

# *Design of a solar energy system for a mosque*

*At Jazan City*

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## **Abstract:**

Muslims congregate for prayers in mosques five times daily: at dawn, noon, afternoon, sunset, and evening. Because these times are governed by the sun, they change within the year but are perpetual. As such, mosque load profiles are highly predictable and witness little variation year over year. The relatively large size of mosque rooftops and their ubiquity in the KSA make them ideal candidates for solar photovoltaic (PV) installations. We perform a technoeconomic analysis on a 42 kW PV Tie Grid system for a mosque with moderate electricity consumption at Jazan city. It was found that the net metering reduces the annual energy bill by more than 82% when using Tie Grid PV system.

*Keywords: PV system, electricity Tie grid, sizing method, PV module*