May 12, 2023

Ministry of Energy, Energy Supply Policy Division
7th floor, 77 Grenville Street
Toronto, Ontario M7A 2C1

Re: IESO Pathways to Decarbonization Study

To Whom It May Concern,

The Ontario Mining Association (OMA) appreciates the opportunity to comment on the IESO's Pathways to Decarbonization Report (the 'Report') (ERO: 019-6647). We have been committed to improving the competitiveness of the mining sector in Ontario since our establishment in 1920. The OMA currently represents over 80 members engaged in environmentally responsible mineral production and processing, as well as suppliers, contractors, environmental consultants, and others involved in the sector. OMA members are found throughout the province and are dedicated to transforming Ontario's mineral resources into prosperity and sustainable growth for local communities, while remaining competitive in global markets. Ontario miners have an indispensable role in powering decarbonization efforts and the clean energy transition, and we are a constructive partner in the fight against climate change. We responsibly mine the minerals and metals that are enabling the world to transition to a low carbon future. These raw materials are transformed into technologies that, having gone full circle, assist mining operations in reducing environmental footprints and enhancing efficiency and reliability. We are proud of the progress OMA members are continually making on improving energy efficiency and reducing emissions at their operations.

Mining companies across the province adhere to the highest global standards in energy conservation, carbon emission reduction, and adoption of clean technologies: as of 2018, Ontario's mining industry accounted for 4% of total GHG emissions in the province. Mining is also a large energy user in the province. According to an IESO report on industrial load consumption, metal ore mining averaged about 638.8 MW/h consumption in March 2023[1]. The mining industry converts its energy use into economic value more efficiently than the other industries. Except for construction, the mining industry contributes more to Ontario's GDP per unit of energy used than all comparable industries in the province. The majority of operating mines are connected to Ontario's power grid, and nearly 95% of Ontario's electricity is generated from zero-carbon sources, such as hydroelectricity. To help meet and exceed stringent environmental targets, Ontario mines have adopted innovative environmental technologies, including electrification of mining fleets and mobile

[1] "Industrial Load By Sector Report" IESO, April 1, 2023

equipment, as well as energy efficiency ventilation-on-demand to reduce power consumption. Ontario mining companies adopted clean technologies at a rate of almost 14% above the Ontario industry average (see the 2022 report, State of the Ontario Mining Sector).

Our ability to build upon these achievements is dependent on good policy design. Ontario mines operate in a high-cost jurisdiction, driving profits down relative to other mineral producing regions. The key to mining success in Ontario, and to realizing the ambition set out in Ontario's Critical Minerals Strategy, is keeping electricity prices competitive.

Socio-Economic Considerations

Mining companies operating in Ontario, and especially in northern Ontario, support strong, resilient communities. In part, this is achieved through fostering mutually beneficial partnerships with First Nations, including new power opportunities which benefit the mining sector and local economy. As new mining opportunities open up, electricity requirements emerge, and the opportunity for collaborative partnerships between all parties must be considered. The Report acknowledges that "communities and First Nations across the province have a growing voice in how and where new infrastructure is located" and "meaningful and transparent discussions about siting and land use will be required". In some cases, more than 'discussions' should take place to "galvanize collaboration amongst stakeholders and Indigenous communities". Indeed, potential new ownership models can emerge, which benefit everyone involved.

Cost of Power

The cost of power is always a critical issue for Ontario's mining sector. Electricity prices in Ontario are significantly higher than in competing jurisdictions, putting mining projects in the province at a disadvantage. Second to labour, energy comprises the highest costs for our mining operations. Ultimately, high energy costs reduce mine life decrease flexibility with regard to new developments and may lead to value-added processing relocating elsewhere. The pathway to decarbonization must balance operational realties, climate change goals, and costs. In relation to the latter, the OMA would like more information on the IESO's cost assumptions utilized in the Report**.** Additionally, the OMA would like a greater emphasis to be placed on energy conservation initiatives as load reduction strategies from the IESO and the Ministry of Energy. This would serve to free up capacity across the grid and reduce the amount of new generation required. Utility-funded energy conservation programs also help mines and mining companies reduce their energy costs.

Risk Mitigation

The OMA recognizes that climate change is a pressing concern for Canadians. Our members are committed to decarbonizing their operations, while responsibly producing the minerals that are essential to the long-term sustainability of our shared planet. Each year, Ernst and Young (EY) puts out a report outlining the top 10 business risks for mining and metal

companies.[2] In 2023, climate change was ranked as the third biggest risk, with the report noting that there is an urgency to better mitigate climate change risk. Managing this risk requires further attention when planning Ontario's future energy landscape.

Weather events caused by climate change impact the reliability of Ontario's power grid. A greater dependence on the grid, without accounting for climate change risks, will have a negative impact on our members' ability to operate. We need to avoid a situation like the one in Texas, which has faced widespread outages over the past several years due to a redundant system. Under significant decarbonization scenarios outlined in the Report, there would be a large increase in electrical generation and transmission capacity requirements. Without this, we too are at risk of rolling blackouts. Grid design options must balance decarbonization priorities with overreliance on the grid, along with climate change weather events and costs.

Distributed Energy Resources

We agree that distributed energy resources (DERs) are an effective means to mitigate risks to Ontario's grid, and OMA members are in a unique position to help with the system buildout, given that our mines are located throughout the province and our energy managers have a wealth of technical expertise. The OMA requests that we play a key role in designing Ontario's future grid by adding DERs to its mix. Furthermore, we believe that there is a greater opportunity for DER integration if there are rate design incentives allowing industry to manage long term costs while easing the strain on Ontario's grid. Notwithstanding programs that help forecast predictability in response requirements, such as the Interruptible Rate Pilot - price volatility remains a concern for OMA members. Increased DER integration will allow mines to maximize critical mineral production, creating a lasting positive economic impact.

Firm Imports

In the Report, external research was performed to assess the clean energy transition of each of Ontario's connected neighbours, as well as their ability to export clean energy. Manitoba was not considered due to its distance from major Ontario load centers and insufficient transmission capability. With the need for imported power expected to rise, and Manitoba being one of two sources of clean imported power available to Ontario, the IESO should reconsider procuring power from Manitoba, especially with capacity shortfalls already being experienced in Northern Ontario.

There are current projects and studies underway which point to Manitoba as a strong electricity firm import, including:

- Northwest Bulk Transmission Line (NWBL) - Phases I-III of the Waasigan Tx line which is intended to increase supply from Thunder Bay to Atikokan (Phase I), Atikokan to Dryden (Phase II) and Dryden to the Manitoba border through Kenora (phase III).

[2] "Top 10 Business Risks and Opportunities for Mining and Metals in 2023", Paul Mitchell, Ernst and Young

- A follow up study to the NE Bulk system plan to review the minimum loading and peak loading conditions in Northern Ontario was noted in the latest APO due to significant voltage control challenges in Northern Ontario today.
- With the Manitoba/Ontario intertie approaching its end of life, a joint study with Minnesota and Manitoba in 2023 to plan its end of life will occur.

Hydrogen

With regards to the Report's references to hydrogen as a key renewable energy source, we recommend that only 'green' hydrogen should be considered; this means the hydrogen would only be produced directly with hydroelectric/solar/wind electricity at high efficiencies. Any alternative methods of hydrogen production that require conversion/burning of any fuel can only achieve 40-50% efficiency, which is a physical limit of converting heat energy into work energy. Further, any other fuel will have much less energy density, for example: producing hydrogen with natural gas, at about half the energy density and burned at 50% efficiency, requires about four times the energy.[3] The Ontario mining sector requires resilient, reliable, and proven hydrogen technology to support the northern mining sector and the neighbouring communities. As such, there needs to be support for R&D endeavours that will enable these technologies for the communities and industries involved.

Natural Gas Moratorium

The Report's assessment showed that a natural gas moratorium would be feasible beginning in 2027, and at that point the system would not require additional emitting generation to ensure reliability. Natural gas has proven to be an effective and reliable energy source for the system. Given the small proportion of natural gas that Ontario requires for backup generation, a moratorium could needlessly introduce potential risks into the system, especially in the case of a climate change related event. Prior to moving forward with the moratorium, we suggest that a risk analysis and life cycle analysis is undertaken to consider such an event. We believe that there are also cost impacts inherent in removing natural gas from Ontario's grid. As such, the OMA recommends that the IESO provide further details on what the effects of a natural gas moratorium on both residential and industrial energy rates entail. The continued use of natural gas provides resilience and reliability for Ontario's mining sector, and the OMA recommends that we continue to use it now and into the future, with the possibility of temporarily increasing natural gas generation as needed. This would allow for co-generation capabilities, which is seen as more efficient than a single use cycle, and the possibility of combining natural gas with other forms of power, such as steam.

Hydroelectricity

With OMA members located throughout the province and close to waterways, we are in support of, and in some cases are already using hydroelectric power. Hydroelectric stations

[3] "The unbearable lightness of Hydrogen", M. Leibreich, Bloomberg https://about.bnef.com/blog/liebreich-the-unbearable-lightness-of-hydrogen/

can be used as energy storage systems, and can be more easily implemented than large scale batteries. There are also lower cost micro-hydroelectric solutions that the IESO should consider. The OMA would like to work with the province to further build out these renewable energy sources, as we are in a unique position to generate hydroelectric power. Increasing power production in the North not only increases accessibility to help ease energy capacity shortfalls, but also continues to ensure reliability and cost competitiveness within the region. Hydroelectricity serves to benefit not only industry, but also Indigenous communities and residents located in the North.

Other Technologies

The Report highlights a number of technologies that will be needed to decarbonize, such as small modular reactors (SMRs), which are in development. Decarbonization requires innovative energy technologies using critical minerals such as lithium available in Ontario. The provincial grid currently has many transmission capacity constraints which restrict the growth of industries needed for decarbonisation. These need to be addressed. Similarly, a greater emphasis needs to be placed on promoting clean, lower-cost, renewable power infrastructure and innovative storage solutions. Such critical investments should be a priority, not only to enhance the grid, but also to promote onsite generation of clean, renewable electricity. OMA members support continued investment by the Ontario and Canadian governments to advance the commercialization of these innovations, and to consider partnerships with the mining sector to pilot these initiatives, where applicable.

Conclusion

Energy policy decisions made today will lay the foundation for current and future mining investment into the province. Therefore, it is critical we work together to get this right. Mining will continue on its innovation path, taking advantage of evolving technologies to progressively improve its industry-leading low carbon footprint. Decarbonization objectives must be balanced - keeping the mining sector competitive, while seizing opportunities for growth by charting and implementing a vision of global excellence, leadership, and innovation.

Sincerely,

Kankshi Amin
Issues and Policy Coordinator