

Electricity Generation to Manufacture Low-Carbon Hydrogen

The P2D report includes plans to generate 15,000MWs of electricity using low carbon hydrogen as fuel. That component of the IESO plan involves importing the required amount of low carbon hydrogen to fuel single cycle combustion turbines. SCCT typically operate at about 33% efficiency, meaning about 45,000MWs of low-carbon hydrogen will need to be imported into Ontario to generate the P2D's planned electricity generation using low-carbon hydrogen fuel.

Hydrogen is a manufactured product. Ontario is a manufacturing province. The Government is promoting a low-carbon hydrogen manufacturing sector via its [Ontario's Low-Carbon Hydrogen Strategy](#).

Most manufacturing and technologically advanced jurisdictions in North America and Europe see low-carbon hydrogen manufacturing as a key component of a decarbonized economy. To remain competitive Ontario will need to manufacture low-carbon hydrogen to meet its current industrial demands. Manufacturing hydrogen, via electrolysis or via steam methane reforming with carbon capture, or a mix of low carbon hydrogen manufacturing technologies, requires a lot of electricity.

Did the P2D study account for future demand to manufacture low-carbon hydrogen in Ontario?

Assuming a blend of blue and electrolytic hydrogen, between 10,000 and 20,000 MWs will be required to produce enough hydrogen to meet the P2D's low-carbon hydrogen fuel demand projections for electricity generation. This is in excess of the electricity currently used to produce gray hydrogen in Ontario. That 10,000 to 20,000MWs leaves nothing to spare for Ontario's industries.

Does the P2D report anticipate future electricity demand to produce low-carbon hydrogen to accommodate future demand for low-carbon hydrogen in Ontario? This includes conversion of existing Ontario manufactured gray hydrogen to blue hydrogen (very electricity intensive) plus low-carbon hydrogen for emerging demand (steel), and other future 21st century demands.

Recognizing the power requirements to manufacture low carbon electricity is not a commitment to build the capacity. However, if the electricity demand for low-carbon electricity is included in the planning process then it may be possible to develop low-carbon hydrogen manufacturing hubs in Ontario to meet 21st century demand for that fuel and chemical feedstock. Alternatively, failure to include electricity demand for low-carbon hydrogen manufacturing will make low-carbon hydrogen manufacturing in Ontario highly unlikely, perhaps impossible.

Recommendation

Please include electricity demand in plans to meet future requirements to manufacture low-carbon hydrogen in Ontario. Please revise the P2D report to align with Ontario's Low-Carbon Hydrogen Strategy. Please don't plan to import hydrogen into Ontario.