

DOCKETED

Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	232039
Document Title:	Greg P Smestad Comments – Key References (Solar PV and CSP Initiatives)
Description:	N/A
Filer:	System
Organization:	Greg P. Smestad
Submitter Role:	Public
Submission Date:	2/14/2020 2:45:43 PM
Docketed Date:	2/14/2020

Comment Received From: Greg P. Smestad
Submitted On: 2/14/2020
Docket Number: 19-ERDD-01

Greg P. Smestad Comments – Key References (Solar PV and CSP Initiatives)

I have read through the full draft roadmap and I am concerned about some of the references, or lack of quality references, connected to the initiatives dealing with solar energy. I have carefully selected the references below...Field Performance versus Standard Test Condition Efficiency of Tandem Solar Cells and the Singular Case of Perovskites/Silicon Devices, J. Phys. Chem. Lett. 2018, 9, 2, 446-458.

<https://doi.org/10.1021/acs.jpcl.7b02277>

A file is attached/submitted to the docket as a searchable PDF in compliance with the requirements.

Additional submitted attachment is included below.

Re: EPIC Research Roadmap on Utility-Scale Renewable Energy

Docket Number: 19-ERDD-01

Greg P. Smestad Comments – Key References (Solar PV and CSP Initiatives)

I have read through the full draft roadmap and I am concerned about some of the references, or lack of quality references, connected to the initiatives dealing with solar energy. I have carefully selected the references below and I recommend that they be included in the final roadmap as key peer-reviewed published references so that the CEC, its partners and collaborators can better utilize and successfully act on this roadmap. To verify the relevance of these references, the reader can simply read the title of the article and then access the article itself via the indicated websites. I have divided and separated my recommendations by the roadmap's initiatives indicated below.

Initiative SPV.1: Field Test Tandem Material PV Cells

Existing Key Published References: Green et al. (2018), Wikipedia (2019)

Recommended replacements for the Wikipedia entry:

Khenkin, M.V., Katz, E.A., Abate, A. *et al.* Consensus statement for stability assessment and reporting for perovskite photovoltaics based on ISOS procedures. *Nat Energy* 5, 35–49 (2020). <https://doi.org/10.1038/s41560-019-0529-5>

There is a global consensus on the ways in which stability of perovskite solar cells should be assessed and reported. This consensus statement article was published in the Nature Research (Publishing) journal Nature Energy.

Haohui Liu, Zekun Ren, Zhe Liu, Armin G. Aberle, Tonio Buonassisi, Ian Marius Peters, Predicting the outdoor performance of flat-plate III–V/Si tandem solar cells,

Solar Energy, Volume 149, 2017, Pages 77-84.

<https://doi.org/10.1016/j.solener.2017.04.003>

<http://www.sciencedirect.com/science/article/pii/S0038092X17302876>

Olivier Dupré, Bjoern Niesen, Stefaan De Wolf, Christophe Ballif, Field Performance versus Standard Test Condition Efficiency of Tandem Solar Cells and the Singular Case of Perovskites/Silicon Devices, *J. Phys. Chem. Lett.* 2018, 9, 2, 446-458.

<https://doi.org/10.1021/acs.jpcllett.7b02277>

<https://pubs.acs.org/doi/abs/10.1021/acs.jpcllett.7b02277>

If the Wikipedia entry cannot be replaced, then I recommend the three references above be included in addition to the existing references. The key here is outdoor or field performance.

Initiative SPV.2: Increase PV Material Recovery from Recycling Processes

Existing Key Published References are sufficient.

I do recommend that the final roadmap include one more:

5.6.1 Communication Master Plan publication, ZABALA Innovation Consulting, 2018.

Freely available at: <https://www.circusol.eu/en/resources/circusol-publications>
CIRCUSOL project (Circular business models for the solar power industry) is a new initiative funded by the Horizon2020 Programme of the European Commission, EU.

Initiative CSP.1: Improve Cleaning Systems for CSP Mirrors

Existing Key Published References: Griffith et al. (2014).

This is incomplete and insufficient. I recommend that you also include:

Philipp Bellmann, Fabian Wolfertstetter, Ricardo Conceição, Hugo G.Silva, Solar Energy, Comparative modeling of optical soiling losses for CSP and PV energy systems, Volume 197, February 2020, Pages 229-237.

<https://doi.org/10.1016/j.solener.2019.12.045>

<https://www.sciencedirect.com/science/article/pii/S0038092X19312599>

Klemens Ilse, et. al. Techno-Economic Assessment of Soiling Losses and Mitigation Strategies for Solar Power Generation, Joule, Volume 3, Issue 10, 16 October 2019, Pages 2303-2321.

<https://doi.org/10.1016/j.joule.2019.08.019>

<https://www.sciencedirect.com/science/article/pii/S2542435119304222>

These can be cited and/or references from within these two peer-reviewed journal articles. At least one of these recommendations has been previously posted as TN# 231953, 2/05/2020. The references above also connects to and supports the statement in the draft roadmap's Areas for Advancement (page 39), "There is an opportunity to build upon international experience in CSP mirror cleaning."

Initiative CSP.2:

Key Published References: There are only two, but they are sufficient.

Please feel free to contact me about these recommendations. Thank you for your attention to this matter.

Sincerely,

Greg P. Smestad, Ph.D.

San José, California

inquiries@solideas.com

<http://www.solideas.com>