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Scaling up SunDrive's advanced solar PV manufacturing

On behalf of the Australian Government, The Australian Renewable Energy Agency (ARENA) has today announced \$11 million in funding to innovative Australian solar technology company SunDrive Solar to expand its novel solar cell metallisation technology from prototype scale (1.5 MW/yr) to commercial capacity (>100 MW/yr).

SunDrive has developed a cell metallisation technology that uses copper, a metal that is approximately 100x cheaper and 1000x more abundant than commonly used silver.

Currently, silver accounts for approximately half the cost of converting a bare silicon wafer into a finished solar cell and solar manufacturing accounts for approximately 25 per cent of the world's annual industrial silver consumption. The use of copper instead could help the world to rapidly scale up solar manufacturing and support meeting net zero commitments.

ARENA CEO Darren Miller said it was vital to support homegrown innovation to further reduce the cost of solar

“To make ultra low-cost solar a reality, it is crucial that our scientists and researchers keep innovating and improving solar cells and module design. SunDrive's technology that replaces silver with copper is a potential game changer and highlights why now is the time to invest in technologies for our future economic success.”

In addition to being more cost-effective and material abundant, SunDrive has also pushed the performance of its technology beyond that achievable with silver by creating the world's most efficient commercial-sized solar cell. The technology also has environmental benefits as copper is easier to recycle and is less carbon intensive in the manufacturing process.

By combining these benefits, SunDrive is aiming to produce one of the world's most advanced solar modules at an installed price that is 20-30 per cent cheaper than other high efficiency solar modules on the market.

SunDrive plans to accelerate the development of its copper-plated solar PV technology to commercial-scale production capacity of >100+ MW/yr of metallised cells.

SunDrive has previously received \$3 million in ARENA funding to demonstrate its copper metallisation technology to the prototype scale of 1.5 MW per year.

SunDrive Co-founder and CEO, Vince Allen, said: “With ARENA's continued support, SunDrive, an Australian founded company, has been able to compete with the world's largest solar PV companies to produce the world's most efficient commercial size solar cell.

To achieve net zero by 2050, we are going to need more advanced solar technologies. Today only 1 per cent of the world's energy comes from solar and current technology is already at its limit in terms of cost efficiency and material scalability, and the use of silver is behind all three of these. With SunDrive's breakthrough copper technology, these roadblocks can be overcome unlocking a new generation of solar technology.

With ARENA's backing, SunDrive is proud to be at the forefront of Australian solar innovation and demonstrating the immense potential of a domestic advanced solar manufacturing industry to make Australia into a renewable energy manufacturing superpower.”

Mr Miller added “It's exciting to see SunDrive take the next step towards market entry. ARENA has supported the company for a number of years now and we're delighted to continue our support to see SunDrive become a key player in our emissions reduction aims.”

Enabling Ultra Low-Cost Solar

While solar PV and wind are recognised as the lowest cost form of generation in Australia today, further cost reductions are required to optimise Australia's transition to renewable electricity and to enable future industries such as renewable hydrogen and low emissions metals.

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Given Australia's superior solar irradiance resources and world-leading solar PV R&D capabilities, ultra –low-cost solar has the potential to unlock significant long term economic potential. SunDrive's Project aligns with ARENA's [strategic priority](#) to enable ultra low-cost solar.

ARENA recently released its [white paper](#) on the incredible potential of ultra low-cost solar for Australia and the world. At the forefront of the white paper is ARENA's 30-30-30 vision for ultra low-cost solar in Australia, which represents 30 per cent solar module efficiency and an installed cost of 30 cents per watt by 2030.

SunDrive aims to accelerate the timeframe of achieving cost-competitive manufacturing of 30 per cent efficient modules through its low-cost copper metallisation technology. Ultra-efficient bifacial silicon solar modules and perovskite-silicon tandem modules both offer potential pathways to achieving ARENA's Solar 30-30-30 initiative. Both pathways will require high-performance, low-cost silicon solar cells which SunDrive aims to deliver.

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