Feedback Form

2021-2024 Conservation and Demand Management Mid-Term Review – July 19, 2022

Feedback Provided by:

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Following the July 19, 2022, engagement webinar, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the items discussed during the webinar. The webinar presentation and recording can be accessed from the engagement web page.

Please submit feedback to engagement@ieso.ca by **August 9, 2022**. If you wish to provide confidential feedback, please submit as a separate document, marked "Confidential". Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

Competitive Mechanisms Review

Topic	Feedback

• What conditions are needed to further enable innovation and market-based solutions? Are there success stories that can be shared from experiences in other jurisdictions?	• Innovation is best measured on outcomes; simply the ends (Net Zero emissions, lower cost energy cost, energy reliability) justify the means (Green supply investment, resource maximization, smart fossil fuel usage)
	• Investment/support of carbon storage for fossil fuel-based energy generation where the generated CO2 can be utilized as part of a sectoral input
	• Co-generation, in reality tri-generation, is a success story within greenhouse agriculture
	  ○ Heat is required for agriculture
	  ○ Power (electricity) is used and sold back to the grid
	  ○ CO2 is an input required for greenhouse agriculture as plant density requires supplementation
	• Chemical energy storage, such as hydrogen generation and storage, is a key innovation to efficiently utilize existing capacity which is asynchronous to demand.
	  ○ Utilizing energy in low-demand periods to generate hydrogen provides a means of energy storage which can be burned cleanly for energy and blended with natural gas to reduce carbon intensity
	  ○ OGVG is currently part of a study investigating the use of renewably energy to generate hydrogen for blend purposes

Customer Needs and Program Review

Topic	Feedback
• Are there additional program gaps that should be addressed?	•

Topic	Feedback
• Are there additional enhancements for the income-qualified or First Nations programs that could be considered?	•
• Are there any implementation considerations you see with any of the program opportunities? • • In particular, • What enhancements would be desired for the Custom Retrofit initiative if it were to be re-instated? • For the greenhouse sector, are there any additional measures that should be considered? • Are there additional opportunities for the residential sector that should be considered?	Greenhouse Sector Considerations: In General: • Electrical demand from greenhouses is: o largely non-existent during the summer months o asynchronous during the winter months • In the winter lighting comes on as market demand is dropping. • Efficient lighting is critical to ensure winter demand peaks remain manageable as some lighting may occur during peak market demand. Summer Demand: • Some heating is required in the summer to control moisture on crops. • CO2 is a necessary input in greenhouse agriculture during the photoperiod of the plants (when lit artificially or naturally) **Co-generation as a solution:** • Provides heat required to greenhouse operations to control moisture • Provides CO2 required for the crops o CO2 supplementation IS required due to the high efficiency of Greenhouse agriculture • Provides electricity to the local grid o Necessary in supply restricted regions (Windsor/Essex) o Electricity availably synchronous with demand and aligned with peak demand • Net Zero emission are easily possible as CO2 is an input, currently purchased by suppliers, and an excellent candidate for carbon sequestration technologies

Topic	Feedback
• How can the IESO further support the energy transition for consumers in all sectors	• Investment in energy generating assets, such as co-generation of heat and power, and the necessary carbon sequestration for the smart use of fossil fuels to support sectors, such as greenhouse agriculture, that require CO2 as an input

General Comments/Feedback

Greenhouse agriculture represents an efficient, sustainable, and secure means of food production. High density, high efficiency agriculture requires CO2 as an input as the dense co-location of plants harvest CO2 from the atmosphere to a degree that supplementation is required. The primary climate benefit of greenhouse agriculture is the efficiency of the land use. The opportunity cost of efficient land use demonstrates that 1 acre of greenhouse land produces 5 times more tomatoes, 10 times more peppers and 20 time more cucumbers than an acre of traditional farmland. Simply put, 1 acre of greenhouse cucumbers would require 20 acres of field cucumbers. The opportunity cost dictates that the 19 acres of land saved could be used for restoring natural habitats, renewable energy projects, or other societal land use needs. As electrification grows in greenhouse agriculture to increase efficiency and decarbonize the sector, more electricity will be required. Co-generation provides heat, electricity and critically needed CO2 all generated on-site. As an input, CO2 can be generated on-site rather than trucked in from off-site which further increases the carbon impact of reduces the efficiency of greenhouse agriculture.

The future is hybrid and the wise utilization of fossil fuels to generate critically needed electricity in southwestern Ontario along with heat and CO2 in greenhouse agriculture provides a win for the climate, a win for consumers and a win for Canada.