

Executive Summary  
“Integration of Renewables into the Ontario Electricity System”  
Brian Rivard and Adonis Yatchew

Over the last decade, Ontario has embarked on an aggressive renewable energy program, mainly through feed-in-tariffs (FITs). Wind generation now approaches 10% of total capacity and coal-fired generation has been eliminated. Various conservation initiatives have also comprised an important part of the decarbonization portfolio.

This paper focuses on three aspects of renewable integration in Ontario: electricity prices, operational and market integration, and the procurement process.

The Ontario electricity industry has a ‘hybrid’ structure where energy is bought and sold in a competitive wholesale market while supply mix planning and procurement are conducted through a government agency. Most generation is secured through long-term contracts. The all-in price of energy consists of three components -- the ‘market price’ which is established on an hourly basis, the ‘global adjustment’ which covers differences between market and contract prices, and conservation program costs; and an ‘uplift charge’ which among other things, recovers the costs of ancillary services and payments related to congestion on the system. As renewable capacity has increased, the ‘market price’ component has declined. On the other hand, the ‘global adjustment’ has increased dramatically so that the all-in energy price has risen from about 60 to 100 CAD/MWh since the introduction of FIT programs in 2009. Not surprisingly, electricity sales have declined.

Operational and market integration of renewable sources has been achieved relatively smoothly. In order to integrate wind generation, which can be unpredictable and volatile, the Independent Electricity System Operator introduced centralized forecasting and five-minute dispatch. Market rules have evolved incrementally and an overseer constantly assesses the market to promote competitive bidding practices.

The procurement process is highly centralized and controlled by the government which uses ‘ministerial directives’ to effect supply mix. We argue that two important principles should inform the process by which the industry should evolve. The first is subsidiarity which states that in a hierarchy, decisions and actions should be taken at the lowest level at which they can be competently executed. In the present context it implies that a degree of *decentralization* of procurement would improve outcomes. The second is a clear separation between policymaking on the one hand, and regulation and implementation on the other. Convolution of these functions has led to decisions which at times have been driven by short term political considerations, rather than longer term economic and societal objectives.

While the current model for promoting and integrating renewables has been effective in increasing renewable supply, the costs have been excessively high, as underscored by the presence of surplus generation, in particular baseload generation, and the frequency with which wind displaces other non-carbon supplies, such as hydraulic and nuclear generation.