

Team 4: TC ENERGY HYDRO-PUMP STORAGE PROPOSAL

EXECUTIVE SUMMARY

TransCanada Energy (TCE) formerly known as TransCanada pipelines is one of the biggest North American energy companies based in Calgary, Alberta, Canada. They develop and maintain energy infrastructure across Canada, the United States and Mexico. Their core business includes Natural gas pipelines, Liquid pipelines and Energy.

Looking at Ontario's energy security, it appears that this decade is crucial for Ontario's future in terms of energy. The demand for energy is on the rise. The supply with existing resources is not sufficient to meet this rise in demand. As a result, the surplus energy available with Ontario today will vanish and a capacity gap will appear. Hence, Ontario needs to make quick decisions based on short term as well as long term vision to prevent any crisis down the road.

Based on Independent Electricity Supply Operator IESO's Annual Acquisition report (AAR 2022), the gap in supply can emerge as early as 2024. The nuclear plants, which provide majority of Ontario's energy as baseload, are undergoing major refurbishment operations as they come to the end of their lifecycles. This will reduce the supply levels from nuclear energy, thus increasing the gap even more. This gap is forecasted as incremental due to electrification of industries and boom in electric car usage in the coming years.

IESO's proposed plan to resolve this situation includes buying energy from capacity auctions and using more natural gas fired plants to produce electricity until 2029. At the same time, new energy generation and storage facilities will be constructed to be operational by 2029, to replace natural gas completely, following the net zero emissions goal of Ontario by 2030.

Considering the long-term plan suggested by IESO, TCE has proposed to build a 1,000-megawatt (MW) hydro-electric pumped storage plant (PSP) on the shore of Georgian Bay at the Department of National Defense (DND) land, the 4th Canadian Division Training Base in Meaford, Ontario. The project is highlighted to be an ideal solution for Ontario's energy security and its fight against climate change, reducing electricity costs and supporting local communities through job creation.

However, this proposal has also garnered criticism regarding the rationale and the harmful impact on the resident ecosystem. As emphasized by the Save Georgian Bay opposition - "No issue exists with a private corporation seeking profit on their investments, but it does not justify harming the pristine environment of Georgian Bay and the Niagara Escarpment or putting a community at risk."

This project is made possible by a collaboration effort between the University of Toronto and the residents of Meaford as well as Save Georgian Bay organization, as a part of the *Applying Innovation in Engineering and Business Operations* course offered by the Faculty of Applied Science and Engineering (FASE) at the university.

As various perspectives both *for* and *against* the proposal are available, there is a need to identify, understand and analyze all perspectives - technical, social, environmental, and economical. The political aspect is considered out of scope. This analysis will enable the project team to provide a tidally unbiased judgement for the stakeholders and the community of Meaford. This is the primary objective of the report.

The team reviewed all the material available comprising of TCE's proposal report, Save Georgian Bay's Assessment report, Ontario Clean Energy Alliance's published documents and IESO's Annual Acquisition

reports for 2021 and 2022. Further, multiple residents of Meaford were interviewed both *for* and *against* proposal including people representing the various stakeholders.

It was found that the proposal is currently in Gate-2 of the government review and assessment process. When it enters Gate-3, it will undergo complete scrutiny to ensure compliance with all rules and regulations set by the government of Canada. Trusting the result of that assessment, which will be made public, it can be said that the environmental impact of the final proposal would be minimal if it gets approved. The economic impact of the proposed facility on the community of Meaford appears positive but the commercialization aspect remains inconclusive. In terms of social impact, the proposed facility has the potential to accelerate the development of the community but there is fear regarding the safety of the people in case of any unforeseen events.

In conclusion, TCE's PSP proposal would be of great value to Ontario and the surrounding communities today but fails to show promise in the future alongside similar facilities like Marmora Pump storage and Oneida Battery storage plants. The future value proposition is uncertain due to better alternatives and the ever-changing needs of the province.