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| **Title:** | IoT-based smart net energy meter with advanced billing feature for residential buildings including solar PV system | | |
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| **Abstract:** |  |
| Electricity consumption is rising across all industries. Residential electricity use dominates the sector. Solar photovoltaic (PV) systems on residential roofs are increasing quickly, notably in Dhaka, Bangladesh. PV power generation is high at peak sun irradiance. Due to light loads, residential structures use less electricity. PV system surplus electricity may be transmitted to the national grid. Residential customers may sell power to the government, lowering their electricity expense. Traditional energy meters make it difficult to calculate PV system consumption by load and grid injection. This is possible with net metering. Thus, this study presents an internet of things (IoT)-based smart net energy meter for home users to provide surplus solar PV power and consume grid electricity when needed. With the government's new power tariff rate, the net bill will be calculated automatically. A dedicated mobile application is used to monitor all the activities. The billing statement will be generated automatically, and the payment of that bill will be payable using a redirect link with the same mobile application. The suggested smart net energy meter will inform SMS/mobile app users of gas, smoke, and tempering. The suggested meter's performance and efficacy were evaluated using software simulation and hardware analysis. | |