### Project Brief
ME 170ab – Mechanical Engineering Design – integrating context with engineering
Stanford University

<table>
<thead>
<tr>
<th>Proposed Project Title</th>
<th>3-5 words</th>
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<tbody>
<tr>
<td>Project Partner</td>
<td><em>Sentence or two describing what the organization does</em></td>
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<tr>
<td>Brief Project Description</td>
<td><em>2-3 sentences describing overview of the project</em></td>
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**Problem statement**
*Please be sure to describe the following*

a. Problem from the perspective of the user
b. Why does the organization see this project as important to pursue?
c. Who is the user, including
   a. Is this a small local community, a broad population, a company a regulatory body, or the like
   b. How many users are, or could be, facing this problem?
d. What is the user need, including
   a. Typical use case that drives and defines the need.
   b. Are there technical requirements associated with the user need (e.g., power, size, weight, cost)
   c. How is this project “clean energy” related? What are the clean energy goals, and why?
   d. What has been done to date to try to address that need?

| Project liaison | Name  
|----------------|-------|
|                | Email  
|                | Phone Number  
|                | US Mailing Address |

**Some guidance on the project definition, to the partner**

1) Projects should include
   a. Emphasis on Clean Energy theme (generation, storage, novel applications or uses)
   b. Structural, material, thermal, dynamics, controls/electromechanical, fabrication considerations
   c. A problem that the partner is interested in exploring, but is not on any critical path or an expected part of any type of partner deliverable. Students are not doing the work “for hire”

2) Projects should be scoped so that students can
   a. Assess and scope the problem they are to work on (3-4 weeks)
   b. Translate user needs to technical design criteria
   c. Assess and scope design directions, resulting in 3 most promising (3 weeks)
   d. Narrow to single recommended design direction (2 weeks)
   e. Conduct design risk analyses, computational modeling
   f. Be of size/scale that students can make, build and test on campus
   g. Reasonably deliver a working solution in 10 weeks, and a vetted engineering solution in 20 weeks

3) What the partner should be prepared to provide
   a. Project must have a project sponsor / advocate with whom the students can work
   b. The advocate must be able to either represent the user themselves, or put the team into contact with the user
   c. Advocate must be available for weekly meetings / calls / skype. Preferably local but not required
d. Be available to physically attend design reviews (Thursdays of weeks 4,7,9) and end-of-quarter presentations (week 10), in both Winter and Spring quarters
e. If dedicated/unique hardware or test facility is required, please provide

4) Expectations
   a. Projects are done by students as a learning experience, and contracts for course projects are not allowed
   b. At the beginning of the term, the projects will be presented to students and they will nominate the projects on which they want to work. There is therefore a possibility that projects do not get selected.
   c. This is a 4-unit course, meaning that students are expected to spend ~12 hours/week on the class, so this is not a full-time role for them. Students will be placed into teams of 4 for each project
   d. In accordance with university policy, students must be able to openly present their work to classmates, instructors, guests, etc
   e. All intellectual property or data resulting from this project will be retained by Stanford and/or the students. Except as provided in this brief, no agreements have been made as to the disposition of intellectual property or data ownership.