be stored and used to power industrial processes for the production of materials like steel,

cement, and glass at low-cost. The demonstration of an electrically conductive, air-stable brick that can be heated via direct resistive heating to 1800°C, and can retain its critical properties after 2,000 thermal cycles will involve extensive high-temperature testing in soak-and-hold and cycling furnaces. The majority of the work for this project will be experimental laboratory research, which will involve testing the performance of ceramic-based thermal storage materials in high-temperature furnaces.

CEQA Exemption Status: 14 CCR 15301 "Existing Facilities"

Reason Why Project is Exempt: This project involves testing the performance of ceramic-based thermal storage materials in high-temperature furnaces. During these tests, there is the potential that heating the materials will generate carbon dioxide or carbon monoxide in small quantities (~1 g per hour). These gases would be generated in a well-ventilated space, and would be quickly diluted with air to the point where they would be rendered harmless, before they would be released into the atmosphere.
. The gases generated over the entire length of the project would amount to less carbon dioxide and carbon monoxide than is generated by a car that burns only one gallon of gasoline. Additionally, the project site is an existing site and the project involves negligible or no expansion of existing or former use of the site. The site has received all of the permitting required to perform these types of lab-scale experiments.

10. Project Title: OpenRoad Accessible EV Fast-chargers and Platform

Applicant: OpenRoad Technologies Inc.
Principal Investigator: Evan Kirchhoff
Subcontractors and Vendors: TBD

Project Summary: This project will design and revise electronic circuit boards and components, and assemble them within printed enclosures, with the goal of completing a prototype EV charger that provides high-speed charging from standard consumer-grade electrical outlets. By banking stored energy, this technology enables true high-speed EV charging in electrically underserved areas and "supercharger deserts", including difficult sites such as multi-unit apartment buildings, as well as reducing load on California's power grid during times of peak demand.

CEQA Exemption Status: 14 CCR 15301 "Existing Facilities", 14 CCR 15306 "Data Collection,

Reason Why Project is Exempt: This project is exempt under CEQA because project activities are limited to system design and assembly of electronic components for a prototype EV charger. The prototype will be designed and tested at an existing site and then demonstrated at a separate existing site. The project involves negligible or no expansion of existing or former use of the sites.

11. Project Title: Modular, On-site, Green Ammonia Production from Variable Renewable Energy

Applicant: 17, Inc.
Principal Investigator: Garth Edwards

Subcontractors and Vendors: TBD

Project Summary: This project will develop small-scale, modular ammonia production units for location onsite solar/wind plants enabling excess clean energy to be converted into a transportable, multi-market zero carbon commodity. The project will use small (<1L) benchtop reactors with standard measurement equipment in existing Lawrence Berkeley National Laboratory laboratories to produce trace amounts of ammonia while measuring system performance.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities"

Reason Why Project is Exempt: This project is exempt under CEQA because project work is limited the development of small-scale ammonia production units and subsequent testing at existing laboratories at LBNL following established lab standard operating procedures for processes and disposals. The project involves no construction activities, and only trace amounts of chemicals used or produced infrequently. The project's physical activities will not cause a significant direct or indirect effect on the environment because it will only produce trace amounts of ammonia as part of experiments in a very small (<1L) benchtop reactor. Since the experiments are being completed in existing laboratories at LBNL that are already equipped for the purpose, there will be no direct or reasonably foreseeable indirect physical change as a result of the project. There will be no construction activities, no changes to land or buildings. Ammonia, whilst a hazardous material, will only be produced in trace (ppm) concentrations and very small amounts (<100g) - significantly less than the 100 lb EPA reporting requirements of CERCLA section 103 and EPCRA section 304.

12. Project Title: Modular Solar EV Charging Stations to Rapidly Electrify California Fleets

Applicant: Gridwave, PBC
Principal Investigator: Troy Tyler
Subcontractors and Vendors: TBD

Project Summary: This project will design, build and test an intelligent energy controls system architecture on a modular solar electric vehicle charging station platform. The project will perform virtual software and hardware design, evaluation and testing of the software through a digital twin model. The project may assemble certain components as lab-scale, temporary proof of concept assemblies as necessary to validate one or more parts of the concept.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities", 14 CCR 15303 "Installation of Small Equipment"

Reason Why Project is Exempt: This project is exempt under CEQA because the project will not build nor construct any physical structures or perform any work that has a physical impact on the environment. This project is focused on a virtual, digital design process for software and hardware components of a modular, solar-powered microgrid to deliver benefits to businesses rolling out electric medium-duty vehicles. Certain components of the modular solar-powered EV charging station being designed will be assembled at lab-scale in order to validate the concept. The proof of concept will be designed and tested at an existing site and then

demonstrated at a separate existing site. The project involves negligible or no expansion of existing or former use of the sites.

13. Project Title: Sodium-ion Battery Powered MWh Rapid charger for Electric Trucks

Applicant: Navion Energy, Inc.
Principal Investigator: Hyo Joon Lee
Subcontractors and Vendors: TBD

Project Summary: This project will fabricate and optimize a battery management system integrated with a 600V 120kWh sodium-ion battery pack and validate it in a state-of-the-art testing facility. This setup will provide a validated prototype with valuable data on performance, efficiency, and reliability, enabling real-world validation and feedback from users for product optimization.

CEQA Exemption Status: 14 CCR 15306 “Data Collection, 14 CCR 15301 “Existing Facilities”

Reason Why Project is Exempt: This project is exempt under CEQA because it will be conducted entirely within an existing fabrication and testing facility involving negligible or no expansion of existing or former use. The project involves no significant construction, land alterations, or extensive outdoor operations that could impact the environment. The project's activities are limited to routine fabrication and testing processes, which are designed to minimize noise, odors, and hazardous material handling, ensuring that there will be no significant effects on the environment or surrounding community.

14. Project Title: Safer, Lower Cost, High Power Charging, Heavy-Duty Vehicle Batteries

Applicant: Coulomb Technology
Principal Investigator: Tim Vosburgh
Subcontractors and Vendors: TBD

Project Summary: This project will continue to optimize 5Ah pouch cells and then scale up to at least 20Ah prismatic cells. This will include optimizing conductive additives to achieve high-power discharge capacity of 500W/kg. The project will include making and testing batteries in a lab by utilizing a hand casting method that entails making a paste out of powder anode and cathode materials by adding isopropyl alcohol Teflon, and carbon. To test the batteries, they will be hooked up to a cycle tester which cycles the battery from no charge to full charge.

CEQA Exemption Status:14 CCR 15306 “Data Collection”, 14 CCR 15301 “Existing Facilities”,

Reason Why Project is Exempt: This project is exempt under CEQA because it is limited to the making and testing of a zinc-ion battery. All project work will be done within an existing laboratory facility and involves negligible or no expansion of existing or former use of the site. Small amounts of hazardous materials are involved in this project but will be confined to a fume hood and not released into the environment. Any hazardous waste will be disposed in a central aqueous hazardous waste container that will be processed by a local certified

environmental health and safety organization in accordance with governing procedures and applicable laws.

15. Project Title: Wireless Charging from Power Lines for Autonomous Fire-Threat Detection EVs

Applicant: Sol Robotics, Inc.
Principal Investigator: Justin Hunt
Subcontractors and Vendors: TBD

Project Summary: This project will develop a wireless charging technology that harnesses the magnetic field from overhead power lines for the primary purpose of recharging autonomous fire-threat detection electric vehicles in remote areas of California. The design and development of this unique charger and robotic arm will be performed in a laboratory setting. Testing of these integrated systems will also be performed in the same controlled lab environment, using a magnetic field generator that replicates the field strength of a conventional California power line.

CEQA Exemption Status: 14 CCR 15306 "Data Collection, 14 CCR 15301 "Existing Facilities"

Reason Why Project is Exempt: This project is exempt under CEQA because it will take place in a Cal/OSHA approved indoor laboratory setting that adheres to strict safety and environmental standards and involves negligible or no expansion of existing or former use of the site. The project is limited to standard activities approved for this setting, which will be mechanical component machining, electrical component assembly and computer work. Testing will also occur in this laboratory setting under controlled operating conditions.

16. Project Title: Solid-State Battery Design for Non-Shredding Disassembly and Recycling Efficiency

Applicant: EcoRecycleTech
Principal Investigator: Mark Lefebvre
Subcontractors and Vendors: TBD

Project Summary: This project will design a solid-state lithium-ion battery cell and pack that enables its facile repair, repurposing, and automated disassembly without shredding, in order to maximize its circular economics and ecofriendliness. The project involves installing a chemical cabinet to store a limited amount of commercially available electrode material, setting up single-channel battery cell testing equipment, and a small commercially available environmental control glove box.

CEQA Exemption Status: 14 CCR 15301 "Existing Facilities", 14 CCR 15306 "Data Collection"

Reason Why Project is Exempt: This project is exempt under CEQA because the project is limited to the development and testing of a solid-state battery packaging architecture in a laboratory, involves no expansion of an existing or former use of the facility and will not contribute to air, water, or noise pollution. The resulting prototype cells use commercially available electrode material in relatively small quantities and if any waste is generated, it will

be treated in accordance with applicable state and local protocols. The project's physical activities will not have a significant direct impact on the environment, as they consist of computer modeling, packaging design, and small-scale cell fabrication and testing.

17. Project Title: A Green-Solvent Critical Materials Separation Technology for Novel Battery Cathode Materials

Applicant: Manara Materials LLC
Principal Investigator: Saad Youssefi
Subcontractors and Vendors: TBD

Project Summary: This project will optimize a novel separation method relying on inorganic green solvents to recover battery critical materials from oil refinery domestic wastes that can then be repurposed for high energy density cathode materials for energy storage applications. This project will seek to prove the techno-economic feasibility of a closed-loop green solvo-metallurgic separation method to source highly concentrated critical materials from oil refinery wastes in a lab setting. The recovered critical material will then be synthesized and optimized into a novel sodium-ion cathode material and tested for electrochemical performance in half-cells and full cells.

CEQA Exemption Status: 14 CCR 15306 “Data Collection, 14 CCR 15301 “Existing Facilities”

Reason Why Project is Exempt: This project is exempt under CEQA because the proposed project does not involve any construction activities, changes to land or buildings, or generation of excessive noise or odors. The project will use benign environmentally inorganic solvents Waste generated from the project will be minimal (less than 10 kg), and established standard operating procedures regarding appropriate waste handling and disposal will be strictly followed.