In Masdar city, the average daily shortwave solar energy has a significant seasonal variation over the year. The brightest period of the year is during three months, from April to July, with an average daily incident shortwave energy per square meter above 7.2 kWh, based on the weather records of Abu Dhabi. The darkest period of the year is during three months, from middle November to early February, with an average daily shortwave energy per square meter below 4.5 kWh. Based on the report of the United Arab Emirates reports the darkest day of the year is December 20, with an average of 4.2 kWh.

In order to analyze solar radiation and average daily incident shortwave solar energy in Masdar city deeper and observe the most suitable areas for the photovoltaic panels, 3D model of Masdar city was analyzed in Sketchup by using the extension module of "Solar Energy". Some calculations were made based on the location, square feet of the panels and the capacity of selected photovoltaic glass. The results of the calculation showed that the biophilic structure that generates 1,464,992 kWh electric car mileage thanks and avoid 1,464,992 kg CO2 emissions per year.

Onyx Solar Photovoltaic medium transparent (34WP/sqm) glass was chosen to represent the roof structure. The photovoltaic glass generates free and clean energy. Moreover, its optimized solar factor enhances thermal comfort inside the building, it completely offsets the energy demand for indoor air conditioning and drastically reduces the total energy consumption. Photovoltaic glass also filters 99% of ultraviolet radiation (UV), which may have a harmful effect on interiors, furniture and humans. Moreover, it reduces the transmission of infrared radiation by up to 90%. Given these properties, PV photovoltaic Glass maximizes the performance of the building’s envelope, enabling buildings to become vertical power generators.