See the formatting and page limit recommendations in Part III, Section A of the Solicitation Manual.

The Project Narrative must respond to each sub-criterion below.

**Technical Merit**

1. The proposed project provides a clear and concise description of the technological, scientific knowledge advancement, and/or innovation that will overcome barriers to achieving the State’s statutory energy goals.
2. Describe how the proposed model/tool/study will be used by key stakeholders (e.g. policy-makers, project developers, other researchers, etc.).
3. Describes the advantage of the proposed model/tool/study over that currently being used by key stakeholders.

**Technical Approach**

1. Proposal describes the technique, approach, and methods to be used in performing the work described in the Scope of Work.
2. The Scope of Work identifies goals, objectives, and deliverables, details the work to be performed, and aligns with the information presented in the Project Narrative.
3. Identifies and discusses factors critical for success, in addition to risks, barriers, and limitations (e.g. loss of demonstration site, key subcontractor, lack of data to support a case study analysis). Provides a plan to address them.
4. Discusses the degree to which the proposed work is technically feasible and achievable within the proposed Project Schedule and the key activities schedule in Section I.E of the Solicitation Manual.
5. Describes the knowledge transfer plan, including how key stakeholders and potential users will be engaged, and the plan to disseminate knowledge of the project’s results to those stakeholders and users.
6. Provides information described in Section I.C of the Solicitation Manual.

Provide a detailed response to the following prompt, from Section I.C of the Solicitation Manual:

At a minimum, describe in detail how the applicant plans to answer the questions listed below over the term of the proposed project. The applicant may also address these questions elsewhere within this document (Project Narrative) as appropriate.

1. How can the **Electric Program Investment Charge (**EPIC**)** Program best coordinate investments with complementary programs, including but not limited to the Hydrogen Program, the development of California’s proposed Renewable Hydrogen Hub, and other DOE hydrogen hubs?
2. How is the competitiveness of hydrogen in electric sector applications impacted by adoption in other sectors such as transportation and industrial uses, and vice versa?
3. Which electric sector applications [~~could~~] **can** reach cost competitiveness in the near-term (within 5 years), mid-term (5-10 years), and long**-**term (10 or more years)**,** and what market conditions or thresholds must be met for their adoption in California?
4. What advancements in existing and emerging technologies, including key equipment and subcomponents, can enable cost-competitive hydrogen production from renewable electricity and end-use in electric sector applications?
5. What are the cost and performance metrics for different technologies, equipment, and key subcomponents for hydrogen production from renewable electricity and end-use in electric sector applications as achieved today as well as targets over the near-term, mid-term, and long-term?
6. How does hydrogen in electric sector applications compare to other zero-carbon technologies ([~~for example~~]**e.g.**, flow batteries or alternative chemistries for long-duration energy storage) for meeting reliability requirements and achieving SB 100 targets?
7. What are the infrastructure requirements and associated costs of hydrogen storage and delivery for different electric sector applications?
8. What are the environmental impacts and available mitigation strategies for different technologies for hydrogen production from renewable electricity and end-use in electric sector applications, including potential hydrogen leakage and associated global warming potential, emissions of nitrogen oxides (NOx) from combustion, and water requirements for electrolysis?
9. What research recommendations, with associated metrics and targets, should be prioritized by the EPIC Program over the near-term, mid-term, and long-term to help enable cost-competitive hydrogen production from renewable electricity and end-use in electric sector applications?

In developing research recommendations, note that projects funded by the EPIC Program fall into the following categories.

* 1. Applied Research and Development: Projects where the primary goal is to advance the state of a technology or set of technologies through the development of applications, processes, or products involving scientific or engineering interventions to optimize components, systems, or subsystems.
	2. Technology Demonstration and Deployment: Projects where the primary goal is to demonstrate and validate the performance of a final-form (or near final-form) technology or system in a real world, operational environment.
	3. Scientific and Techno-Economic Analysis: Projects where the primary output is knowledge gained. These projects may generate new technical/scientific knowledge and/or provide publicly available tools that will primarily be used to optimize decision-making and inform energy policy, planning, and public services.
	4. Market Facilitation: Projects where the primary goal is to identify and address non-technical barriers to deployment of clean energy products and services for the purpose of stimulating the creation and growth of markets.
1. How do the research recommendations align with EPIC Program goals and support other complementary hydrogen programs?

**Impacts and Benefits to California IOU Ratepayers**

1. Explains how the proposed project will benefit California Investor-Owned Utility (IOU) ratepayers and provides clear, plausible, and justifiable (quantitative preferred) potential benefits. Estimates the energy benefits including:
	* annual electricity (EPIC) and thermal savings **(Public Interest Energy Research Natural Gas program)** [~~(PIER NG)]~~ (kilowatt-hour and therms), energy cost reductions, peak load reduction and/or shifting, infrastructure resiliency, infrastructure reliability.

**In addition, estimates the non-energy benefits including:**

* greenhouse gas emission reductions, air emission reductions (e.g. NOx), water savings and cost reduction, and/or increased safety.
1. States the timeframe, assumptions with sources, and calculations for the estimated benefits, and explains their reasonableness. Include baseline or “business as usual” over timeframe.
2. Identifies how outputs of the model/tool/study will benefit key stakeholders (e.g., streamline planning, help eliminate barriers, stimulate growth of applicable market sectors).

**Team Qualifications, Capabilities and Resources**

1. Identifies credentials of prime and any subcontractor key personnel, including the project manager, principal investigator, and technology and knowledge transfer lead *(include this information in the Project Team Form).*
2. Explains the team structure and how various tasks will be managed and coordinated.

*Include an organization chart similar to the one below*

 **Figure X: Organization Chart**

1. Describes the facilities, infrastructure, and resources available that directly support the project.
2. Describes the team’s history of successfully completing projects in the past 10 years including subsequent deployments and commercialization.

**Budget and Cost Effectiveness**

1. Budget forms are complete for the applicant and all subcontractors, as instructed in the Budget Forms Attachment.

*Provide a budget by tasks, such as:*

**Table X: Task Budget**

| **Task (by major task)** | **Energy Commission Funds** | **Match Share** | **Total** |
| --- | --- | --- | --- |
| Task 1: General Project Tasks |  |  |  |
| Task 2: |  |  |  |
| Task [TBD-1]: Evaluation of Project Benefits |  |  |  |
| Task [TBD-2]: Technology/ Knowledge Transfer Activities \* |  |  |  |

\* **Requires 5% of total CEC funds**

1. Justifies the reasonableness of the requested funds relative to the project goals, objectives, and tasks.
2. Justifies the reasonableness of direct costs (e.g., labor, fringe benefits, equipment, materials & misc. travel, and subcontractors).
3. Justifies the reasonableness of indirect costs (e.g., overhead, facility charges (e.g., rent, utilities), burdens, subcontractor profit, and other like costs).

**CEC Funds Spent in California**

This project proposes to spend $\_\_\_\_\_\_\_\_\_ of Energy Commission funds in California.

**Disadvantaged & Low-Income Communities**

1. Proposal identifies how the target market(s) will benefit disadvantaged and/or low-income communities.
2. Identifies economic impact on low-income and disadvantaged communities including customer bill savings, job creation, partnering and contracting with micro- and small-businesses, and economic development.
3. Describes how the project will increase access to clean energy or sustainability technologies within disadvantaged and/or low-income communities and how the development will benefit the communities.
4. Applicants have letters of support from technology partners, community based organizations, environmental justice organizations, or other partners that demonstrate their belief that the proposed project will lead to increased equity, and is both feasible and commercially viable in the identified low-income and/or disadvantaged communities.