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## A parking space for solar energy projects

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To the average user, a multi-level parking garage may seem like slabs of concrete, painted lines and exit signs. For architectural designers, a parking garage is now one of many areas where a business may want to think about implementing the very latest in solar power technology. Margulies Perruzzi Architects (MPA) is currently researching some bright additions to the solar product industry and new alternatives to the traditional roof placement of solar panels. When the roof of a corporate office building is too small or crowded for an energy-producing photovoltaic (PV) array of solar panels, an adjacent parking garage may be the right fit. Suddenly, a building owner may be able to tap into an even larger area, install a greater number of solar panels, and harness more electricity for the building. In addition to offering an increased footprint, selecting a garage for solar panel installation offers its own set of advantages. There are several distinct benefits to placing a PV array over the top level of parking in a garage when compared to a similar one on a roof. By raising the panels to a point where there is enough room for easy flow of traffic below, there's a greater opportunity for convection cooling through an increase in the volume of air flowing underneath and around the solar cells. This circulation helps keep a PV installation operating more efficiently than when placed directly on top of a building roof where HVAC equipment, penthouses and parapets can block area breezes. One of the ongoing maintenance requirements of roof PV arrays is making sure that no debris or snow build-up can block out sunlight. With an array placed above parking, and with panels at an optimal angle of between 15 and 30 degrees, there is less chance of any debris gathering on top of the installation. And as expensive solar panels become a hot item for thieves, safety concerns over having a PV panel within reach of the public can be mitigated with the choice of a garage, thanks to the parking patrols and monitoring systems already in place. While the ultimate goal is to significantly cut the building's energy bills, there are noticeable changes and even perks for drivers using a garage with a solar energy installation. Solar arrays can create a canopy of sorts – shading cars and keeping them from baking in the sun. And in rough weather, the panels can provide some protection to drivers getting in and out of their vehicles. They also serve as a signal to visitors of the building owner's commitment to the environment. The evolving solar power industry also means there will be an evolving education process for firms like MPA. Whether it's a solar panel on top of a garage or solar cell technology applied to glass, MPA is looking at all products and placement options currently on the market. The intent is to provide clients with all of the available options, as they look toward earning more LEED points or simply moving in a more sustainable direction. Saul Accetta, LEED AP, is an architectural designer at Margulies Perruzzi Architects, Boston and is a monthly contributing Architect author for the New England Real Estate Journal's Green Building section.

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