

2023 TECHNICAL EXCELLENCE AWARD

Efrem Teklemariam, P.Eng., FEC



Efrem Teklemariam P.Eng., FEC, is the Department Manager of Water Resources and Manager of Research and Development with Manitoba Hydro and has over 30 years of experience in hydropower engineering. Efrem completed his Master of Engineering in Water Resources Engineering from Delft Technical University in the Netherlands in 1988. He continued his studies in 1999 and completed his Master of Science in Water Resources Engineering from the University of Manitoba. He also attained a Master Certificate in Project Management from York University in 2003.

Efrem is vastly experienced in the field of hydropower engineering, including engineering design, planning, and maintenance, and has been instrumental in the application of computational fluid dynamics and physical modelling to energy planning and optimization studies. His technical excellence has also extended to numerical models for ecohydraulics applications, dam public safety and risk assessment studies, and climate change impact studies on water resources infrastructure.

Efrem was the Hydrotechnical Engineering Lead for the planning, design, and construction of the Wuskwatim Generating Station on the Burntwood River, the Keeyask Generating Station on the Nelson River, and the Pointe du Bois spillway replacement project. His technical work supporting

rehabilitation and maintenance projects at Manitoba Hydro includes re-running of the turbines at the Kelsey, Pine Falls, and Great Falls Generating Stations which increased output and efficiency. In 2006, Efrem supported the development of climate change strategies and internal climate science expertise at Manitoba Hydro which are now being widely used.

Efrem's technical leadership at Manitoba Hydro is in the operational implementation phase of a modernization of its decades' old inflow forecasting framework. This is a giant step in Manitoba Hydro's ability to forecast inflows, manage the hydraulic system, and enable efficient use of all available water in the system. This system will help better forecast floods which impact all Manitobans.

Throughout his career, Efrem has been a pioneer in the application and incorporation of state-of-the-art numerical modelling technology at Manitoba Hydro. Since 2004, Efrem has initiated and driven the concepts of ecohydraulics studies at Manitoba Hydro, introduced it at the University of Manitoba and in the consulting industry of Manitoba. This influence of Efrem's work has been enormous and a lot of these concepts have been incorporated by the broader consulting community in the province.

Efrem has been an active volunteer throughout his career, serving in a number of positions with Engineers Geoscientists Manitoba as part of the Academic Review Committee and as a councillor. He is a current member of the University of Manitoba's Alumni Board of Directors and sits on the university senate on behalf of the alumni association. He represents Manitoba Hydro at Friends of Engineering and 30 by 30 initiative events and he is a founding member of the Internationally-Educated Engineers Qualification (IEEQ) Program, the immigrant settlement organization Manitoba Start, and the Ethio-Eritrean Members Chapter of Engineers Geoscientists Manitoba.

In recognition of his outstanding leadership and technical contributions to the field of hydropower engineering, Engineers Geoscientists Manitoba is pleased to award the 2023 Technical Excellence Award to Efrem Teklemariam, P.Eng., FEC.