

"Ontario's Green Energy Act not so green" - letter to editor of Canadian Nuclear Society's BULLETIN - 2009 December edition

Ontario's Green Energy Act is not so green. The transition from coal to natural gas and wind will not necessarily reduce greenhouse gas emissions.

Wind is not replacing coal; gas is. Natural gas will need to be burned in gas-fired power plants whether the demand on the grid is high or low and whether or not the wind is blowing. Gas, less flexible in operation than coal, is replacing coal, to be burned to provide base load (together with run-of-river hydro and nuclear) and intermediate load (together with stored water hydro). Gas responds to the normal load-following dispatches needed to balance the grid, albeit made more difficult by erratic wind generation, because the present nuclear plants cannot respond quickly enough and stored water is a valuable operating reserve not to be wasted. This means that when demand is low, and or wind generation is high, expensive wind energy will displace the clean, cheap electricity from the nuclear plants that will have to power down or even shutdown for several days or weeks, and cannot displace the electricity from the polluting, greenhouse gas (GHG) emitting gas-fired plants that are needed to meet the varying demands of the grid. This is happening now even though at present there is a relatively small amount of wind on the grid.

Shutting down and powering down nuclear stations in order to run the gas-fired generators makes a mockery of Ontario's Green Energy and Green Economy Act and certainly does not improve the reliability of the grid when the demand for more power arises and nuclear units are manoeuvred. More wind generation will make an already bad situation worse. To reduce the burning of gas new nuclear units in Ontario will have to have load-following capability, that is, be able to vary output up and down by significant amounts in accordance with dispatches.

Even though GHG emissions from gas-fired units are around half that from coal-fired units, for the same electrical output, the replacement of coal-fired power plants by natural gas-fired plants will not reduce GHG emissions as much as would be thought. This is because the minimum operating power output of the gas-fired units is a lot higher than that of the more flexible coal-fired units. This means that in periods of low demand, and or high wind generation, the output from nuclear plants would have to be decreased more with gas-fired units on the grid than would have been the case with the coal-fired units, in order to keep the units above their minimum loading level. Thus GHG emissions from an Ontario gas-fired grid could be even more than from a coal-fired grid, depending on the demand and the amount of wind generation.

It is simplistic to think that adding windmills to the grid will significantly reduce GHG emissions. Why is this not being pointed out to the government by the Independent Electricity System Operator and by the Ontario Power Authority before many more billions of dollars are wasted on wind and gas?

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