

30 Dec., 2016

On 22 Dec., 2016 OPG filed a document entitled “Amended Evidence” that amended a document that had been previously filed as Exhibit A1-3-2 Attachment 6, a memorandum prepared by London Economics International LLC. The new document describes three “fundamental characteristics” (or “fundamental issues”) of hydroelectric generation that formed the basis for their evidence, as follows:

***“ 2 Fundamental characteristics of a TFP study for the hydroelectric generation industry***

*Three fundamental issues make hydroelectric generation industry different from other industries that are typically regulated under IR schemes:*

*Hydroelectric generating assets, if properly maintained, continue to deliver the same productive capability in the long-run. Unlike a battery or distribution poles, the majority of a hydroelectric generator’s capital stock does not get “used up” or physically deteriorate in pre-set increments over time.*

*The drivers of productivity growth are different than other regulated industries: since output is largely fixed when a facility is designed, productivity gains from output growth are not a driver of hydroelectric industry productivity trends. Generators do not experience demand growth as an electric distributor does. While a distributor may show productivity gains by adding new customers, hydroelectric generators do not. In addition, technology-driven growth is slow in the hydroelectric generation industry.*

*Hydroelectric facilities provide a suite of services to consumers, including water management. Ideally, a TFP study should aim to capture these services. To the extent that one or more outputs from hydroelectric power plants are not directly captured, they must be considered in the interpretation of the TFP study results. “*

It might be more appropriate to label these three *characteristics* as *assumptions* that at one time applied to the hydro industry but that no longer do so. New technology now makes it technically and economically feasible to store electricity that could be produced by hydro facilities that has in the past has been wasted for lack of a means of storing excess capacity when the demand is less than the supply. Given a means of storing the electricity the large amount of potential energy of the spring run-off can be put to good use, for example, as can the high river flow that follows rainstorms. Utilizing that extra energy could make the existing facilities much more productive at very little cost, but the OPG application neglects to consider that possibility.

Historically Pumped Storage has been used to store such excess energy but Ontario has only one major Pumped Storage facility. Other countries that use hydroelectric energy typically have many such storage facilities, and cheaper and better alternatives are now at hand, including exergy stores as previously explained in Sustainability-Journal submissions. The potential for employing storage in Ontario is very large. According to the IESO web site Ontario consumed 154 Twh of electricity in 2015, so its average rate of consumption (power demand) was under 18,000 MW. In 2015 Ontario’s generation capacity amounted to about 36,000 MW. Ontario’s current generation capacity is thus twice as much as what we really need. **It follows that we will in future not need the Darlington nuclear power station at all. Ontario’s hydro stations are operating with poor energy efficiency.**

**Increasing their output would in many cases require using larger turbines but that is a comparatively small expenditure, and it should have been provided for in OPG's estimates.**

In Ontario the hydro stations provide a very important function in that they handle much of the daily demand fluctuations because their ponding provides energy storage. In a system that adds external storage to the ponding storage the external stores can collect energy at night, when the power demand is low. That increases the capacity of the ponding storage to handle supply/demand imbalances, a feature that is just as important as their ability to contribute to the overall generation capacity.

We respectfully submit that these are fundamental concerns that should be examined in this proceeding.

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