

Interactive comment on “Feasibility study for 100% renewable energy microgrids in Switzerland” by Sarah Barber et al.

Peiyuann Chen (Referee)

peiyuan@chalmers.se

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General comments The paper evaluates microgrid sizing problems in Switzerland by using the commercial software HOMER pro. The topic is practical and worth further investigation. However, the analysis lacks depths. The paper resembles a report for pre-study of a microgrid feasibility study, and is suitable for further discussion with industries. For an academic journal, a significant more higher level of analysis and theoretical understanding is needed. This, however, does not imply that the work carried out in the paper is not valuable. The reviewer hopes that the following comments will help to improve the quality of the paper.

Specific comments 2.1 Typically, Levelized cost of electricity is used to measure the

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cost of a generation technology. Why would the authors use cost of electricity instead?

2.2. Page 9, line 4, the paper writes 'For an island mode system, it is therefore important that SSR is above one at all times'. I think the sentence does not convey the right message. If $SSR < 1$ for certain hours, it should not be a problem, as the energy storage should cover this temporary power deficiency. But if $SSR > 1$ at all time, isn't the generation system in this island over-dimensioned?

2.3 Page 9, line 11-12, the paper writes 'This is because the combination of wind and PV. allows the set-up to more efficiently cover the production demands due to the complementary nature of the solar and wind resources'.

Can the authors elaborate on this? To what extent is this complementary nature? How to quantify this? Is this level of complementary general in Switzerland, or even in Europe? For a journal, the reviewer would expect a deeper analysis on this, especially this statement serves as the main explanation for the key conclusion of the paper.

2.4 Page 9, Line 12-13, the paper writes 'Furthermore, for nearly all the sites, the Wind only set-up has the highest SSR'. This is because wind power fluctuates more over the year than solar power does'. The annual SSR is only related to the annual energy production, why would this be related to hour-to-hour variation? It is hard to see the cause-effect relation here.

2.5 The area considered is $100,000 \text{ m}^2$, is it reasonable to install 180 - 220 wind turbines? Is noise a problem? Have the authors discussed this analysis with microgrid business developers? I believe this would be useful if possible.

Technical corrections 3.1. Page 9, line 9, 16,000 kWh instead of kW/h.

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