

Radio Flyer Solar Project Leads to ROI Trifecta

50% Savings in Utility Bills
2.4-Year Payback Period
Increased Funds for Operations Improvements



When Radio Flyer and SunVest first started developing a rooftop photovoltaic (PV) system at the company's Chicago headquarters, multiple priorities were at play. The iconic manufacturer of wagons, electric bikes, scooters, and more is a family-owned toy company well on its way to achieving a goal of 100% carbon-free manufacturing and materials. The company is also working toward a goal of 100% renewable electricity across global operations as part of its involvement with RE100, a worldwide campaign by corporate leaders to achieve 100% renewable energy. A rooftop solar array would make great strides in both arenas.

"Radio Flyer is passionate about sustainability – it's a critical part of the way we run our business, produce our products, and give back to the community," said Tom Cesario, Vice President of US Operations & IT for Radio Flyer. "We're grateful for our partnership with SunVest for their expertise in solar power and helping us achieve our goal of 100% renewable energy across global operations."

SunVest designed, installed, and helps maintain a 606-kilowatt system comprised of 1,616 Canadian Solar modules spread across four different roofs at the Radio Flyer headquarters. There were several challenges for this project, which were all addressed through SunVest's extensive experience in solar design and installation as well as SunVest's breadth of knowledge of the various industry technology platforms.

SUMMARY

Radio Flyer, the Chicago-based manufacturer of wagons, ride-on toys, bikes, and scooters for children, as well as electric bikes for families, has committed to 100% carbon-free manufacturing and materials.

SunVest installed a photovoltaic (PV) system at their headquarters spanning four rooftops that gets them closer to their goal while ensuring adherence to safety guidelines.

BENEFITS

- Predicted to offset more than half of annual electricity usage at Chicago headquarters
- Potential to save \$50,000 in utility bills annually
- Payback period is approximately 2.4 years
- Financial flexibility to improve operations, employee programs, and manufacturing lines
- One of many sustainability initiatives that will help recruit and retain top talent



Challenge

In order to provide Radio Flyer with the desired amount of solar, SunVest needed to distribute the arrays across four roofs in various sizes, and yet place the system's five inverters in a central location near the facility's main distribution panel. The difficulty was that the long-distance wire runs from the arrays to the inverters could lower the voltages of the system and reduce the amount of solar energy for Radio Flyer.

Solution

SunVest selected SolarEdge inverters for Radio Flyer's design. A leader in smart inverter manufacturing, SolarEdge inverters provided the design flexibility to allow SunVest to add the highest number of modules to each voltage string, which not only minimized any voltage drop issues but also served to lower the cost of the system for Radio Flyer as well.



Challenge

The various facility roofs had several obstructions on each, which could cause shade on the arrays and again reduce the system's performance.

Solution

The SolarEdge inverters incorporate the use of Optimizers, which are components that are mounted behind the solar panels. One optimizer is wired to every two solar panels on the roof, and the optimizers allow each pair of modules to perform independently of all the other pairs, thereby mitigating shade across the arrays and capturing the most solar generation possible.



Challenge

The City of Chicago permit requirements include Rapid Shut Down of solar at all array locations. Rapid Shut Down mandates that solar users in Chicago have the capability to de-energize the entire system to the module-level in less than one minute so fire safety personnel can safely access all parts of the array during an emergency situation.

Solution

SunVest's design using SolarEdge Optimizers gave Radio Flyer this critical capability for permit approval, complying with the strict safety requirements from the City of Chicago and the National Electrical Code (NEC) for fire protection.

SunVest's Asset Management Team also provided Radio Flyer with an Operations & Maintenance (O&M) agreement, ensuring the arrays would perform at peak operating condition through SunVest's 24/7 remote monitoring capabilities, system health checks, and troubleshooting aptitude.

Radio Flyer's PV system went live in May 2020. It has achieved 99% of its performance goal in PV Watts, despite a 60-year low of solar irradiance for January and February 2021.

The system not only has the potential to produce 737,000 kWh of renewable electricity every year – offsetting more than half of the Chicago headquarters' electricity usage – but it will save Radio Flyer \$50,000 in utility bills annually and pay for itself within 2.4 years. Radio Flyer will reinvest the funds into sustainability initiatives to further improve operations, employee programs, and manufacturing lines.

Good for the environment. Good for Radio Flyer's people. And good for business.

