Trends in PV O&M pricing

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Average price for full-scope PV O&M in Europe for a fixed-axis system

EUR/MW/year

-73%

2011 35,000

2012 28,000

2013 21,700

2014 19,500

2016 13,000

2017 9,350

Source: BloombergNEF. Note: Full-scope O&M contract includes monitoring, periodical maintenance, panel cleaning (once a year), vegetation control (once a year) and corrective maintenance.
Average full-scope O&M price build up in Europe in 2017 for a fixed-axis PV system

Euros/MW/year

- Monitoring: 1,280
- PM: +2,650
- Panel cleaning: +1,150
- Vegetation control: +1,020
- CM: +3,250
- Full-scope contract: 9,350
- Technical AM: 2,250
- O&M+ Technical AM: 11,600

Source: BloombergNEF. Note: PM – Periodical maintenance; CM – Corrective maintenance, AM – Asset management. Assumes once-a-year cleaning and vegetation control. Technical asset management includes reporting on plant performance and the management of warranties, regulatory compliance, insurance claims and contract management.
Price and scope of O&M contracts signed in 2017

Source: BloombergNEF. Note: Bubble sizes represent project capacity. M-Monitoring, PM-Preventive maintenance, CM-Corrective maintenance, SM-Spare part management, SC-Spare part costs, S-Security, C-Cleaning, VC-Vegetation control.
Percentage of surveyed portfolio by different cleaning methods

- Tractor-mounted cleaning: 66%
- Manual cleaning: 26%
- Robotic cleaning: 8%

Source: BloombergNEF
Our research shows...

• O&M contracts have got cheaper due to competition, consolidation of providers and a reduction in willingness to pay due to lower power prices
• Corrective and periodic maintenance are the largest components of cost
• There is still considerable variation in the prices of contracts between European countries
• There is considerable cost reduction potential in O&M. Predictive maintenance and monitoring are relatively early stage, and robotic cleaning used in only about 8% of projects.
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