



UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

DIVISION OF  
CORPORATION FINANCE

April 11, 2014

Via E-mail

Shaker Sadasivam  
President and Chief Executive Officer  
SunEdison Semiconductor, Inc.  
501 Pearl Drive  
St. Peters, Missouri 63376

**Re: SunEdison Semiconductor, Inc.  
Amendment No. 4 to Registration Statement on Form S-1  
Filed March 21, 2014  
File No. 333-191052**

Dear Mr. Sadasivam:

We have reviewed your registration statement and have the following comment. In our comment, we ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information. If you do not believe our comment applies to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to the comment, we may have additional comments.

Combined Statements of Equity, page F-7

1. We note the net transfers to and from SunEdison. Please explain to us the reasons for these changes and how the amounts here correspond with amounts reflected in your statements of cash flows.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Shaker Sadasivam  
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Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Gary Newberry, Staff Accountant, at (202) 551-3761 or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Tom Jones at (202) 551-3602 or Mary Beth Breslin, Senior Attorney, at (202) 551-3625 with any other questions.

Sincerely,

/s/ Mary Beth Breslin for

Amanda Ravitz  
Assistant Director

cc (via e-mail): Dennis M. Myers