

COMMENTS from CHFCA Hydrogen Ontario regarding proposed IESO Interruptible rate pilot.

As discussed during our virtual consultation with the IESO the Hydrogen Ontario (CHFCA affiliate) here are our submitted comments:

We at Hydrogen Ontario are still basically a 'startup' industry association focused on Ontario-based hydrogen solutions on behalf our members, stakeholders and the need for clean energy writ large. We see hydrogen as one key element of the drive to de-carbonize the energy sector, industries dependent on energy and on the transportation sector. We do not have the immense resources often fielded by large companies in Ontario that see a role in the development of the hydrogen industry here in this province. Accordingly we cannot support our comments with study results, pols or white papers - yet. However we are in constant contact with local industries, potential suppliers of hydrogen, equipment suppliers and potential end users in industry and in transportation. In consideration of our sector knowledge we would like to provide key messages to the IESO:

Other provinces in Canada have committed major financial support to the hydrogen sector via supportive policies, mandates and co-funding of early pilot projects. BC, Alberta and Quebec have all allocated significant de-risking funds to kick-start their local industries and end users. Here in Ontario the government has tasked the IESO with this job through the \$15 million Hydrogen Innovation Fund and via the future deployment of an interruptible electricity rate pilot for the specific production of electrolytic hydrogen. We at the Hydrogen Ontario understand that there are limits to the scope and breadth of what the IESO can do. Your efforts will be focused on grid impacts, benefits to grid resiliency and also to ensuring that any rate structure for hydrogen production will not add to the cost of power for all users. This approach while totally understandable will not capture all the other benefits of hydrogen adoption which we will identify in our bulleted comments below:

- We at Hydrogen Ontario are highly supportive of developing a special electricity price for hydrogen production (interruptible or otherwise). We see this as a very valuable supporting measure for the application of clean hydrogen solutions in Ontario. If well-crafted this pilot will allow early movers to commit to investing in projects once they can predict their energy costs more accurately. Many are frankly waiting on such pricing signals before they commit. A well-crafted plan will also benefit the grid on many levels, and will help to de-carbonize emissions and support the creation of an industrial- based hydrogen economy.
- Carbon dioxide emissions in Ontario are dominated by the transportation sector followed by natural gas heating. Industrial emissions (and electricity production) while significant are not in the lead. Within the transportation sector trucking is a dominant emitter. CO2 from diesel trucks surpasses emissions from light vehicles because trucks are on the road moving for many hours a week (often more than 100) whereas cars spend most of their time stationary. The 401 highway is one of the most (if not the most) heavily truck-trafficked corridors in North America. Accordingly if the 401 can be identified as 'low hanging fruit' to decarbonize heavy transportation via fuel cell powered

trucks – hydrogen fuelling stations will be needed along the 401. In our view this would be an ideal opportunity to use the IESO Hydrogen Innovation Fund and the rate pilot to support the development of the early infrastructure which would likely consist of 10 to 20 megawatt electrolyser facilities optimally distributed across the 401 corridor from the Quebec border to Windsor. For argument's sake each station could create 2,000 to 4,000 KGs of H2 per day (depending on duty cycle), enough to fuel 100 to 200 trucks per day each, some long haul and some local. Probably adequate in the first half-decade of deployment but likely more will be needed to convert all major truck fleets over time.

- All that being said about the near term benefits of decarbonizing transportation, what may come as a surprise is that the demand for clean hydrogen in Ontario after 2030 will be driven by industrial demand with hydrogen as a feedstock. The steel plants in Hamilton and in Sault St Marie are converting to carbon-free 'green steel' and will require hundreds of tons of hydrogen per day each. In addition there are other Ontario industrial producers of 'clean' ammonia and methanol who will require hundreds of tons per day. At this point it is hard to project forward whether the Ontario grid can supply enough 'value priced' electricity to meet this demand considering all of the other electrification demands that will constrain the electricity system going forward. Local production from natural gas or imports from other sources may be required depending on demand.
- As mentioned in the opener the Ontario government strategy on hydrogen deployment is presently more focused on the relationship between the electricity supply and hydrogen production. While this is a major issue, it does not capture all of the other benefits that will also be delivered or created. The significant reduction in CO2 emissions needs to be factored in. The opportunity to further develop the budding hydrogen industry here in Ontario also needs to be included. And finally the de-carbonization of the 401 corridor would have multiple benefits to local industries such as the automotive sector. In addition there are many new technologies that are being adopted elsewhere and can be used here to make hydrogen from waste streams such as pyrolysis of municipal plastic waste, bio-wastes and wood waste in northern Ontario.

In summary we applaud the role for the IESO in helping to create a viable early adoption of clean and green hydrogen as part of a broader decarbonisation strategy. This can be done via a special electricity rate, through pilot projects co-funded by the innovation fund, and by other measures yet to be determined as part of the further build out of the Ontario electricity grid. However much of the benefits that will accrue to Ontario may not be captured through these mechanisms alone. We also see that some level of coordination with federal incentive programs and policies would be beneficial once those initiatives (such as the Income Tax Credits) are clearly defined and developed.

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An affiliate of the Canadian Hydrogen and Fuel Cell Association