

**Electrical Energy**

**Solution Card 3: Install an on-grid PV system**

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| **Solution Card 3: Install an on-grid PV system** |
| **Overview** |
| *Action* | Use an on-grid PV system as an alternative energy source |
| **Assumptions** |
| *Unobstructed rooftop area* | 400.0 m2 | 800.0 m2 | 1600.0 m2 |
| *Specific area requirements* | 10.0 m2/kWp | 10.0 m2/kWp | 10.0 m2/kWp |
| *System rating* | 40 kWp | 80 kWp | 160 kWp |
| *Annual specific yield* | 1,850 kWh/kWp/year | 1,850 kWh/kWp/year | 1,850 kWh/kWp/year |
| *Annual Energy yield* | 74,000 kWh/year | 148,000 kWh/year | 296,000 kWh/year |
| **Constraints** |
| *System cost* | 13,500 EGP/kWp | 12,000 EGP/kWp | 11,500 EGP/kWp |
| *Cost of energy* | 1.450 EGP/kWh | 1.450 EGP/kWh | 1.450 EGP/kWh |
| **Economic Features**  |
| *CAPEX* | EGP 540,000 | EGP 960,000 | EGP 1,840,000 |
| *OPEX* | EGP 5,400 | EGP 9,600 | EGP 18,400 |
| *Net annual Savings* | EGP 101,900 | EGP 205,000 | EGP 410,800 |
| *Payback period* | 5.3 years | 4.7 years | 4.5 years |
| *Discounted payback period* | 12.7 years | 9.3 years | 8.5 years |
| *Project lifetime* | 20 years | 20 years | 20 years |
| *Annual CO2 reduction* | 34.018 tCO2/year | 68.036 tCO2/year | 136.071 tCO2/year |