

## **SOMETHING NEW UNDER THE SUN**

*Morgan Solar Deploys SPOTlight Solar Pergola at the Ontario Association of Architects (OAA) Headquarters in Toronto - Using Light Modeling and Design Tools to Help Achieve Net Zero Energy*

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*SPOTlight Solar Pergola seen from the patio of the OAA headquarters.*

Today, over half of the world's people live in cities, and consume almost 80% of our energy use. The urban proportion is expected to grow to two thirds of the population by 2030. This trend presents a series of complex challenges, and there is an increasing focus on reconciling the health and wellness of people with the need to make cities more sustainable and resilient.

Solar power's unique capability to collocate generation with consumption makes it the logical energy choice of the future. However, in buildings taller than two stories, it is nearly impossible to generate a substantial portion of the building energy requirement on the roof due to space constraints, and the aesthetics of conventional solar panels are not generally desirable on building facades. Moreover, high glazing ratios in tall buildings results in uncomfortable solar heat gain requiring more energy to cool the building, even in winter!

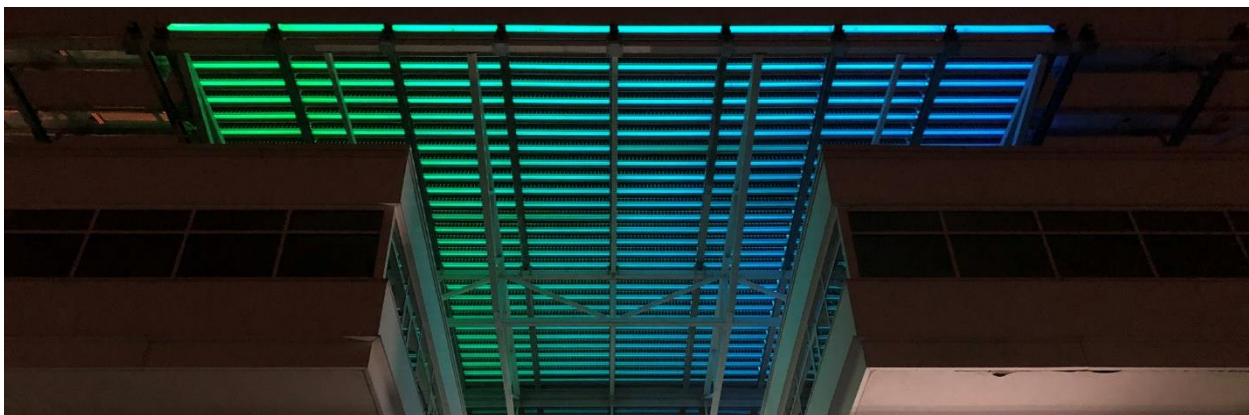
Windows are desired for good reason: they have a particular aesthetic, they let natural daylight into the building, and they allow occupants to remain connected with the outdoors. The multifaceted demands and consequent issues of sunlight in an urban environment presents an opportunity for holistic daylight and energy solutions.

At Morgan Solar we have a solution development process which starts with understanding what our customers value, whether it is maximizing energy generation, optimizing occupant comfort, or creating an eye-catching showcase using innovative and sustainable technology. We then use our proprietary light modeling, simulation and design tools to evaluate a range of technology options and customize a solution proposal which achieves the desired goals. This approach is demonstrated in the following case study with the Ontario Association of Architects headquarters.

### **SPOTlight Case Study**

The Ontario Association of Architects (OAA) recently renovated its Toronto headquarters to achieve zero net carbon in a project that highlights the competing demands for sunlight in high-performance buildings.

The OAA headquarters was originally designed in 1989 to incorporate solar panels, but they were never installed as they were cost prohibitive at that time. Despite utilizing almost the entire roof area for a conventional PV array, more energy was needed to satisfy the building's energy requirement. The OAA did not want to cover the patio and block the sky with opaque solar panels. Additionally, it needed to mitigate solar heat gain and glare through the curtain wall, which had made the central atrium uncomfortable for occupants. The OAA was challenged by these competing requirements with existing technology and wanted to support Canadian innovation.



*SPOTlight Solar Pergola at OAA headquarters illuminated by integrated colour LEDs.*





To solve this problem, Morgan Solar designed a 200-m<sup>2</sup> customized SPOTlight Solar Pergola to generate 40,000 kWh annually, block most of the heat and glare throughout the year and maintain a view of the sky. Showcasing the OAA's commitment to sustainability and innovation, the array generates more energy than the conventional PV system per square meter of roof. The tilt and spacing of the slats were optimized for the building location and orientation using Morgan Solar's Sun Studio design software to achieve the desired performance. Integrated multicolour LEDs illuminate the array during events, complementing the architectural design.

Morgan Solar is a Toronto-based solar technology innovator in light management. The company is supported by Sustainable Development Technology Canada (SDTC) and the Government of Canada. The SPOTlight Solar Pergola is an application of Morgan Solar's core competencies in building light and energy management. Using our proprietary optical design and light modeling software, the SPOTlight platform can be deployed in a range of configurations, inside and outside the building, to deliver customized value to your building project.

For additional information on SPOTlight, to request a tour of an installation, or to discuss the viability of incorporating SPOTlight into your project, please visit our website or address your inquiry to [urban.utility@morgansolar.com](mailto:urban.utility@morgansolar.com).



*SPOTlight Solar Pergola at OAA headquarters seen from street level.*