

Negative electricity prices



The Hourly Ontario Energy Price was unusually low in March 2009, including 50 hours in the last week of March in which prices were negative. The lowest prices to-date occurred during the early morning hours of March 29th (see table). Low prices (and potentially negative off-peak prices) are expected to continue until April 17th. While a combination of internal and external factors are contributing to the situation, the most significant is the extended outage of a transmission connection between Ontario and New York State.

Hourly prices on March 29		
Date	Hour	HOEP
29	1	-\$47.03
	2	-\$51.00
	3	-\$51.00
	4	-\$51.00
	5	-\$46.21

While wholesale customers might benefit in the short term, these lower prices will not necessarily translate into lower customer bills overall. The high—and increasing—proportion of generation that is contracted or regulated in Ontario means that the Global Adjustment (which is added to customers' bills to pay generators the difference between their contract price and the market price) will rise sharply.

1. Transmission outage at intertie circuit PA302 and PA301

In 2008, a New York Power Authority asset survey identified the need for immediate maintenance on equipment connected to two 345 kilovolt circuits connecting Ontario with New York State. On March 19, the IESO issued a System Advisory of an emergency reliability outage at intertie circuit PA302, reducing the Total Transfer Capability between Ontario and New York to zero. The Advisory indicated that no export transactions would be scheduled between March 24 and April 5. Scheduled exports have dropped significantly since March 24, 2009: by more than 1,000MW when compared to the days leading up to the outage. When PA302 returns to service on April 5, PA301 will be removed from service and will be out until April 17th. The effect of the PA301 on transfer capability will be the same as PA302, meaning that the current situation (reduced exports and surplus base load) will continue until both circuits are back in service on April 17th.

Scheduled energy exports from Ontario		
	Average Hourly Exports (megawatts)	Average HOEP
March 1-23	2,292	\$35.56
Since March 24	1,250	\$9.77

2. Surplus base load generation

The electricity supply mix in Ontario includes significant base load capacity, including nuclear generating stations, large “run-of-river” hydro-electric generation at Niagara Falls and on the St. Lawrence Seaway which are designed and intended to run around the clock. Nuclear generating stations in particular are not designed and, except for a limited ability to vent steam and reduce output at the Bruce Power Generating Station, are not able to reduce output. Increasing amounts of wind power added to the Ontario system contributes to the phenomena.

Generation production in March, comparing March 2009 with previous years													
Year	Day	OPG Base Load Hydro	OPG Nuclear	Bruce A	Bruce B	NUG	CES	RES	Coal	OPG un-regulated Hydro	Lennox	Other Hydro	Average total supply (MW)
2004-2008	1-23	2,241	5,450	1,016	2,724	1,090	350	82	3,310	1,644	47	298	18,252
	>24	2,265	5,042	1,051	2,799	1,059	272	76	3,078	1,484	10	245	17,381
		2,247	5,344	1,025	2,744	1,082	330	80	3,250	1,603	38	285	18,027
2009	1-23	2,323	5,530	1,465	3,253	1,083	778	240	1,577	1,822	10	260	18,339
	>24	1,961	5,437	1,469	3,074	1,099	407	371	534	1,590	0	234	16,176
		2,238	5,508	1,466	3,211	1,087	691	271	1,333	1,768	8	254	17,834

In March 2009, the amount of Surplus Base load Generation during off-peak hours ranged from 100MW up to a maximum of 2500MW. Between 2004 and 2008 wind power (seen in the column marked RES in the previous table) contributed an average of 80 MW/h to the system. In 2009, the amount increased by a factor of four, to an average of 271. Wind power production increased to 371 MW/h in the last week of the month, during which the negative prices were most pronounced.

While the aggregate output of all Ontario generators is just slightly lower than the average output level of previous years, nuclear generation was higher in March 2009 compared to previous years. It is interesting to note that between March 24 and March 30, the output of OPG's base load hydro-electric generation (the price of which is regulated for amounts less than 1900 MW in an hour) is significantly reduced, from an average of 2323 MW/h to an amount that is slightly higher than 1900 MW/h.

3. Declining Demand

Primary electricity demand in Ontario was low throughout March of 2009. Compared to previous years, primary demand in March was between 1000 and 2000 MW lower.

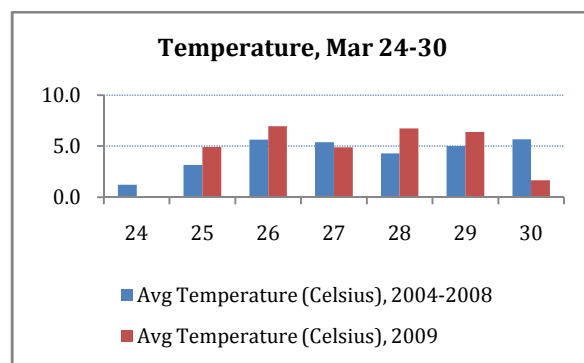
While average energy production was higher in March 2009 (at 22,425 MW) than in that month in any previous year since 2004, primary energy demand was sharply lower, from

17,657 MW in March 2008 to 16,547 MW in 2009, a drop of 1110 MW/h on average. This drop can be attributed to the dramatic decline in economic activity and the continuing economic contraction of manufacturing in Ontario.

Ontario primary energy demand in March compared to previous years					
Year	Average Energy Production (MWh)	Average Primary Demand Total (MW)	Average Dispatchable Load (MW)	Average Energy Shortfall / Surplus (MWh)	Average HOEP
2004	20,172	18,106	190	2,256	\$48.90
2005	21,470	18,367	204	3,307	\$59.87
2006	22,187	17,946	204	4,445	\$49.01
2007	20,342	17,909	204	2,637	\$54.85
2008	20,539	17,657	288	3,170	\$56.84
2009	22,425	16,547	108	5,986	\$29.55

4. Mild Weather

The temperature was warmer this past Month than it was in March in previous years. The weather was particularly mild on March 28th and 29th during which negative HOEP was highest. The chart shows average daily temperature at the Pearson International Airport in Toronto.



5. The Impact on the Global Adjustment

With Ontario's pool model, the IESO acts like a clearing-house; all power that is injected to the grid by generators or withdrawn by customers is settled at HOEP. The payment amounts for the NUGs, the CES (net of imputed market revenues), RES and other contracts are tallied up by the Ontario Power Authority at month end and settled by the IESO. The Global Adjustment is the difference between the aggregate amount of the OPA contract payments, OEB-regulated payments and the HOEP and is allocated to customers at the end of each month based on their total consumption in that month.

The negative prices during the last week of March and the generally low prices throughout the month will cause the Global Adjustment to increase. The IESO's preliminary estimate (published on April 2) indicates a Global Adjustment for March above \$27/MWh.