Cal**SEED**

2023 Application Questions

February 15, 2023

CalSEED

Eligibility Questions

1. Innovation Name: (10 word limit)

2. Contact Information:
   a. Name:
   b. Position/Title:
   c. Organization:
   d. Phone Number:
   e. Email:
   f. Website:

3. Address: (Applicants must list the address where the majority of the work will occur)
   a. Street Address:
   b. City:
   c. State:
   d. Zip Code:
   e. County:
      o Los Angeles County
      o Orange County
      o San Diego County
      o Riverside County
      o San Bernardino County
      o Santa Clara County
      o Alameda County
      o Sacramento County
      o Contra Costa County
      o Fresno County
      o Ventura County
      o San Francisco County
      o Kern County
      o San Mateo County
      o San Joaquin County
      o Stanislaus County
      o Sonoma County
      o Tulare County
      o Solano County
      o Monterey County
      o Santa Barbara County
      o Placer County
      o San Luis Obispo County
      o Santa Cruz County
      o Merced County
      o Marin County
      o Butte County
      o Yolo County
      o El Dorado County
      o Shasta County
      o Imperial County
      o Kings County
      o Madera County
      o Napa County
      o Humboldt County
      o Nevada County
      o Sutter County
      o Mendocino County
      o Yuba County
      o Lake County
      o Tehama County
      o Tuolumne County
      o San Benito County
      o Calaveras County

- o   Siskiyou County
- o   Amador County
- o   Lassen County
- o   Del Norte County
- o   Glenn County
- o   Plumas County
- o   Colusa County
- o   Mariposa County
- o   Inyo County
- o   Trinity County
- o   Mono County
- o   Modoc County
- o   Sierra County
- o   Alpine County

4.   Are you or any of your leadership team members located in California? [Yes/No]

5.   Will the development of your innovation and/or business occur in California? [Yes/No]

6.   Have you or any of your team members received funding from CalSEED in the past? [Yes/No]

7.   I understand that if I plan to conduct business in California, I must be registered with the appropriate county in California and/or in good standing with the California Secretary of State in order to win an award. [Mandatory Checkbox]

8.   Do you have paying customers for this specific innovation? [Yes/No]

9.   Have you raised funding for this technology in the past? [Yes/No]

(CalSEED Concept Awards are targeted at early stage startups for whom $150,000 in grant funding will have a large, meaningful impact. This includes companies that have received very little to no funding to date, have limited access to outside capital, or are not candidates for traditional forms of investor financing. To align with this objective, only companies who have received less than $1,000,000 in private, outside funding at the time of application are eligible for a Concept Award. This includes private funding and investment capital. Funds raised after submitting this eligibility application are not counted against the $1,000,000 cap, and Concept Awardees are encouraged to continue raising funds to supplement and build upon their Concept Awards.

The California Energy Commission retains the right to audit any awardees to verify the $1,000,000 application cap has not been violated.)

a.   How much public funding have you received to date? (10 word limit)

b.   How much private funding have you received to date? (10 word limit)

[FILLABLE FORM "Private Funding"]

Name / issuing agency	Date of Award	Amount

10.   What is the status of development? (100 word limit) *INSTRUCTION BOX: Please answer in the present tense and use consistent grammar in your response.*

11.   Which of the following technology types apply to your proposed innovation? [Select one]

a.   Hardware (physical component/s that require(s) design and testing):
   i.   Choose the answer that best describes your current state of development:
      1.   Performing basic scientific research based on observed principles.
      2.   Inventing practical applications. Basic principles have been observed.
      3.   Analyzing, modelling and/or experimenting with innovation components.
      4.   Basic functionality of components is being validated in a lab environment.

5. Validating the technology in relevant (or simulated / non-laboratory) environment.
6. Validating the technology at >50% scale in a relevant or simulated environment.
7. Technology works smoothly and is considered operational.

b. Software (programs or applications direct system function):
   i. Choose the answer that best describes your current state of development:
      1. Concept mapped out to address known issues. Yet to begin developing code.
      2. First set of requirements gathered and analyzed with little to no proof of detailed analysis to support assumptions.
      3. Implementation, algorithm development, and/or coding at limited functionality. Preliminary requirements defined based on analysis.
      4. Alpha version of software solution in preliminary test with fewer than 100 users. Critical software components integrated.
      5. Limited release versions of software with improved reliability.
      6. Technology works smoothly and is considered operational.

c. Integrated Solutions (innovative combination of existing or new software and hardware):
   i. Choose the answer that best describes your current state of development:
      1. Developing a novel idea to integrate existing solutions.
      2. Building/coding the integrative hardware or software piece(s).
      3. Analyzing and experimenting the effectiveness of the integrated solution.
      4. Hardware components of integrated solution identified. Early integration software or application beta developed.
      5. <50% scale demonstration developed.
      6. 50% to full scale demonstration developed.
      7. Commercialization of solution in progress or complete

12. Which category most applies to your proposed innovation? [Select one]
    a. Energy Storage
       i. Non-lithium-ion short-duration technologies with reduced capital and life-cycle cost, better lifetime performance, access to greater depth of discharge, reduced degradation over time, better round-trip efficiency, and improved supply-chain diversity relative to lithium-ion battery systems.
       ii. Long-duration storage technologies capable of storing energy for 8 hours or longer, specifically: flow batteries, advanced battery chemistries such as solid-state batteries, flywheels, compressed air, liquid air systems, molten salt, molten sulfur, or gravity storage.
       iii. Technologies that advance low-impact recovery of lithium and other co-products from geothermal brine.

    b. DER Integration and Load Flexibility
       i. Advanced machine learning or AI techniques to improve forecasting behind-the-meter solar photovoltaics, storage, and load flexibility
       ii. Low-cost, modular, and replicable behind-the-meter direct current power systems that enable efficient, clean, and reliable power for electric vehicles and other direct current end-uses.
       iii. Modular power electronics technologies that can safely enable behind-the-meter renewable generation systems to provide backup power functionality at reduced cost.
       iv. Advanced flexible load technologies and tools to facilitate and increase grid resiliency and demand response in the industrial, agricultural, and water sectors.
       v. Open-source data and management controls that can be used by Virtual Power Plant aggregators and others to aggregate customer loads, manage the loads to grid conditions, and provide grid services needed to support a clean and resilient electric grid.

      vi.   Advances in control technologies, sensors, and communication systems to increase reliability and interoperability of flexible loads and DERs for building automation.

   c. Transportation Electrification

      i.   High efficiency charging devices and systems that reduce electric losses and costs of electric vehicle charging.

      ii.   High-power electric drive systems for medium- and heavy-duty vehicle applications.

      iii.   Innovative reuse and recycling technologies for end-of-life lithium-ion batteries to conserve critical materials, promote material sustainability, reduce environmental impacts, or reduce the cost of new storage products by lowering material costs.

   d. Building Decarbonization

      i.   High efficiency 120-volt and 240-volt heat pump water heaters or heating, ventilation, and air conditioning heat pumps that use low-global warming potential refrigerants.

      ii.   New building envelope technologies such as thermal storage or phase change materials, or manufacturing processes to reduce the cost of highly efficient advanced building retrofit solutions.

      iii.   Next generation heat pump system that combines hot water and space conditioning into a packaged, modular unit.

      iv.   Innovative HVAC decarbonization solutions for large commercial buildings, specifically: hybrid low-GWP electric heat pump systems, low-cost large air-source and water-source heat pumps that use low-GWP refrigerants, non-vapor compression cooling, solid-state cooling, or ground-source heat pumps.

   e. Industrial Decarbonization

      i.   Low-carbon, high-temperature industrial heating solutions, specifically: direct electrification technologies or high-temperature heat pumps.

      ii.   Energy efficiency and decarbonization technologies for concrete manufacturing, specifically: advancements in electrically driven carbon capture and utilization to increase its energy efficiency; alternative raw materials, chemistries, or processes for the production of cement and concrete, including substitutes that enable electrification technologies by reducing temperature requirements.

      iii.   Innovative electric-driven separation technologies in the industrial sector, specifically in food processing, chemicals, water desalination, wastewater treatment, or carbon capture.

13. In one paragraph, describe your innovation. (100 word limit) *INSTRUCTION BOX: Please answer in the future tense and use consistent grammar in your response. For example: This innovation will…*

14. In one paragraph, how does your innovation benefit California electricity ratepayers? (100 word limit) *INSTRUCTION BOX: please answer in future tense and use consistent grammar in your response.*

15. Impact questions, please check all that apply. Please note that you will be asked to elaborate on your answers to these questions if you are asked to submit a full application.

    o Does the proposed innovation demonstrate potential to create positive economic impact in low-income and/or disadvantaged communities in terms of job creation, micro-and small-business partnerships and economic development? (e.g. Will the company hire or utilize vendors in disadvantaged/low income communities?) [Yes/No]

    o Will the proposed innovation increase access to clean energy, energy efficiency technologies, energy storage, or energy cost reduction within disadvantaged communities and/or low-income communities? (i.e.Will it make clean energy more affordable?) [Yes/No]

o Will the proposed innovation address pollution burdens that disproportionately impact disadvantaged and/or low-income communities? (for example: air pollution/air quality, traffic congestion, low-cost/retrofit applications) [Yes/No]
o Can the proposed innovation be deployed in a disadvantaged community and/or low-income community? [Yes/No]
o Could the proposed innovation help improve the resiliency and reliability of electricity service in locations that that are being impacted by extreme weather-related events such as wildfires? [Yes/No]

The following questions are optional and will not be used to evaluate applicant eligibility for CalSEED.

16. Please choose the selection that best describes how you are applying:
    a. As an individual or team of individuals
    b. As a sole proprietorship
    c. As a university researcher
    d. As a National Lab researcher
    e. As a nonprofit organization
    f. As a for-profit corporation, LLC, LP, or LLP
    g. Community group or collective

17. If you own a business, does it have any classifications or certifications from the State?
    h. Micro Business (MB)
    i. Small Business (SB)
    j. Small Business for the Purpose of Public Works (SB-PW)
    k. Disabled Veteran Business Enterprise (DVBE)
    l. Non-Profit Veteran Service Agency (NVSA)
    m. Non-Profit Recognition (NP)
    n. Women's Business Enterprise National Council (WBENC)
    o. Women-Owned Small Businesses (WOSBs)
    p. Economically Disadvantaged WOSBs (EDWOSBs)
    q. HUBZone
    r. Minority Business Enterprise (MBE)
    s. Other (10 words):

18. Which of the following services would be of use to you and your team?
    a. Additional Public Funding Resources
    b. Technical Assistance
    c. Mentorship
    d. Business Plan Development
    e. Development and Commercialization Partnership Development
    f. Customer Network Development
    g. Investment Opportunities
    h. Intellectual Property and Legal Assistance

19. How did you hear about the CalSEED Initiative? [check boxes]
    a. Referral
        i. Please specify: [10 word limit]
    b. Event
    c. Webinar
    d. News article
    e. Blog article
    f. LinkedIn
    g. Twitter
    h. Facebook
    i. Instagram
    j. Radio advertisement
    k. Regional Innovation Cluster
        i. Los Angeles Cleantech Incubator
        ii. Bluetech Valley
        iii. Cyclotron Road
        iv. Southern California Energy Innovation Cluster
    l. Incubator (please specify: _____)

m. Other

20. I guarantee that, to the best of my knowledge, all eligibility questions have been answered accurately. If selected to complete the full application, applicants will be asked to confirm pre-application answers. [Mandatory checkbox]

21. The CalSEED team would like to share funding, acceleration, and professional development opportunities with you. Please opt-in if you would like to receive occasional emails about funding and programs from CalSEED, New Energy Nexus, and our partner organizations. [checkbox]

22. The CalSEED team collaborates with Regional Innovation Clusters around the state of California. Can we share your contact information, project name, and project description with partners within the California Energy Innovation Ecosystem? [checkbox]

Full Application

PROPOSED INNOVATION

Please use consistent grammar in your responses, save frequently, and review your responses before submitting.

1. Please provide a project summary that follows this exact format (120 word limit):

The goal of this project is to <finish sentence with description of project>. <One sentence about why/how the technology is innovative and different>. <One additional sentence about why this new innovative technology matters and makes an impact>. During the CalSEED agreement <description of main tasks/milestones of the project>.

Example A: The goal of the project is to develop a portable battery diagnostic system that can be embedded in an EV battery pack management system to continuously monitor battery health while detecting and preventing thermal runaway. This battery diagnostic technology is more accurate and faster than competitors and will be able to self-calibrate based on the individual battery pack characteristics which vary depending on the EV model and year. The CalSEED award will be used to improve adaptability and repeatability of sensitive battery diagnostic measurements across varying battery pack designs by adding the dynamic self-calibration. The award will also be used to confirm the system is able to continue to provide accurate, clean, and reliable data.

Example B: The goal of this project is to design and demonstrate a software platform that enables multi-unit building owners to install a shared solar system that equitably rewards residents for using energy when it is cheap or provided by the solar system. The platform will have a 15-minute interval load algorithm that can identify each housing unit's "true" solar energy and EV charging usage considering real time-of-use. During the CalSEED agreement, the team will develop five technology features: load algorithms, tenant facing interface, EV charging integration, battery load control, and usage and pricing event triggers.

Example C: The goal of this project is to engineer a low cost, easy-to-assemble ground mounted photovoltaic system that can be stowed flat to withstand winds up to 150 mph. This photovoltaic technology is composed of ground-mounted photovoltaic solar array that is pre-fabricated in a factory, shipped to a PV project site in standard shipping containers, and rapidly deployed using common hand tools. This innovation minimizes complexity in the design of the technology and enables large projects sizes to be quickly deployed. The goal is this CalSEED project is to complete the engineering design and validate a streamlined manufacturing process.

2. What problem are you trying to solve and how? (200 word limit)

3. What specific innovation or idea will be explored or tested with this innovation? Provide enough detail for the review team to understand the nature of the innovation or idea you propose. (1000 words limit)

4. What is unique about your innovation or approach that may not be immediately obvious? (200 word limit)

5. Are there existing alternatives or competitors that attempt to address the same problem? If possible, provide a comparison of two or three existing products, processes, and/or services that meet the same or similar functions as your concept. Include comparison data if available. (200 word limit)

6. What is preventing or has prevented the current market from solving this problem? (200 word limit)

7. Please describe any obstacles that you currently face and how this innovation seeks to overcome those obstacles. (200 word limit)

8. Are there other barriers to market entry (in addition to competition)? How do you plan to overcome them? (200 word limit)

CalSEED

9. What is the status of development? (200 word limit) INSTRUCTION BOX: *Please answer in present tense. For example: Our innovation is….*

10. How long have you been working on this idea? (5 word limit)

11. Are the unique technical features of your innovation that advance energy equity? If so , please describe. (200 word limit) *INSTRUCTION BOX: CalSEED defines energy equity as prioritizing technological solutions that provide affordable access to energy, greater economic opportunities, and enhanced resilience to California's disadvantaged and low-income communities, which face the highest energy and socio-economic burdens. The CalSEED program is committed to building energy equity into the foundation of how grant awardees conceive their clean energy ideas, design their products and run their companies. CalSEED provides training and guidance to awardees on setting and achieving goals that advance energy equity through technological innovation and intentional business practices.*

12. In one sentence, describe your proposed innovation for a member of the general public. (50 word limit)

INNOVATION BENEFITS

Social impact and energy equity are key components of this program. The following questions ask about the social and economic benefits of your innovation when it is scaled. We want to understand your innovation's impacts on the electricity system, the environment, as well as on the economy.

As California continues to promote clean energy and sustainable innovations, we must ensure that clean energy solutions address the interests and needs of disadvantaged communities, and that these communities can fully participate in the benefits and opportunities of a clean energy economy. (To find out more about how California defines disadvantage communities, click here.)

To this end, CalSEED is committed to increasing access to clean energy, energy efficiency, and energy storage technologies, reducing pollution burdens, providing economic opportunities (including job creation, workforce development, contracting, supplier diversity, etc.), and reducing the need for Public Safety Power Shutoffs, particularly in vulnerable populations that face barriers accessing and affording technologies to cope with the power shutoffs.

Please consider the following guidance:

- If the proposed innovation is a piece or part of a product or if direct sale of the innovation is not going to the final, end user (e.g. innovation will be B2B), please explain how potential partners in the supply chain and customers downstream will benefit.

- While answering the following questions in this section, think about how your innovation will positively impact disadvantaged communities through economic opportunities and social benefits. We encourage responses that not only describe what the innovation's social benefits will be, but also explain how the innovation will achieve that benefit.

- Authenticity stands out, we encourage you to articulate the social and economic benefits of your innovation in your own words in the way that makes sense to you.

- Please use consistent grammar (verb tense, use of pronouns, etc.) in your responses, save frequently, and review your responses before submitting.

For the next four questions, please indicate if your innovation, when scaled, will provide these benefits. Benefits are a critical part of the evaluation criteria, and we are looking for quality responses. While we encourage innovations to provide as many social benefits as possible, you will not get extra points for answering all of the questions if the responses are not high quality.

13. What are your target markets? (i.e. who is your intended end user?) (200 word limit)

14. If you are successful in commercializing this innovation, how do you intend to integrate it into the California market? (100 word limit)

15. Will scaling this innovation create economic opportunities?
    a. If yes, what are the economic opportunities that your successful innovation could bring in terms of job creation, partnering and contracting with micro- and small-businesses, and economic development? Please address the local and statewide economic benefits and the economic opportunities for low-income or disadvantaged communities. (200 word limit)

16. When deployed, will your innovation increase access to clean energy, energy efficiency, or energy storage within disadvantaged or low-income communities?
    b. If yes, please explain. (200 word limit)

17. Will your proposed innovation address pollution burdens that disproportionately impact disadvantaged and/or low-income communities? (for example: air pollution/air quality, traffic congestion, low-cost/retrofit applications)
    c. If yes, please explain. (200 word limit)

18. Could the proposed innovation help improve the resiliency and reliability of electricity service in locations that that are being impacted by extreme weather-related events such as wildfires?
    d. If yes, please explain how electricity rate-payers will benefit. (200 word limit)

19. Other than economic opportunities, increasing access, reducing pollution burdens, and community partnerships, how can the development of your proposed innovation benefit communities? (200 word limit)

20. What community engagement / customer discovery do you plan to do to advance this technology?

21. Applicants have the option to provide up to two letters of support. Letters from technology partners, environmental justice organizations, and other partners that demonstrate equity, feasibility, and commercial viability are most helpful. Letters of support are not required. [UPLOAD] [INSTRUCTIONS]

Name	Organization	Role
[Name 1]		
[Name 2]		

CALSEED AWARD

Please use consistent grammar in your responses, save frequently, and review your responses before submitting.

22. Tell us what you plan to do with a CalSEED award and define what you expect to have accomplished at the end of your CalSEED award. (500 word limit)

23. Applicants are expected to present a simple Scope of Work that will be accomplished within the project duration if they receive a CalSEED award. (If you are selected for an award, you will not be contractually bound to the Scope of Work you provide in this application.)

[THIS IS A FILLABLE FORM SCOPE]

Milestones	Tasks	Deliverables

24. If you have received outside funding, what is the source? Be specific and describe how the funds were used. You may be asked to provide supporting documentation to validate the information you provide. Be specific. (100 word limit)

Example: *ARPA-E GRIDS program provided $250,000 to fund prototype in 2012. Jack Jackson (angel investor) invested $100,000 in 2013. Raised $15,000 via Kickstarter for pre-sold subscriptions. Founders contributed $35,000 of seed capital. Total raised to date: $400,000.*

25. In one sentence, please state the goal of your project for a member of the general public. (50 word limit)

TEAM EXPERIENCE

Please use consistent grammar (verb tense, use of pronouns, etc.) in your responses, save frequently, and review your responses before submitting.

26. Why are you or your team the right team to advance this innovation? (200 word limit)

27. How many team members are working on developing this concept?
    a. 1-2
    b. 3-5
    c. 6-10
    d. More than 10

28. Please provide a summary of qualifications for up to five team members. Describe what contribution each team member will make to the project.

[THIS IS A FILLABLE FORM ADD TEAM DETAILS]

Name	Role	Why are they right for this role?

29. What have you or your team done before that will help make this concept a success? (1000 word limit)

30. In one sentence, describe your organization for a member of the general public. (50 word limit)

Financial and Legal Certifications

31. The grant applicant acknowledges that all costs associated with proposal preparation are borne by the applicant and that receipt of a proposal by the CalSEED Initiative does not constitute a contractual relationship with the grant applicant. [Mandatory Checkbox]

32. The applicant has performed a thorough search of existing published literature and patents and determined that the proposed concept is original. [Mandatory Checkbox]

33. The applicant has disclosed if it has any past or current funding received from any private, state, or federal agencies for work that is similar or related to the innovations proposed in this grant application. [Mandatory Checkbox]

34. The applicant owns all proprietary ideas, concepts, patents, branding and intellectual property detailed within this application. [Mandatory Checkbox]

35. The applicant understands that submitted applications are subject to the California Public Records Act and has not disclosed confidential information in this application. [Mandatory Checkbox]

36. The applicant is able to agree to the Electric Program Investment Charge contract [Terms and Conditions](#) for CalSEED. [Mandatory Checkbox]

[Review button]

[Submit]