

## **DETAILS OF IMPLEMENTATION ARRANGEMENTS**

### **A. Project Framework**

1. The project involves the rollout and operation of multiple solar photovoltaic installations, each with a capacity ranging from 400 kilowatts-peak (kWp) to 10 megawatts-peak (MWp), on rooftops or elsewhere on the premises of commercial and/or industrial buildings owned or leased by host companies in Thailand. The solar installations, which comprise the project's subprojects, will result in total capacity of up to 100 megawatts (MW) and will be installed at no up-front cost to the host companies. The project will enter into long-term power purchase agreements of at least 18 years each directly with the host companies. Electricity will be sold at a 5%–10% discount to the price of electricity purchased from the fossil fuel-dominated national grid, thereby achieving solar power production at parity with the grid, owing to the (i) economies of scale associated with installing, operating, and maintaining solar photovoltaic systems; and (ii) continued reduction of solar photovoltaic costs. The lower cost of electricity (with no additional burden of paying the up-front costs associated with developing their own solar power facilities) will act as an incentive for companies to participate in the project. The project aims to demonstrate the viability of non-subsidized solar power in Thailand, as it will not be relying on the Thai feed-in tariff (FIT) regime.

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### **B. Management**

4. The project is being undertaken by the borrower, Thai-Sunseap Asset Company Limited, a special purpose project company incorporated in Thailand. The borrower is 55% owned by Weng Holding, Sombath Phanichewa and his immediate family members, and 45% by Sunseap Group. The borrower will own 100% of subprojects up to an aggregate capacity of 100 MW.

5. Weng Holding is a privately held company that is part of an industrial conglomerate (the Weng Group), led by a prominent Thai businessman Sombath Phanichewa. S. Phanichewa is the chairman of the board of Don Muang Tollway, which operates the elevated toll road from Bangkok metropolitan and the northern vicinities as the main and direct route to the center, northern, and northeastern parts of Thailand under a concession granted by the Department of Highways.

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6. Sunseap Group is a leading developer and the largest owner of solar rooftop systems in Singapore, with more than 163 MWp of contracted capacity. It has won five out of six solar tenders called by the Government of Singapore to date to install photovoltaic panels on the rooftops of a number of public housing and other government properties.

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### C. Construction Arrangements

7. Without moving parts, fuel processing requirements, or the need to handle high temperatures and pressures, rooftop solar photovoltaic projects are significantly less complex to construct than conventional power plants. The risk of delay and cost overrun is therefore relatively low for rooftop solar projects, and is further mitigated by the short construction period.

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9. Photovoltaic solar panel and inverters will be acquired on a subproject-by-subproject basis based on specific requirements from a list of pre-agreed tier-1 suppliers vetted by the LTA.

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### D. Operations Arrangements

11. **Offtake.** Photovoltaic solar technology has a highly predictable revenue structure because of the availability of reliable, long-term solar irradiation combined with a long-term power purchase agreement (PPA). As photovoltaic solar technology tends to produce electricity roughly coincident with electricity demand, it can benefit from higher peak-period prices when solar radiation is greatest.

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15. **Operation and maintenance.** Photovoltaic solar power systems have high up-front capital costs and minimal operating costs. The cost structure is highly predictable, with limited expenditures for maintenance and parts replacement, and no ongoing or volatile fuel expense. Debt servicing costs are the only significant expense and consequently drive the economics and viability of grid-parity solar power projects. It is therefore important for solar power projects to obtain long-term, fixed-rate debt financing to reduce debt servicing costs.

16. The operation and maintenance of solar power plants is relatively simple, consisting of cleaning the panels, regular inspections, minor repairs and measurements, data verification, reporting, and site security. The operations do not present any major technical challenges, and the risk of major outages is limited, as there are no moving parts and the structure is modular (i.e., the failure of one module does not affect the output of others). The project's electrical inverters, which convert direct current into alternating current, will be continually maintained to avoid periodic replacement under a fixed-price, extended-life warranty.

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### E. Project Performance Monitoring, Reporting, and Evaluation

17. The borrower will submit quarterly unaudited financial statements and annual audited financial statements to ADB. The borrower will hire a reputable accounting firm to audit its annual accounts to generally accepted accounting principles.

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19. ADB will monitor the project using information from its own sources, the public domain, and the LTA's operations monitoring review reports. The project will be evaluated on the

(i) successful operation of the project, (ii) increase in Thailand's rooftop solar power generating capacity, and (iii) reduction in carbon emissions. The performance indicators are in the design and monitoring framework (Appendix 1).