

June 17, 2004

Subject: Amendment No. 1 to Solicitation for Letters of Interest No. RXL-4-44205 entitled "Thin-Film Photovoltaics Partnership Program" – Questions/Answers

The following information is provided in response to questions received regarding the subject solicitation:

### QUESTIONS/ANSWERS

1. Question: The solicitations states that research and initial manufacturing must occur in the US. Does this exclude all offshore research performed by a global but US business as defined in the solicitation even when critical to the overall proposed effort. If some offshore work by a global company is allowable, how much of the total effort? What if the offshore research is contributed as cost share and no federal funds are used? What if the US business is serving as a subcontractor to a second US business responding as a technology partner?

Answer: The subject solicitation specifically and clearly states: "research and initial manufacturing must occur in the United States (U. S.)". This statement is intended to exclude all offshore research performed by a global but US business, therefore no offshore work by a global company is permitted. These limitations on research and initial manufacturing apply to all of the work performed under the resultant subcontract, regardless of the funding source for such performance and regardless of the primary or subsidiary position of the performing entity.

2. Question: The LOI states for Optimizers "In the past, cell research was often driven by new deposition methods for the semiconductor layer. Because many of these approaches have not resulted in the anticipated cell efficiencies, NREL would like to see novel deposition approaches de-emphasized, unless very promising cell results can be quickly demonstrated with such deposition approaches." It further states "Instead, NREL would like to see more emphasis on ..... faster deposition or processing rates in instances where such rates are limiting cost-effective manufacturing." One approach to eliminating these bottlenecks is the use of plasma CVD variants. Are variants of plasma CVD considered outside the scope of the program?

Answer: The LOI makes clear that the onus is on the offeror to back up their novel approaches with convincing arguments and evidence; novel approaches aimed at solving long-standing issues without convincing arguments are what we would like to discourage (i.e., we are not trying to discourage innovation). The statement is written to caution against becoming too optimistic about a new approach because a certain process aspect, material parameter, or device aspect looks promising, even suggesting a new optimum. The LOI expects that such approaches will result, within the period of the contract, in cell or module efficiencies that can be considered an advancement beyond the current state-of-the-art of the respective technology, when considered in the full context of the intent of the new approach (i.e., that it may have advantages other than simply increased efficiency).



3. Question: Any interest in TiO<sub>2</sub> cells-Gratzel type?
- Answer: There is not any interest in TiO<sub>2</sub> cells-Gratzel relating to subject Solicitation No. RXL-4-4405; however, NREL does have other programs that allow this type of cell as an entry.
4. Question: On reading the LOI I see that institutions may be awarded no more than 2 subcontracts as primary investigator. However the number of submissions to the solicitation is not specified. If we feel we have 3 competitive proposals, can we submit all, and permit the reviewers to decide on those that will be awarded subcontracts?
- Answer: If submitting a proposal under the Technology Partner Category, only one (1) response in that category is permitted (others can be submitted elsewhere); otherwise, any number may be submitted.
5. Question: The last time we responded to a Partnership LOI we were required to submit an Estimated Budget Form. In addition we were required to specify how the cost of each item was determined. I do not see this additional requirement in the solicitation this time. Is this no longer required or did I miss something?
- Answer: Please see Section 13. LOI Preparation Information, Paragraph E, on Page 20 of the solicitation document. It includes the requirement for the completion of the Estimated Budget Form. On page 23, under 15, Solicitation Provisions, Paragraph B, the Estimated Budget Form is also identified; and the link is provided to access it from NREL's website.
- The current Solicitation No. RXL-4-44205 does not require the support documentation for all categories included in the Estimated Budget Form as was required for the previous Solicitation No. RDJ-1-30630-00. Following evaluation of proposals if your response is in the competitive range, NREL may at that time request support documentation.
6. Question: We propose using...as a test arena for the Performance and Reliability Analyses of Deployed Thin-Film products....We realize that NREL has existing test facilities in Golden, Colorado and Arizona. We seek confirmation that...environment would be considered sufficiently different from these locations to generate new additional data.
- Answer: The LOI seeks data and analysis of thin-film systems. It does not seek to pay for new systems, but rather observe existing ones that generate NEW information about thin-film module performance and reliability. We are not putting any constraints a priori on what kind of environment might be needed; in fact, we expect all kinds to be monitored, not just a special kind.
7. Question: P.10, "Strong LOI responses in this category will propose collaborative work, in most instances with other members of the National Teams, to establish such quantitative correlation between material and characterization parameters and cell and module performance or yield." Do we need lower-tier subcontract for this collaborative work or we can write the collaborative work in our own LOI response. P. 15, the last line, 44% and 56% mean what?

- Answer: Offerors do not need lower-tier collaborations; just show us how important it is by including it in your plans in some convincing fashion. The percentages (Technical Quality and Relevance (44% for Technology Partners; 56% for R&D Partners)) indicate different weightings in the overall evaluation of different aspects of the qualitative merit criteria.
8. Question: Are we allowed as a university to submit a proposal? The topic area will be hybrid (organic/inorganic) solar cells, is this welcomed by the call?
- Answer: Yes, universities are allowed to submit proposals. We cannot judge what a 'hybrid organic/inorganic solar cell' is without further information. The LOI addresses work in which the absorber of sunlight is inorganic. We say specifically that the program will not consider organic cells. We would accept a hybrid proposal, but it ought to preferentially address improving the current state of inorganic sub-cells.
9. Question: Page 14 of your solicitation states that "There are no NREL funds for the purchase of equipment for U.S. businesses available under this LOI." In order to monitor the performance and reliability of deployed thin-film modules...will have to invest in module support racks, irradiance sensors and some additional weather monitoring equipment. Would these capital expenses be permissible under this program?
- Answer: NREL will not pay for equipment, except for universities. Equipment to be acquired for the sole purpose of doing the proposed work by non-academic entities may be counted towards their cost-share. Non-academic entities could buy most (but not computers or sensitive equipment) items (under \$25,000) as supplies, but should be cautioned that excessive "supply" budgets may not be considered a 'good value' during our evaluation.
10. Question: On page 12 of the LOI, the following sentence appears: "LOI responses shall not contain any references to any possible future support activities to be performed by NCPV technical researchers." Are Specialized Contributors permitted to propose collaborative research with NREL scientists who are part of the Thin-Film Photovoltaics Partnership Program? If so, are such collaborations encouraged or discouraged?
- Answer: NREL has historically supported requests for collaboration with in-house researchers from those who receive funding within its subcontracts programs. However, in order to maintain reviewer impartiality, we do not want proposers to indicate or negotiate any collaboration with NREL staff. Only after awards are designated will it be appropriate to define such agreements. It can be mentioned in proposals that there are plans to collaborate with NREL researchers without mentioning any names; however, details of which will need to be negotiated after the awards. NREL collaborations are encouraged. The NREL researchers must not provide a commitment letter as would be used in other lower-tier arrangements.
11. Question: In the qualifications for the Optimizer category there are 'baseline' values that are expected of strong candidates (page 8) that are also defined as minimum on page 11, which appears somewhat contradictory. Could some clarification be provided on the nature of baseline values

(typical, normal, average, best, etc.) and if they correspond to an absolute requirement or merely a strength for evaluation?

Answer: The intention is to emphasize that we are looking for improvements in the state-of-the-art. One or more cells produced by the offeror and measured by NREL at or very close to the range of values given for different technologies will be considered adequate for evaluation purposes. However, as stated elsewhere, specific innovations (thin cells, lower cost, etc.) made clear in the proposal as the main direction for proposed work allows the offeror to propose despite much lower efficiency values. These will then be compared during our evaluation against those of other proposals with the same research directions.

12. Question: In solicitation no. RXL-4-44205, there is a limitation of the number of awards that will be given out to any organization. Does that mean we are limited to the number of proposals we can submit from our institution as well?

Answer: If submitting a proposal under the Technology Partner Category, only one (1) response in that category is permitted (others can be submitted elsewhere); otherwise, any number may be submitted.

13. Question: The solicitation defines work for Technology Partners that includes nearly all aspects of work defined for the other categories - Solar Cell Process Developers, Contributors to Directed Topics and Specialized Contributors. If awarded a subcontract as a Technology Partner, the solicitation allows an additional award under one additional category. How can a Technology Partner perform more work in an additional category without jeopardizing the ability to perform key work if the LOI for an additional category is not accepted?

Answer: We suggest that the best and most important work be proposed. We state that Technology Partners can focus on shorter-term issues; and R&D Partners can focus on less short-term issues. Naturally, there is some room for interpretation about how activities should be separated between potential proposals; we leave that up to the offeror. These are Letters of Interest, and there is some room post-award for adjustments of actual research work statements.

14. Question: The solicitation indicates that commercial success and market share of thin-film PV products have not shown as much progress as needed and that reliability as well as marketing perception issues need to be addressed. Also, analysis of deployed thin-film products for performance and reliability is desired. This analysis can make progress on both technical and perceptual (marketing) issues by monitoring performance of systems over their life cycle, assessing parameters that are important to potential users (such as performance) and monitoring performance to detect system losses and failures that are the result of module failures. For these considerations, deployment of a significant number of modules over an extended period would be necessary to obtain reasonable statistics and to reasonably sample module production output. Is deployment and monitoring of 30 kW to 60 kW of CIS modules per year, at a site(s) that will stress the modules, consistent with the objectives of this solicitation?

If so, will disposition be determined such that title to the modules and BOS fully vests in the contractually determined site owner after completion of deployment and measurement contracts (10CFR600.132(a))?

Answer: The LOI does not provide any funds for purchasing systems. We wish to monitor existing systems. That can include systems owned by either a commercial customer or by the manufacturer.

**Responders are required to acknowledge receipt of the subject amendment, dated June 17, 2004, with any Letter of Interest submitted in response to this solicitation.**

RECEIPT ACKNOWLEDGED

COMPANY \_\_\_\_\_

NAME AND TITLE \_\_\_\_\_

DATE \_\_\_\_\_