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NEWS RELEASE

## Annual solar repairs and maintenance spend to grow to \$9 billion by 2025

22 June 2020

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**Solar power systems nearing inverter end of life currently account for 5% of the global PV market. This number will grow to 16% - or 227GW<sub>DC</sub> of solar systems - by 2025, according to new research by Wood Mackenzie.**

The repowering and maintenance of these solar power plants will come at a cost, however.

Wood Mackenzie expects the global non-residential solar PV operations and maintenance (O&M) market to reach an annual total of \$9.4 billion by 2025. Of that total, the APAC region accounts for \$4.1 billion, EMEA represents \$3.5 billion and AMER accounts for \$1.8 billion.

“Inverter repowering is especially important in Europe, as more than 16GW<sub>DC</sub> of systems are currently over ten years old. By 2025, that number will grow to 100 GW<sub>DC</sub>. Aging solar systems are an opportunity for repowering activities, while new projects can take advantage of advanced analytics,” said Daniel Liu, Wood Mackenzie Principal Analyst.

While it is estimated that solar inverters will need replacing every ten years, some systems present earlier faults.

Wood Mackenzie estimates that approximately 4.2 GW<sub>DC</sub> of solar assets will run into premature failures in 2020, with this annual total jumping to 36 GW<sub>DC</sub> in 2025.

“Premature inverter failures will grow as the global PV fleet ages. Though less than 1% of systems experience premature failure, between 10% - 12% of O&M costs are dedicated to inverter replacements,” said Leila Garcia da Fonseca, Wood Mackenzie Principal Analyst.

The widescale adoption of auctions is driving solar LCOE further down and putting additional pressure on O&M costs, according to Wood Mackenzie.

“Europe has joined the markets that are phasing out renewable energy incentive schemes and introducing auction-based mechanisms. Auctions are emphasising the existent price-based competition for O&M services in established markets such as Germany.

“Developers and asset owners are exploring methods along the value chain to reduce overall costs, assuming more risk. In the O&M sector, this will happen through partnerships with different players oriented to a hybrid structure,” added Liu.

Another factor impacting O&M costs lies in the content of contracts signed by developers and asset owners.

In the long-term, asset owners are likely to incur more costs with an a-la-carte service structure than if opting for an all-in service contract, says Wood Mackenzie.

“In reality, most O&M contracts currently signed on the lower end of the cost range (3-5\$/kW/year) miss vital aspects of operating and maintaining a solar power plant properly.

“The typical scope included on current O&M contracts covers very few basic maintenance activities.

“With full-wrap contracts being avoided, vegetation management, corrective maintenance work and module washing are often excluded from the scope, despite being critical to keep solar power plants performing as expected.

“While these activities are heavily dependent on plant location and project specific characteristics, they can roughly represent 40-45% of a project’s total O&M costs,” added Garcia da Fonseca.

Wood Mackenzie’s global annual solar installation forecast for 2020 has been downgraded by 17% to reflect coronavirus impacts. Despite short-term impacts, the market has shown resilience with limited effects on operations.

As solar power is expected to play a key role in the energy transition, with annual installations forecast to average 135 GW<sub>DC</sub> between 2022 and 2025, the O&M opportunity is an attractive one for market players.

2019 saw further consolidation in the global O&M market, as the top 15 vendors increased their market share from 51% to 54%.

Of the 12 markets examined in the Wood Mackenzie report, only Germany, the UK, the US and France did not show any consolidation. Spain experienced significant consolidation activity last year, as the top five players held 71% of the market share. This is up 9% from 2018.

First Solar topped the annual rankings again in 2019, however many positions changed hands due to portfolio movements.

Sterling & Wilson and Mahindra Teqo both made significant gains, largely driven by contracts added from their construction arms operating in the Middle East, Africa and India.

Canadian Solar had the largest growth rate of any non-inverter vendor in the top 15. The company added over 2GW<sub>DC</sub> in 2019, translating to a 286% growth rate. This was mainly due to the addition of projects in Australia.

“Vendors ranked 16-30 had a lower growth rate than the top 15, indicating that global trends in market consolidation is mostly limited to the top 15 vendors.

“Although mid-level vendors - those ranking 16 to 30 - experienced a lower growth rate than players 1-15, they still added a combined 6GW<sub>DC</sub> to their portfolios.

“Most of these vendors are regionally focused and were able to retain leading positions in their markets,” said Garcia da Fonseca.

As noted in the Wood Mackenzie report, affiliated service providers (ASP) manage the largest share of the global O&M market.

Engineering, procurement and construction companies (EPC) follow ASPs with the second largest share of the global O&M market.

Module manufacturers (ModCos) retained the number three ranking, despite experiencing a 1% market share loss when compared with 2018.

Inverter manufacturers saw a 1% market share growth in 2019 to reach fourth place in the global rankings. Much of this growth was due to portfolio additions from Ingeteam and Schneider Electric.

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