

Abbi Helfer
Senior Division Energy & Transportation
Sun-Sational Solar

The purpose of this project was to determine how practical it would be to convert a school district to solar power based on weather-related efficiency, school building architecture, solar panel efficiency, and average energy use. To determine the practicality, the output from an existing solar array was recorded for three and a half months and was compared with the weather to determine what percentage of maximum output the solar panels could produce during different weather conditions. The usable roof area of each school was then measured to determine the maximum number of solar panels that would fit on the roof. This was used to calculate the maximum output from the solar panels for a year and the total cost of the panels. The number of years it would take to pay the solar panels back was then calculated. The results from weather calculations determined that the solar panels average only about 61% of their maximum rated capacity on a partly cloudy day and 8% on an overcast day. The district wide data showed that while the maximum number of solar panels could produce on average 60% of schools' energy needs, the payback averaged 41 years. Current solar panels only have a life span of about 50 years. The results showed an average payback of 41 years, so a sooner payback would be needed to consider the panels practical. It is not practical to convert a school district to solar power without rebates, grants, or better technology.