

## Different Uses of Subsurface Storage Space: Natural Gas Storage or Compressed Air Energy Storage?

By: Nigel Bankes

**Decision commented on:** <u>OEB Decision and Order EB-2019-0287</u>, Tribute Energy Storage Inc., Application for an order to revoke the designation of the natural gas storage areas known as the Bayfield Pool and the Stanley 4-7-XI Pool, in the County of Huron, April 9, 2020

This post focuses on an application by the project proponent and licensee (Tribute or TESI) to have the Ontario Energy Board (OEB) revoke an existing designation of a depleted gas reservoir as a natural gas storage area, with a view to potentially having the same reservoir re-licensed as a site for compressed air energy storage (CAES).

While the application to revoke the designation is the focus of this post, there are two other underlying themes. The first is the question about how we make decisions on the competing uses of underground (storage) space or pore space. I have commented on this issue before on ABlawg; the most recent post is here, with links to earlier posts. A second theme relates to the importance of establishing appropriate rules for energy (electricity) storage projects, whether these projects are battery projects, pumped hydro or, compressed air energy storage. These rules include not only the necessary tenure and licensing rules for the physical project, which is the focus here, but also, in some cases, the appropriate market rules. Should a storage project be treated as generation to the extent that it supplies energy? Should it be treated as load to the extent that it draws energy to pump water upstream or to inject compressed air? Should it be treated as transmission to the extent that it might avoid the need to reinforce transmission to an in isolated community? And how should storage be able to participate in the different ancillary markets? The appropriate characterization is important because characterization affects how the provider is compensated – either by market rules or cost of service.

In Alberta, the Alberta Electric System Operator (AESO) is currently grappling with these market issues (see here) and the Alberta Utilities Commission (AUC) is dealing with the project approval issues in a number of battery storage applications and decisions (see <u>AUC Decision</u> 25205-D01-2020, TERIC Power Ltd., eReserve1 Battery Energy Storage Power Plant Project, April 6, 2020) and in at least one pumped energy storage application (see <u>AUC Decision 22934-D01-2018</u>, Turning Point Generation, Canyon Creek Pumped Hydro Energy Storage Project, August 2, 2018).

## The OEB's Decision

In 2012, the OEB granted various applications from Tribute (now TESI) and its associates (now TESI) for developing a gas storage area with the Bayfield and Stanley depleted natural gas fields.

The OEB approvals included an order designating the pools as a natural gas storage area under s 36.1 of the *Ontario Energy Board Act, 1998*, SO 1998, c 15, Sch B (*OEBA*). For further details on natural gas storage regimes, including discussion of Ontario's regime, see Bankes and Gaunce, "Natural Gas Storage Regimes in Canada" (ISEEE: University of Calgary, 2009). Despite holding those approvals, TESI never proceeded with the storage area project. In support of its application to revoke the designation, TESI reasoned (referred to at 5 of the 2019 decision) that:

... the envisaged development of the Pools did not occur because it was not economical to do so given persistent depressed gas market prices. TESI expects these gas market price conditions will continue which makes the development of new natural gas storage highly unlikely.

While the *OEBA* contains rules with respect to natural gas storage, there are no rules in the *OEBA*, or in any other Ontario statute, dealing with the use of pore space for a CAES project. This presented something of a dilemma for TESI, since it clearly wanted to try and ensure that it protected as much of its regulatory position as possible while acknowledging that the site was unlikely to be used for its current licensed purpose. Accordingly, it framed its application in conditional terms, pending development of new regulations for CAES under the *Oil, Gas and Salt Resources Act*, RSO 1990, c P.12 (*OGSRA*):

TESI requested that the OEB's approval of the de-designation be made conditional upon the issuance of a new OGSRA regulation, so that the designation delineation for either gas or CAES is preserved for whichever use remains when this process is completed. (at 5).

TESI subsequently re-framed this to acknowledge that any conditional de-designation might be term-limited so as to balance the company's interests with the provincial or public interest in not sterilizing a resource (at 6).

The OEB concluded that there was no demonstrable need for the designation for gas storage due to the state of the gas market, but also because of the distance and cost to connect this storage with the main Dawn-Trafalgar transmission system. This made it extremely unlikely that the project would ever proceed as a gas storage project. Given that, the OEB was not inclined to favour a conditional, time-limited, de-designation, since it did not anticipate that market conditions would change materially in the near future. It also noted that it had no authority over the development of a new CAES regulation under the *OGSRA*. Accordingly, the OEB simply approved the de-designation effective immediately.

The fact pattern of this decision demonstrates that depleted reservoirs may have a number of potential commercial uses but it also demonstrates the need for governments and regulators to put in place appropriate rule structures (tenure, regulatory and market rules) to facilitate the new forms of energy technology that we will require as we move to a greener energy future. In this case Ontario has a well-developed rule system for gas storage projects that covers both designation and de-designation but it has yet to put in place either tenure or regulatory for compressed air energy storage.

## Postscript

After I prepared a draft of this post I had the opportunity to follow an excellent web discussion of the challenges and opportunities associated with integrating renewables into the grid. The discussion was hosted by Markham Hislop and his discussant was Prof Tim Weis of the University of Alberta. The recording is available here. Weis offers some useful insights with respect to storage opportunities (at about minute 45). Weis explains that the economic attractiveness of storage depends on the availability of significant arbitrage opportunities that allow operators to store at very low prices and generate when prices are high. Where there is less price variability storage is less attractive. The economic downturn triggered by COVID-19 may have significant implications here insofar as it reduces demand. In that scenario, zero bid offers from wind and solar, combined with cogeneration facilities that must run to provide steam, will tend to keep prices low. This is actually the scenario being played out this week on the Alberta power pool. See the AESO website for the pool price and for informed commentary follow Prof Blake Shaffer on twitter @bcshaffer. It will be interesting to see whether COVID-19 induced projects of reduced demand and thus excess supply will cause the proponents of the 75MW Canyon Creek project to delay their project.

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