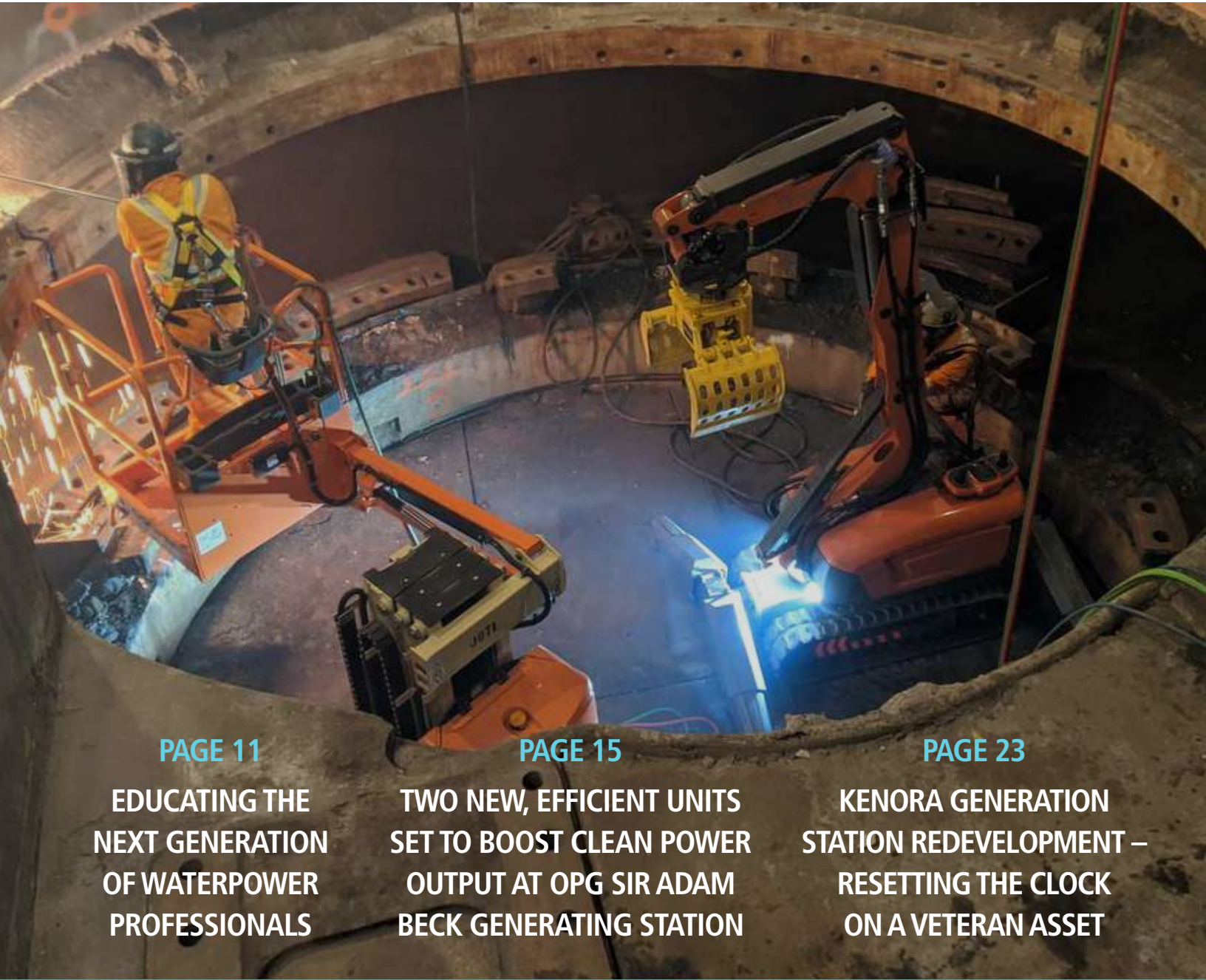


2020 YEAR IN REVIEW



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**EDUCATING THE
NEXT GENERATION
OF WATERPOWER
PROFESSIONALS**

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STATION REDEVELOPMENT –
RESETTING THE CLOCK
ON A VETERAN ASSET**



Affordable, Reliable, Sustainable



welcome

Welcome to the OWA's annual "Year in Review" publication – and what a year it has been. For those of you who have been personally affected by the pandemic, whether it be through a friend or family member, our thoughts and best wishes are with you. And for those who have been on the front line within the industry and beyond, our sincere

thanks. I am particularly proud of the way the entire industry stepped up to ensure Ontarians continued to have reliable electricity through these challenging times.

Despite the upheaval in the way we work and interact, the OWA has worked to make significant positive progress in delivering on our core objectives. We finally saw the implementation of the elimination of the unnecessary burden of "Permits to Take Water" – an initiative we had been advocating for more than a decade. We have seen proposed fundamental reforms to Environmental Assessment, including the OWA's Class EA, to streamline processes for low risk projects. And we are working with Fisheries and Oceans Canada to develop standard guidance to proponents and practitioners in the implementation of the revised federal *Fisheries Act*. In fact, many have observed that the business of government has only accelerated over this past year.

And perhaps as a result of the required shift and re-think of how we do business, the Association has created new opportunities for member engagement. Our first ever virtual "Waterpower Summit", convened in September was a success and offered additional means to connect within and beyond the industry. Our roll out of regular "member-led" technical webinars has significantly expanded our audience and reach. And our ongoing efforts to foster municipal "community champions" continues to grow local support for waterpower.

It would be foolish of me to attempt to predict with accuracy what the state of affairs will be a year from now, but I am willing to suggest it will be different than whatever we used to call "normal". There are some important signposts, however, that I believe are worth considering as we look to the future and chart the course for this industry.

First is the emergence or re-emergence of the idea of increased "self-reliance". Whether it be the manufacturing of personal protective equipment, the growing and consumption of local food or perhaps the production of electricity, "Made in Ontario" has become an important brand and value proposition in political and public discourse. The opportunity for waterpower in this context is obvious. With more than two hundred facilities embedded in communities right across this province, waterpower is part of the very fabric and identity of Ontario. The work that the OWA has already done to encourage local "Waterpower Champions" is evidence of the positive relationship between our citizens and our industry.

Secondly, I would suggest that the importance of independent subject matter expertise in informing the development and implementation of public policy is worth noting. Throughout the pandemic we've seen both local and provincial governments rely, appropriately in my view, on the expert advice of public health professionals when making decisions. This approach has clearly instilled and sustained public confidence. This context provides an opportunity for our industry as well. Across the sector are individuals and organizations with professionals and subject matter experts in a

wide array of disciplines including biology, ecology, engineering, finance, the law and others. The OWA has a long and successful history of engaging member expertise in the development of leading-edge Best Management Practices that can be leveraged to further public and political trust in how we do our business.

Thirdly, there is the theme of collectivity and connectivity – the perhaps overused notion that "we're all in this together." Throughout this unprecedented period in time we've seen member companies step up to support local and provincial needs. We've seen manufacturers pivot and innovate to provide new products. And, perhaps most characteristic of our industry, we've seen the sharing of adaptations and work practices with others. It is a strength of who we are as a sector and is something to continue to build upon. The waterpower industry in Ontario has a shared commitment to the value we contribute to society and a firm belief that "all of us are better than any of us". This is, in fact, at the very core of our Association's identity and I am proud of what we continue to accomplish together.

So, with that context, let's move to some items on the horizon of importance to our industry.

Electricity sector reform in the province is well underway and can be expected to have a significant influence on our businesses. The IESO continues to move forward with Market Renewal – the most fundamental change since the market was created almost two decades ago. Amendments to how energy and capacity is valued and dispatched across Ontario will have direct implications for market participants. A renewed and refocused Ontario Energy Board mandate and leadership will influence the relationship between generators and consumers. And the changes in demand resulting from a shift in the economy and in supply with the penetration of distributed energy resource will affect hydro operations.

The business of government and its attention to economic recovery will continue and increase. We have seen significant progress for our industry on burden reduction over the last year and can expect that theme to be sustained in the near term. Expect to see further measures to drive down input costs in the future, particularly as we head into the next election cycle. Our job is to position Made in Ontario waterpower as a solution to the ongoing challenge of electricity prices.

Finally, public opinion matters. We must continue to outreach to, engage and listen to organizations and individuals with an interest in our industry. We must sustain and grow relationships with Indigenous Communities, with Municipalities, with elected officials and regulators to maintain and improve our social licence to operate and expand. While we in the industry know that waterpower is the backbone of a reliable, affordable electricity system in Ontario, our responsibility through the OWA is to communicate that message to those who will inform, influence and implement public policy.

I believe that we can handle a lot more of the "unknown" than we think we can. In fact, I think we already have.

Stay safe. Stay well.

Stephen Somerville, OWA Board Chair

Vice President, Corporate Development and Investor Relations, H2O Power

What's Next

In Q1 2021, the next phase of the Resource Adequacy engagement will discuss the details needed to operationalize and implement the framework. Based on stakeholder feedback, the IESO proposes to structure the next phase of engagement based on four major discussion areas:

Framework

Discussion of items such as eligibility, commitment details, role of government and regulatory policy, decision-making, capacity auction enhancements and other framework details

Target Setting

Methodology for setting targets for amounts to be acquired and how the different targets will be allocated and coordinated

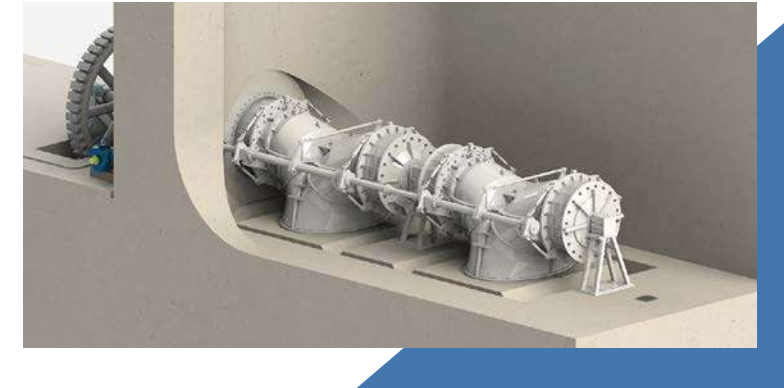
Planning

Discussion of changes needed to IESO Power System Planning information and products to align with framework objectives

Transition

Discussion of period between when existing resource contracts expire and capacity need in 2028

The IESO's Resource Adequacy Framework development and detailed design will be central to the OWA's advocacy efforts in 2021, along with Market Renewal and continued Red-tape Reduction. The outcome of this initiative has the potential to set the course for near and long-term investment and re-investment in Ontario's waterpower resources. As an industry, we must and will ensure that the values and attributes of all hydro assets are at the table.



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Norcan would like to take this opportunity to congratulate the Portage Power Team and the Cima+ Team on the successful completion of the Chaudière Hull GS1 project.



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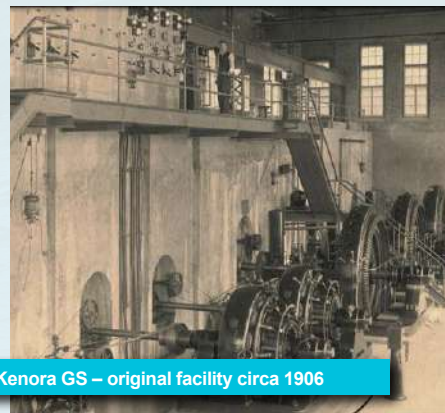
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Kenora GS Redevelopment

RESETTING THE
CLOCK ON A
VETERAN ASSET

BY RON CARIGLIA, P.ENG, ENGINEERING MANAGER, H2O POWER HOLDING LP
AND MARC MANTHA, P.ENG, VICE PRESIDENT, OPERATIONS, H2O POWER HOLDING LP

Kenora GS is located on the east channel of the outlet of Lake of the Woods into the Winnipeg River, in the town of Kenora, ON. First put into operation in 1906 with four horizontal generating units and two horizontal exciter units, the station saw its first redevelopment in 1925 with the removal of the horizontal units and installation of 10 vertical units rated at 1.25 MW each. Construction of a downstream facility in the late 1950s resulted in an increase of tailwater levels and ensuing head loss, which reduced the station's effective capacity to less than 6MW. The facility continued operation with this configuration and equipment until the recent redevelopment.



Kenora GS – original facility circa 1906



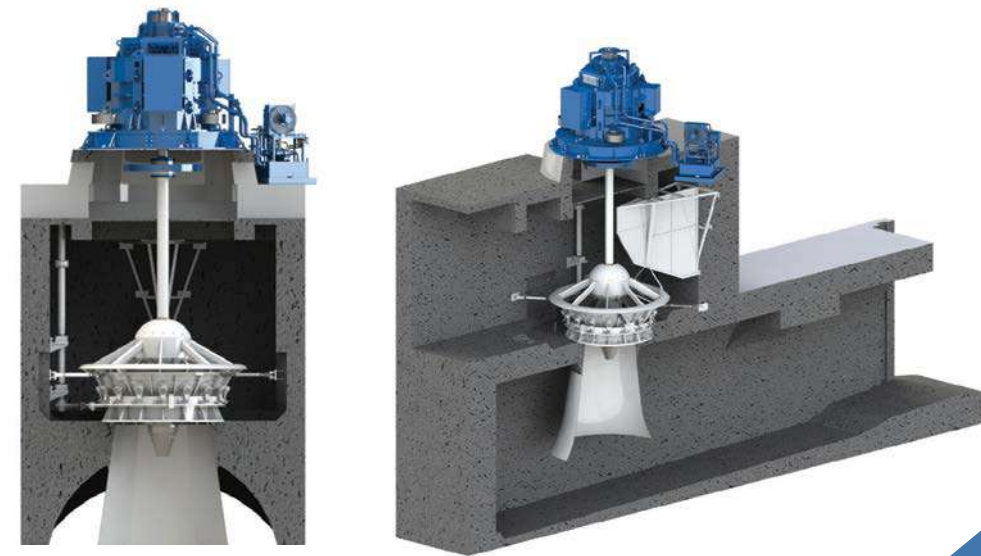
Kenora GS – pre-redevelopment (2017)

In 2014, faced with a number of critical components at or nearing end of life, H2O Power started work on examining options to modernize the station. The main transformer, generator switchgear, generators and turbines were well past the point of reasonable service life. The options examined to modernize Kenora GS ranged from outright replacement of the powerhouse to various combinations of turbine and generator replacements. The key challenge of this project was to arrive at an economically viable solution to restore the long-term reliability of the station. Most turbine selections available involved significant civil modifications for reconfiguration of the main water passage, which would have exposed the project to considerable financial risk.

H2O Power found a solution working with Norcan Hydraulic Turbine to replace the previous ten units with six vertical axial flow turbines and synchronous generators, installed within the existing flumes and of equivalent aggregate capacity as the old ten units. By working within the confines of the existing facility, potential environmental impacts associated with in-water works and cofferdams were avoided, resulting in savings of both cost and lengthy permitting activities.

The substation was also replaced with a new step up transformer and breaker, and protections fully modernized. Part of the protection modernization included construction of a new fibre optic line between Kenora GS and Hydro One's

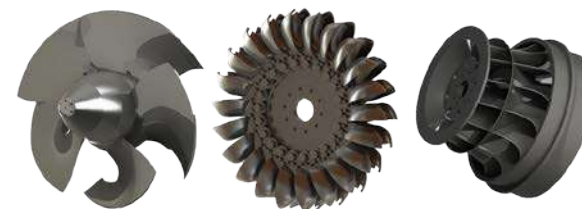
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Rabbit Lake TS to provide transfer trip service between the two stations. The work inside the powerhouse included full replacement of generator switchgear, updating the turbine controls, new balance of plant equipment and powerhouse building improvements.

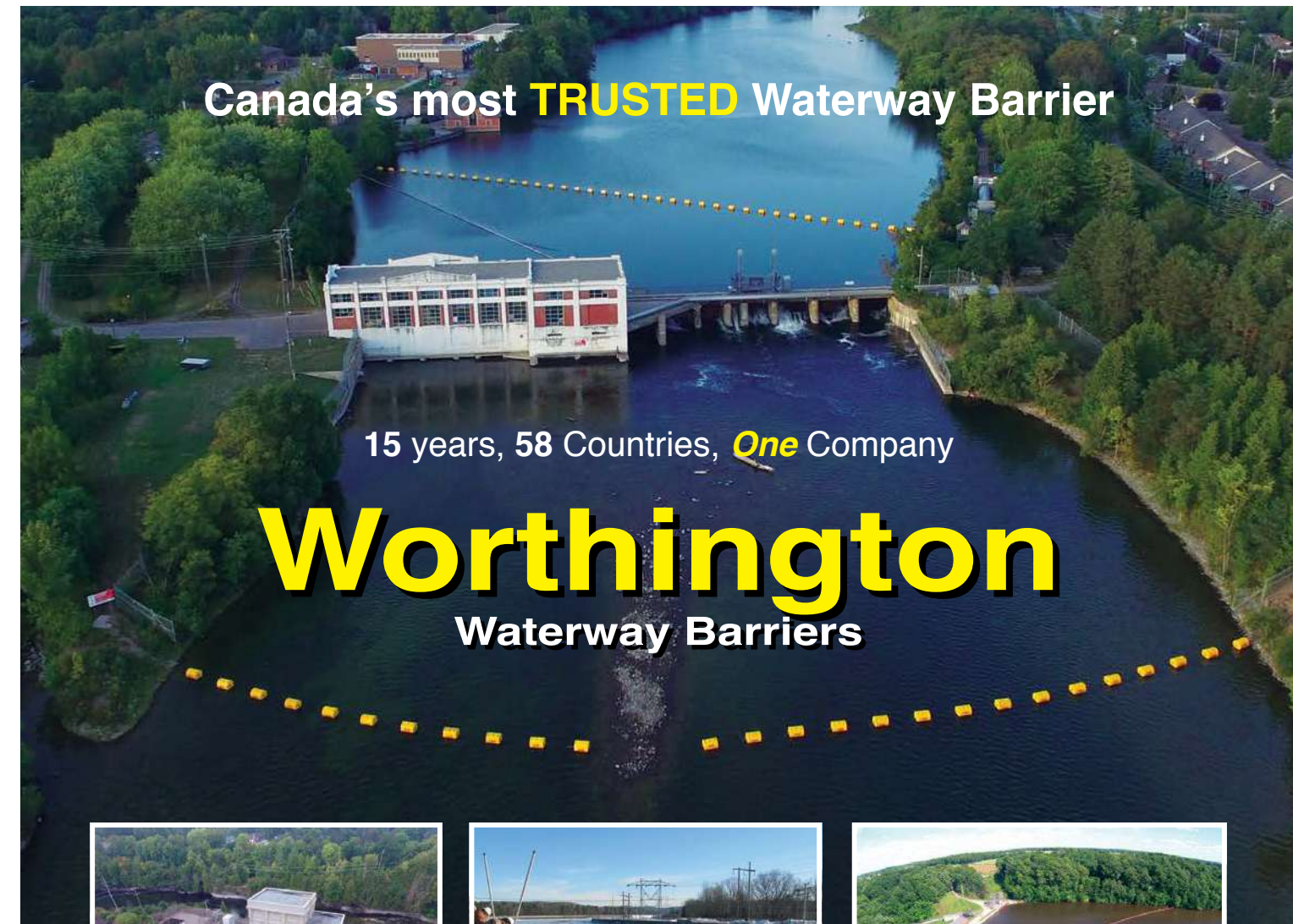
H2O Power took the role of Construction Manager and the project proceeded with 3 major milestones. The substation work started in 2017 and the new transformer energized in December 2018. Removal of the old equipment was started in July 2018 and completed by October. Installation of the new units started shortly after, with the startup of the first unit in March 2019. The remaining units were completed and commissioned in rapid succession, with facility achieving COD in May 2019, on schedule and on budget.

The redeveloped Kenora GS units were subject to thorough performance testing, with the turbines undergoing an acoustic scintillation test to quantify turbine efficiency and capacity. The testing indicated the units are performing as expected.

The Kenora project, while relatively short in duration, employed a significant

number of service providers and suppliers, including many local firms. Nearly 75 service firms, equipment suppliers and consultants were involved with the project, including 23 local firms.

Kenora GS is now re-positioned to be a reliable asset with a long service life, contributing to Ontario's energy needs.



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