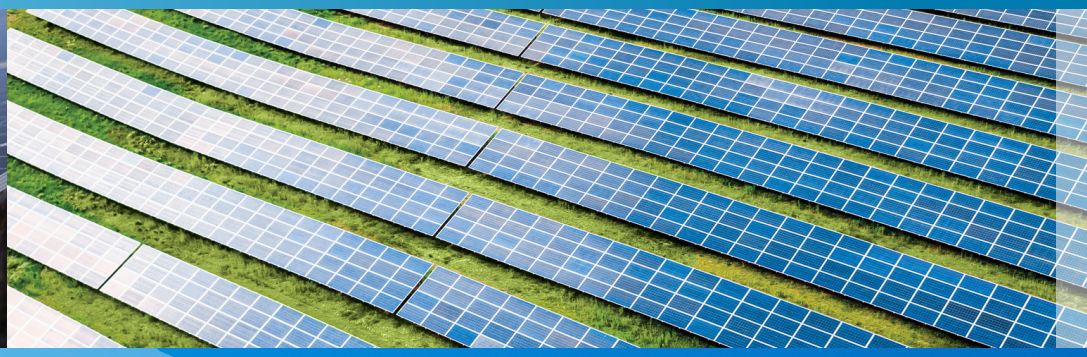

An Even Brighter Future at Nanticoke

Adding More Solar Energy

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Feb 05, 2026

ONTARIO CLEAN AIR ALLIANCE

Overview

The Government of Ontario has asked Ontario Power Generation (OPG) to investigate the potential for all types of new generation at its Nanticoke, Wesleyville and Lambton sites.[1]

The Nanticoke site was the home of the Nanticoke Generating Station, which was the largest coal-fired power plant in the world.

This report estimates the amount of new solar electricity that could be produced at the Nanticoke site.

Solar Power and Potential at Nanticoke

Located near Port Dover on the north shore of Lake Erie, the Nanticoke Generating Station produced coal-fired electricity from 1972 to 2013. It was demolished in 2019.[2] Since 2019, OPG and its partners, Six Nations of the Grand River Development Corporation and the Mississaugas of the Credit First Nation, have transformed part of the site into a 44-megawatt (MW) solar facility housing nearly 200,000 solar panels spanning 0.52 km^2 (129 acres).[3] To date, the facility has generated more than 100,000 megawatt-hours of clean power, enough power to electrify 10,000 homes year-round.[4]

The total area of OPG's Nanticoke site is about 4 km^2 (987 acres).[5] The total area available for additional grid-scale solar power generation is estimated to be 3.5 km^2 (858 acres).[6] This area could house a further 113 MW of generation capacity and generate 137 GWh of annual electricity, equivalent to the average energy needs of nearly 15,300 more homes.[7]

Expanding grid-scale solar at the Nanticoke site can help Ontario meet its peak day demand for electricity. Peak day demand occurs on hot summer days when air conditioner use is high. One third of the utility-scale solar generation potential at the Nanticoke site (46 GWh/year) would occur during summer on-peak times.

Table 1 | Solar Energy Potential at OPG's Nanticoke Site

Site	Total area for solar power generation (m^2)	MW of potential	GWh/year	Summer peak GWh/year
Nanticoke	3,472,326	112.8	137.28	45.66

It is time for Ontario to make productive use of the Nanticoke lands by planning for clean, renewable solar generation that will support the needs of our province in the 21st century. Increasing the grid-scale solar power capacity at Nanticoke will strengthen our commitment to emission-free, renewable power generation and build a brighter future while helping to meet Ontario's increasing power demands.

Methodology

The spreadsheets used to perform this analysis can be found on the Ontario Clean Air Alliance website along with this report on the publications page.

- The available area for grid-scale solar was obtained from Ontario Power Generation maps[8] and excluded the lands already covered in solar arrays.
- Solar panels were assumed to have a maximum power output of 32.5 W/m^2.[9]
- PVWatts[10] was used to estimate the kWh/kW for ground-mount solar systems at Nanticoke using default parameters and no production in January (due to snow coverage). Tilt angle was optimized (30°) and 180° azimuth were used.[11]
- The annual generation during time of use blocks was calculated from Engineering Climate Datasets for Toronto.[12]

Acknowledgements

The Ontario Clean Air Alliance Research gratefully acknowledges the generous financial support that it has received for this report from:

Clean Economy Fund

Echo Foundation

Externalitator Foundation

Green Sanderson Family Foundation

Noor Cultural Centre

Stanley-Horn Charitable Trust

Taylor Irwin Family Foundation at the Toronto Foundation

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6 See the Methodology section in this report for how the total area for additional grid-scale solar power generation was estimated.

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