

Investment and Financing Perspectives for a Solar Photovoltaic Project

Andrea Marchioni

University of Modena and Reggio Emilia, “Marco Biagi” Foundation, Italy
andrea.marchioni@unimore.it

Carlo Alberto Magni

University of Modena and Reggio Emilia, Department of Economics “Marco Biagi”, Italy
magni@unimo.it

Davide Baschieri

University of Modena and Reggio Emilia, “Marco Biagi” Foundation, Italy, and GRAF Spa, Italy
davide.baschieri@unimore.it

Switching from traditional energy sources to renewable energy has a beneficial impact in terms of ecological sustainability. However, firms willing to switch from retail energy to renewable energy are also concerned with the impact on economic profitability. Therefore, an appropriate financial modeling and profitability metrics are required which assess correctly the effect on shareholder’s wealth (Magni and Marchioni 2019).

In this work we illustrate a simple logical framework serving the purpose of measuring value creation in a real-life solar photovoltaic project, funded with a lease contract, a loan contract and internal financing (i.e., withdrawal from liquid assets). We use the projected accounting data to compute the value created. We assess the project from both an investment perspective (operating assets and liquid assets) and a financing perspective (debt and equity). Furthermore, focusing on value creation for equity-holders, we calculate the expected contribution on wealth increase of operating activity and financial management. Finally, we highlight the role of the distribution policy in financial modeling, by underlining the strict logical connections between estimated data and decision variables.

More precisely, we consider the appraisal of a solar photovoltaic (PhV) project proposed by an Italian installer company to small firm, located in Northern Italy, which aims to switching from retail energy to solar energy and draw up a financial model which connects operating variables and financing variables. The plant will be installed on a land property owned by the company and currently rented. With retail energy, the firm periodically pays a utility bill and receives a rental income from the rent of the land. The solar PhV plant implies a leasing contract whereby lease payments and operating and maintenance costs are made periodically. After several years, at the expiration date, the lessee will pay a lump sum to acquire the plant, and the system will continue to generate electric power for some years. The lump sum is paid through the issuance of new debt capital and withdrawal from liquid assets. At the end of its useful life, the plant will be removed, and the firm will incur disposal costs. If the retail system is replaced by the PhV plant, the incomes and cash flows will increase as a result of the ceased lease payment and the cost savings (the utility bill), but will increase as a result of operating and maintenance costs, the terminal outlay for acquiring the plant, and the lost rental income.

Keywords: Photovoltaic solar energy, project evaluation, net present value, distribution policy

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