



CalSEED Awardee Portfolio Overview

CalSEED

The **California Sustainable Energy Entrepreneur Development** initiative grants up to \$600,000 to early stage clean energy concepts and provides professional development resources



Concept Award

\$150,000

Concept Development & Assistance

Mentorship from entrepreneurial experts and industry leaders

Introduction to resources to advance the concept



Prototype Award

\$450,000

Successful Concept Awardees prepare for Commercialization

Business Plan Competition to push awardees to think in a commercialization area



CALIFORNIA
ENERGY COMMISSION

CalSEED 2017 Awardees

 Saratoga Energy

INTERTIE
Adding real value to clean energy

Opcondys

SUNVAPOR
RENEWABLE PROCESS HEAT

BK LITEC

Li lac
solutions

pf POWERFLEX
SYSTEMS

MOEV

 **CORRELATE**

lucent optics

 **CUBERG**
THE FUTURE OF BATTERIES IS HERE


ARCTICA SOLAR
www.arcticasolar.com

 Sustainable
Economies
Law Center

MORE
Maxout Renewables . Com

parc
A Xerox Company

GLINT
PHOTONICS

 **SEPION**
TECHNOLOGIES


ENERDAPT
ENERGY SAVINGS. SIMPLIFIED.

codecycle

SOUTH 8
TECHNOLOGIES
Next Generation Energy Storage Devices

 **SUNSWARM**
SOLAR FOR EVERYONE

 **NATIVUS**
REVOLUTIONARY COOLING

— opus 12


GENERAL ENGINEERING AND RESEARCH

CalSEED

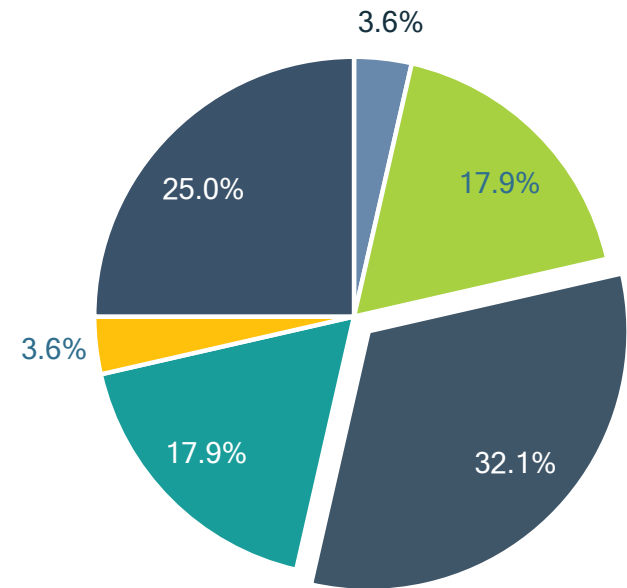
Core Areas of Focus

- Storage Solutions
- Energy Efficiency
- Lighting
- Power Plant Improvements
- System and/or Home Modeling Tools
- Heating/Cooling Energy Efficiency
- Smart Grid components
- Renewable Generation



Portfolio Breakdown

(California-Wide Technology Descriptions)



- Electric Vehicle & Mobility
- Batteries & Energy Storage
- Intelligent Manufacturing
- Renewable Energy
- Energy Efficiency
- Grid & IT
- Water-Energy Nexus

CalSEED Awardee Companies 2017

Company	Technology Vertical	Idea	Location
Artica Solar	Renewable Energy	Next Gen Solar Heating & Cooling	Huntington Beach
BK Litec	Intelligent Manufacturing	S1 Outdoor & Industrial IoT LED Lamp	Los Angeles
CodeCycle	Energy Efficiency	Energy compliance	San Francisco
Correlate	IT	Virtual Energy Manager Platform	San Francisco
Cuberg	Batteries & Energy Storage	Better Batteries with Next Gen Electrolytes	Mountain View
EnerDapt	IT	HVAC Optimization & Proactive Maintenance Software	Roseville
General Engineering & Research	Batteries & Energy Storage	High Efficiency Magnetic Refrigeration	San Diego
Glint Photonics	Energy Efficiency	Low Cost Energy-Saving Configurable Lighting	Burlingame
Halo Industries	Renewable Energy	Advanced Wafering for Drastic Solar Cost Reduction	San Mateo
InterTie	Grid	EV ChargePod, A Clean Energy Enabler	San Francisco
Lilac Solutions	Batteries & Energy Storage	Lithium Extraction with Materials	Oakland
Lucent Optics	Energy Efficiency	Daylight Harvesting Window Film	Sacramento
Maxout Renewables	Renewable Energy	Maxout Polyverter	Livermore
MMCI Solar	Renewable Energy	Ejector Heat Pump for Low Cost Solar Water Heating	Oakland

CalSEED Awardee Companies 2017

Company	Technology Vertical	Description	Location
PARC (Project)	Renewable Energy	Membrane-based Electrochemical CO2 Removal System	Palo Alto
PARC (Project)	Batteries & Energy Storage	Energy Storage and Electrochemical Desalination	Palo Alto
Powerflex Systems	Electric Vehicle	Adaptive Charging Network for EV and Renewables	Los Altos
Samuel Zhang	Batteries & Energy Storage	Super-Long-Life, Ultra-High-Power Hybrid Battery	Newbury Park
Saratoga Energy Research Partners	Batteries & Energy Storage	High-Power Long-Life Batteries for Grid Storage	Berkeley
Sepion Technologies	Batteries & Energy Storage	EV Boost Technology	Berkeley
South 8 Technologies	Batteries & Energy Storage	Lithium Metal Battery	San Diego
Sunswarm	IT	Sunswarm Community Solar Software	Oakland
Sunvapor	Renewable Energy	Industrial Solar Steam for Central Valley	Livermore
Sustainable Economies Law Center	Energy Efficiency	Permanent Community Energy Cooperative	Oakland
PARC (Project)	Renewable Energy	Membrane-based Electrochemical CO2 Removal System	Palo Alto
PARC (Project)	Batteries & Energy Storage	Energy Storage and Electrochemical Desalination	Palo Alto
Powerflex Systems	Electric Vehicle	Adaptive Charging Network for EV and Renewables	Los Altos
Samuel Zhang	Batteries & Energy Storage	Super-Long-Life, Ultra-High-Power Hybrid Battery	Newbury Park

Portfolio Company Descriptions

Arctica Solar

Arctica Solar is working to drastically reduce the price and increase the performance of existing commercial solar air heater options.

<http://www.arcticasolar.com/>

BK Litec

Accelerating LED adoption in lighting through high power omnidirectional, screw-in LED innovations.

<http://www.bklitec.com/>

CodeCycle

Software Platform to Improve Compliance with Building Energy Standards: CodeCycle has designed an inspection application to streamline the compliance process for building officials, contractors, and engineers. Inputs and inspection processes will be organized atop building plans increasing transparency and time measured with the greatest energy impact.

<https://www.codecycle.com/>

Correlate

Virtual Energy Manager Platform: Correlate provides energy programs for building portfolios that require no-upfront-capital. Its programs use software workflows, analytics and services to efficiently execute tasks, enabling energy consumers and industry to deliver more projects.

<https://www.correlateinc.com/>

Cuberg

Building better batteries with next-generation electrolytes

<http://www.cuberg.net/>

Portfolio Company Descriptions

EnerDapt

A virtual building engineer platform designed to support providers, reduce tenant complaints and cut operating costs.

<https://enerdapt.com/>

General Engineering & Research

General Engineering & Research is creating a novel refrigeration technology using magnets and advanced materials for safer and more efficient low temperature applications such as hydrogen storage.

<https://www.geandr.com/>

Glint Photonics

Glint Photonics is developing a new customizable lighting technology providing a low-cost mechanism to optimize the light output pattern from any luminaire— saving energy and money by placing light precisely where it is needed.

<http://www.glintphotonics.com/>

Halo Industries

Technology to increase the energy output of a solar thermal system while reducing the total cost of the system.

<http://halo-industries.com/>

Individual - Super Long Life, Ultra-High-Power Hybrid Battery

Developing novel batteries for energy storage. By using a hybrid architecture, this new battery combines supercapacitor and Li-ion battery into one pack with super-long- life and ultra-high-power.

Portfolio Company Descriptions

Intertie

Intertie's modular smart grid solution, the EV ChargePod™, advances California's 'Grid of the Future' by simultaneously delivering fast EV charging, intelligent storage, solar integration and electric services, while improving grid reliability, raising utilization and allowing others to realize greater value from their clean energy investments.

<https://www.intertie.com/>

Lilac Solutions

Lithium Extraction with Ion Exchange Materials: Lilac Solutions is developing a more efficient lithium extraction and manufacturing process that will lower the costs of battery production.

<http://www.lilacsolutions.com/>

Lucent Optics

Lucent Optics' daylight harvesting window film captures and redirects sunlight deep into building interior to improve natural illumination, improve occupants' comfort and save up to 60% of energy used for lighting.

<http://www.lucentoptics.com/>

Maxout Renewables

Advancing the Polyverter, a new class of string inverter from early proof of concept to alpha testing.

<http://www.maxoutrenewables.com/>

Portfolio Company Descriptions

MMCI Solar

MMCI Solar's technology centers on a solar thermal collector design which utilizes air to transport heat. This eliminates the use of copper in the construction of the panel, and stainless steel piping to transport heat. Solar thermal systems based on this technology can be simply and easily retrofitted to existing water or process heating infrastructure.

<https://www.mmcisolar.com/>

MOEV

MOEV created a system that integrates vehicle to grid, stationary storage, distributed energy resources, and grid conditions while monitoring and predicting the changes to the availability of each component.

<http://www.moevinc.com/>

Nativus

Hyper-Efficient Heating and Cooling Technology: Nativus technology offers heating and cooling of clean, filtered air at substantially lower operating cost to residential and commercial ratepayers, with meaningful reduction on power demand burden to the utility's grid.

<https://www.nativuspower.com/>

Opcondys

Opcondys is demonstrating an optical switching device for high-efficiency power grid control and better fault detection and recovery.

<http://opcondys.com/>

Portfolio Company Descriptions

Opus 12

Opus 12's technology converts CO₂, water, and electricity into valuable products such as fuel, methane, chemicals, or plastics.

<https://www.opus-12.com/>

PARC- Energy Storage and Electrochemical Desalination

This desalination battery is a low capital cost approach to grid arbitrage with round-trip efficiency >80% and modular storage capacity that produces desalinated water during battery discharge.

<http://www.parc.com/>

PARC- Membrane-based Electrochemical CO₂ Removal System

This system presents an energy-efficient approach to improving indoor air quality by ensuring selective removal of carbon dioxide, resulting in substantial HVAC energy savings.

<http://www.parc.com/>

Powerflex Systems

Powerflex Systems will develop control software to optimize EV charging in real time, facilitate renewable integration, and respond to grid conditions, demand response (DR) signals or electricity prices.

<http://powerflex.com/>

Portfolio Company Descriptions

Saratoga Energy

Saratoga Energy is developing an inexpensive production process to synthesize graphite from CO₂. Saratoga's technology electrochemically separates CO₂ into oxygen and graphitic carbon, an essential material in lithium-ion batteries. Graphite produced by the Saratoga process is well suited for fast-charging electric vehicles, grid storage, and a broad spectrum of other energy and industrial applications.

<http://www.saratoga-energy.com/>

Sepion Technologies

Development of advanced battery membranes that are the key to powering electric vehicles beyond 400 miles on a single charge. Thin-film solid electrolyte is designed for compatibility with existing Li-ion battery manufacturing techniques.

<http://www.sepiontechnologies.com>

South 8 Technologies

South 8 Technologies is commercializing a breakthrough battery electrolyte showing significant improvements in safety and energy density, especially in cold environments.

<http://www.south8technologies.com/>

Sunswarm

Sunswarm will use technology to develop methodologies, business process and relevant metrics that can be applied to community engagement and education campaigns to accelerate the adoption and acceleration of community solar campaigns.

<https://www.sunswarmsolar.com/>

Portfolio Company Descriptions

Sunvapor

Sunvapor's patent-pending solar collector will reduce the cost of solar steam. Their redesigned parabolic trough collector reduces cost by 75 percent.

<http://www.sunvapor.net/>

Sustainable Economies Law Center

SELC helps overcome barriers to community-owned and financed solar energy, testing a cooperative ownership and financing model that will allow everyone, not just homeowners and the wealthy, an opportunity to drive renewable energy development, share in its benefits, and speed the transition to renewables.

<http://www.theselc.org/>



Optimizing the energy transition

**100%+ clean energy economy
for the 100%**