**Meeting Common Area Energy Needs in Multi-Dwelling Buildings with Photovoltaic (PV) Panels: Design and Calculations**

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| **Abstract**  In recent years, PV (photovoltaic) electricity generation has been installed especially on the roof areas of newly meeting the energy consumption of independent housing sections is not preferred very often due to insufficient roof space. However, the use of roof space for common areas of housing is frequently preferred. Increasing energy unit prices, together constructed buildings; in order to meet the energy consumption for common areas. In multi-storey residential buildings, with the necessity of electric vehicle charging station systems in parking areas, have increased the energy costs of common areas of housing. Although PV energy systems are suitable for increasing energy costs, the installation cost of PV systems is also high. For this reason, it is inevitable that calculations and designs for PV systems should be made with high precision accuracy. In this study, the design of photovoltaic (PV) electricity energy systems for multi-storey residential buildings is discussed. The installed power and demand power calculations, which are mandatory in the project preparation stages of the buildings, were made on the basis of the electric power table in the common areas and the necessary calculations were performed. In line with the demand power calculations, the energy power, number of panels, inverter capacity, cable sections of the PV system were calculated and a 2D design was created in the AutoCAD program. Then, the connection elements of the designed PV system to the main distribution panel inside the building were calculated and integrated into the design. As a result, the applicability of PV electrical energy systems in common areas of multi-storey residential buildings was demonstrated. The use of such systems has great potential in terms of environmentally friendly energy production and low energy costs. In addition, it will contribute to energy efficiency in future building projects by providing an important step towards sustainable energy solutions. In the future, equipping more buildings with such systems will be an important development in terms of energy independence and environmental sustainability. |

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