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## **Center for Sustainable Energy's™ Response to CEC RFC "Increase Adoption of Emerging Clean Energy Technologies through Procurement"**

The Center for Sustainable Energy commends the CEC and its EPIC program for addressing procurement issues related to emerging clean energy technology, and respectfully offers the following comments to this RFC:

1) What are barriers that large-scale customers face when procuring emerging energy technology solutions? Would projects funded from this solicitation help address those barriers? If not, what specific changes would you recommend to help ensure the resulting projects meet large-scale customer procurement needs?

Large-scale customers often have difficulty financing projects with emerging technologies due to risk exposure. Lack of field lifetime data creates increased loss potential. This is insurance risk that must be carried by the small business manufacturer at high costs, if available at all, or by the large-scale customer themselves. In either case this risk cost is added to the product price, thus reducing the value relative to commercially mature alternatives. Suppliers sometimes attempt to balance this additional cost by providing minimized product solutions, and then relying on successive change-order charges to fulfill the full spectrum of needs of the customer.

Projects funded by this solicitation have the potential to greatly reduce emerging technology risks to large-scale customer procurement. It is vital that these projects improve economic transparency, increase customer awareness of technology capabilities and limitations, and assure customers'™ needs are correctly matched with the specific values provided by the technology solutions. High value should be placed on approaches that insure impartial and unbiased evaluation methods.

2) What are specific recommendations you can provide for improving the purpose of the solicitation outlined in this RFC? Please explain the rationale behind the recommendations.

Marginal gains from efficiency efforts are diminishing, further justifying a move of funding efforts from efficiency to emerging technologies. Assessment and monitoring of new-to-market products has become cheaper and more effective through wireless and cloud-based technologies, justifying more thorough evaluations for customer assurance. Shared learning through improved education and outreach can enhance the procurement process to the benefit of all industry participants.

3) Are there existing efforts that complement the groups identified in this RFC? What specific changes to this proposed solicitation would you suggest to best leverage these existing efforts?

SD-REIN, CalSEED, and similar LA/Bay Area efforts help to bring emerging technologies to market. There have been complementary efforts from the DOE, such as small business vouchers to national laboratories, and the creation of Industrial Assessment Centers, which may need to be taken up by individual states if DOE funding is reduced. Communication and cooperation with these centers should be encouraged. Local governments can utilize Joint Power Authorities (JPA's) to aggregate purchases for municipal capital purchases, including fleet vehicle procurement.

4) Are the proposed funding amounts identified in this RFC appropriate for the work requested? Please explain the rationale behind the recommendations, and, if applicable, what would the expected cost be to adequately test and evaluate the technology types identified in this draft solicitation?

From our perspective, funding allotments for Groups 3 and 4 should be swapped, to allow multiple individualized approaches to Group 3, and for the creation of a substantial market-making environment in Group 4. Group 1 funding may be low if it includes the funding for the testing vouchers themselves.

5) Should the Energy Commission require test bed locations in both Northern and Southern California? Please explain the rationale behind the recommendations.

A more significant and useful distinction may be coastal versus inland regions, which differ in temperature variability, air quality, fresh water issues, corrosivity, and energy resource profile. California is fortunate to have access to such diversity and this should be leveraged. Requiring locations in both Northern and Southern California would be helpful for reducing the proportion of funding that is taken by travel and shipping.

6) Are there additional technologies we should consider or technologies we should remove from the lists provided in this RFC? Please explain the rationale behind the recommendations.

For both Groups 1 and 2, behind the meter energy storage should be included, as well as EV chargers, hydrogen fuel cells, thermal storage, micro combined heat and power (micro CHP), waste to power technologies, and microgrid components.

7) How can Group 3 most effectively build trust with target customers to ensure that the target customers are buying high quality products?

Trust can be maximized between suppliers and customers by insuring linkage between the four project Groups, as each Group is a progression through the lifecycle of an emergent technology. Trust can also be enhanced by providing education to procurement agencies on the value propositions and the economics of emergent technologies.

8) What are the largest impediments to successful deployment of solutions that can facilitate successful procurement of emerging energy technologies? Are there solutions not addressed under this proposed solicitation that would address these impediments? Please explain the rationale behind the recommendations.

Impediments to procurement solutions include:

- Scaling a procurement system too quickly can leave system vulnerabilities that can be exploited, allowing "gaming" of the system.

- Communicating the value proposition of emerging technologies across multiple functional areas in a large-scale entity is difficult, especially when different value areas are addressed by different proposals. Solutions must be effective at aligning procurement decisions across organizational groups.

- Scaling production can become a serious issue for a small supplier winning a sizable contract with a large-scale customer, damaging project economics after procurement. Assistance at aggregating vendors and technologies could help to reduce production scaling stresses and reduce risk exposure.

- The unsettled nature of electricity tariffs increases the volatility of returns on energy projects, further driving up investment risk. Decoupling this volatility would greatly improve project economics, and enhance procurement options.

