

Incident Summary #II-1514425-2023 (#32612) (FINAL)

SUPPORTING INFORMATION	Incident Date	February 23, 2023	
	Location	District of Kent	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact Injury	Qty injuries	0
		Injury description	There were no injuries to person(s)
		Injury rating	None
	Damage	Damage description	A significant portion of a flat rooftop mounted solar array installed on top of an elementary school was damaged during a windstorm event.
		Damage rating	Moderate
	Incident rating	Moderate	
Incident overview	During a severe windstorm event, the force of the strong winds exceeded the combined weight of the floating concrete ballasts installed over the modular solar array racking system foot plates, causing a large portion of the solar panel array to be uplifted and folded over on itself.		
INVESTIGATION CONCLUSIONS	Site, system and components	Weighted ballasts designed specifically to secure solar panel arrays to flat roof tops are installed to prevent movement and uplift of the installed equipment without requiring mechanical connection to the roof, to avoid creating roof penetrations (Image 2).	
	Failure scenario(s)	An insufficient number of weighted ballasts were installed securing the modular racking system to the flat roof top which failed to prevent the wind from uplifting a large area of solar panel arrays.	
	Facts and evidence	<ul style="list-style-type: none"> No evidence of mechanical fastening or anchoring the modular racking system to the building roof. Weighted concrete ballasts displaced from their installation position(s) on the modular racking during the uplift event (Image 1). 	
	Causes and contributing factors	It is certain that the combined weight, amount, and layout of the installed weighted ballasts securing the solar panel array to the flat roof was insufficient in preventing the windstorm event from damaging the installation.	



Image 1 - Effects of windstorm overcoming the weight of the concrete weighted ballasts and uplifting the solar array (concrete ballasts visible).



Image 2 - Weighted ballast installation methods for this array. Two ballasts float over a metal channel plate and are secured together by a metal strap.



Image 3 - View of damage from ground level.



Image 4 - Typical installation of this flat roof top array.



Image 5 - Size of affected area post removal of damaged solar arrays.