

**Senate Standing Committee on Environment and Communications**  
**Legislation Committee**  
Answers to questions on notice  
**Environment portfolio**

**Question No:** 114  
**Hearing:** Supplementary Budget Estimates  
**Outcome:** Agency  
**Programme:** ARENA  
**Topic:** Differences in costs between solar and diesel generation  
**Hansard Page:** 109  
**Question Date:** 19 October 2015  
**Question Type:** Spoken

**Senator Waters asked:**

**Senator WATERS:** ...On your project with Rio to provide solar power for their bauxite mine in Weipa, can you tell me what the current cost differential between solar and diesel generation is for greenfield mining projects?

**Mr Frischknecht:** For that particular project, if you are interested in the details, we would have to take it on notice. However, in general what I can tell you is that for mining projects, if there is either a brownfield or a greenfield project, typically you would save money simply by displacing diesel with solar. However, that is fairly low-penetration solar—in other words, no storage involved and no fancy control system. It simply looks like negative load to the diesel generator. In other words, the load goes down a little bit, and in that process you save some money through displacing diesel.

**Senator WATERS:** Can you extrapolate from that how long you think it would be for solar to be cost competitive with diesel?

**Mr Frischknecht:** It is cost competitive in that scenario. Where it is not yet cost competitive, and the reason we have to provide some grants to these mining interests, is that often they are extremely conservative and they want to make sure that they have a high level of diesel redundancy, even while the solar is being proven. Over a number of years we expect that the solar will be proven and that therefore they will not have to have that level of redundancy.

**Senator WATERS:** Okay.

**Answer:**

The key factors which affect the competitiveness of solar in off-grid electricity generation are the availability of alternative energy sources (e.g. proximity to gas pipelines, ports etc), the amount of solar PV used (penetration levels) and the length of the off take agreement. Solar PV primarily provides cost saving through fuel displacement. Accordingly where traditional fuel sources are expensive the benefits from solar PV generation are significant. Remote greenfield sites with diesel generation are therefore prime candidates for solar PV uptake. This is because the majority of the cost for PV are borne upfront (approximately 85%) and so longer offtake agreements enable a lower marginal cost of supply. Brownfield sites with a known or prospective mine life are also likely beneficiaries.

ARENA currently funds two brownfield mine projects at Weipa and DeGrussa. While these are first of a kind projects in Australia, ARENA's investment is encouraging other mining companies to pursue solar PV in Australia. Sirius Resources has recently announced plans to install a 20 Megawatt diesel power station combined with a 6.7 Megawatt photovoltaic solar power station at a greenfield site without subsidy.