

## Dyesol's Study Generates LCOEs of A\$0.096 – A\$0.12 KWh

**Queanbeyan, 12 November 2015** – Dyesol recently announced it had reached an agreement with ARENA to receive \$450,000 funding support to progress its Perovskite Solar Cell (PSC) technology towards scalable manufacture and mass commercialisation. While the critical key performance targets relate to achieving targets of efficiency and durability for our PSC technology, the program also involves a number of other important deliverables.

The first of these deliverables is analysing and reporting on the Levelised Cost of Electricity (LCOE) for PSC PV technology when large-scale manufacture is achieved. Dyesol is very pleased to advise that this initial report is to be submitted for ARENA consideration.

The results confirm that PSC PV technology has the potential to be a highly disruptive technology with the prospect of achieving highly competitive energy costs once large-scale manufacturing is achieved. Importantly, this modelling assumes zero carbon or tax credits and no feed-in tariff support.

The modelling is based on a production facility of 100MW located within Australia. This is a modest and economically feasible size compared to PV manufacturing facilities developed elsewhere. Production costs were calculated using a PSC model developed by Dyesol and the extensive data we have generated during our scale up activities.

LCOE costs were calculated using ARENA's LCOE calculator developed for large-scale solar installations. The LCOE modelling is based on developing a standalone 20MW solar PV facility in three different locations, namely Geraldton, Nyngan and Canberra districts. The modelling was undertaken for panel efficiencies of 10%, 12% and 14%. This is reasonable considering laboratory test efficiencies currently exceed 20%, the steep trajectory of improvement and the considerable progress Dyesol is achieving in scaling up the technology.

Key findings of this study include:

- The low manufacturing cost structure of PSC technology is reflected in the forecast delivered panel costs in the range of A\$0.21/Wp - A\$0.27/Wp depending on efficiency. This is highly competitive with competing 1st and 2nd generation PV technologies with quoted competitive costs typically in the range of A\$0.56-\$0.70/Wp (US\$0.40 - \$0.50c/Wp).
- Indicative LCOE figures for the three sites modelled are:
  - Geraldton \$96.41 - \$105.84/MWh
  - Nyngan \$100.80 - \$110.50/MWh
  - Canberra \$109.12 - \$119.62/MWh

#### **About DYESOL LIMITED**

Dyesol is a global leader in the development and commercialisation of Perovskite Solar Cell (PSC) technology – 3rd Generation photovoltaic technology that can be applied to glass, metal, polymers or cement. Dyesol manufactures and supplies high performance materials and is focused on the successful commercialisation of PSC photovoltaics. It is a publicly listed company: Australian Securities Exchange ASX ([DYE](#)) and German Open Market ([D5I](#)). Learn more at [www.dyesol.com](http://www.dyesol.com) and subscribe to our mailing list in English and German.

#### **About PEROVSKITE SOLAR CELL TECHNOLOGY**

Perovskite Solar Cell (PSC) technology is a photovoltaic (PV) technology based on applying low cost materials in a series of ultrathin layers encapsulated by protective sealants. Dyesol's technology has lower embodied energy in manufacture, produces stable electrical current, and has a strong competitive advantage in low light conditions relative to incumbent PV technologies. This technology can be directly integrated into the building envelope to achieve highly competitive building integrated photovoltaics (BIPV).

The key material layers include a hybrid organic-inorganic halide-based perovskite light absorber and nano-porous metal oxide of titanium oxide. Light striking the absorber promotes an electron into the excited state, followed by a rapid electron transfer and collection by the titania layer. Meanwhile, the remaining positive charge is transferred to the opposite electrode, thereby generating an electrical current.

#### **About ARENA (Australian Renewable Energy Agency)**

ARENA was established by the Australian Government to make renewable energy technologies more affordable and increase the amount of renewable energy used in Australia. ARENA invests in renewable energy projects, supports research and development activities, boosts job creation and industry development, and increases knowledge about renewable energy. ARENA is currently supporting more than 200 projects and is actively seeking new projects to support.

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