



*Photo courtesy of NB Power*

# **A nuclear response**

## **Keeping lights on was just the beginning**

**F**or CNNO, the CANDU Owners Group member in China, 2020 came in with news of a virus that would quickly put the country on alert. From there, it would ripple around the globe over a two-month period eventually finding its way to Canada and touching other COG member countries along the way. CNNO was quick to respond and to share its OPEX with COG, helping to inform and prepare other COG members for what was to come.

COVID-19 is now a household word, globally. Almost every person has been impacted by the virus or its effect on our way of life. And, almost every country, region, organization and person has been forced to respond.

Just as trained and practised to do, the entire nuclear community stepped up. It did much more than keep the lights on.

In the pages to follow, read stories of how the COG community answered the call.

# Answering the call

**COG members and suppliers are leading in COVID-19 response;  
COG is there for the assist**

**W**hen the pandemic hit, CANDU Owners Group (COG) members, suppliers and partners continued to deliver safe, clean and affordable electricity to meet the demands of daily life and essential services. Collaboration through COG helped make it happen.

## **COG: There for the assist**

Through COG, the Canadian and international community of member operators created an Operations and Maintenance Pandemic Planning Group consisting of station leadership from utilities in Canada and internationally as well as Canadian Nuclear Laboratories (CNL). The regular connection via COG Webex has allowed real-time information exchange to assist with response to emergent technical issues arising from the pandemic and increasingly, a proactive response to anticipated next steps.

The collaboration includes development of protocols and workforce management. It is ensuring critical programs and supply chain are maintained despite the complications created by COVID-19. Immediate operating experience is shared twice weekly via teleconference and through a team site on the secure COGonline platform. The group is also connected into the World Association of Nuclear Operators Atlanta Centre (WANO-AC), the International Atomic Energy Agency (IAEA) and the Nuclear Energy Institute (NEI).

## **From human performance to technology solutions**

By the end of April, more than 30 different issues had been examined by the O&M group members, ranging from use of masks as a barrier to COVID-19 to enhanced cleaning techniques. As well, a myriad of workforce management policies, such as protocols for on-site visitors and considerations for managing shift crews have been reviewed.

Early on, the group looked at best practices for temperature monitoring as employees came on site. The team has also reviewed how to apply human performance tools in a time of physical distancing and protocols for staff in the station and working from home. New technologies and innovative processes that can be applied to improve plant performance and reduce any pandemic-related risks have been investigated.

As the plants considered how to bring back their workforces, a special team was created to review and recommend best practices that could be adopted at all stations. The team holds bi-weekly calls to share information on topics like staged return-to-work and building preparation.

As a new normal set in, the team has been used for more advanced initiatives including development and delivery of virtual training; development of a phone app for COVID pre-screening and contact tracing; processes to allow outside contractors to safely enter facilities for outage execution; and changes to mask policies based on OPEX at the various sites.

## **Beyond operations: Regulatory and communication co-operation**

In addition to the O&M Peer Team initiative, COG has been a collaboration vehicle for other workgroups tackling COVID-related issues at the utilities.

The existing Regulatory Affairs Vice Presidents' Forum held virtual meetings to examine potential implications and strategies for meeting regulatory requirements during the pandemic and to provide a coordinated response to the Canadian Nuclear Safety Commission.

Nuclear communicators from 10 organizations — including operators and several other industry organizations — shared best practices and examples of communications during the initial days of the COVID-19 response as all utilities were reacting in real-time to set and re-set protocols as the situation rapidly evolved.

COG also linked into an International Atomic Energy Agency (IAEA) initiative to share experience amongst operators across all nuclear technologies, worldwide. This initiative, with 50 participants from 21 member states is helping countries, including those with smaller nuclear programs to benefit from knowledge that exists across the broader international community.

## **More collaboration, not less**

Since COG halted faceto-face meetings and instituted work-at-home policies, the COG team has used the company's well-established meeting systems and well-formed network to bring information to our members and to help them connect with each other. The roster of peer team meetings and workshops continues as does important research, joint projects, OPEX sharing and other forms of teamwork. In fact, with travel removed from the equation, some international members have found it easier to participate. Since April, COG has hosted an average of 20 meetings and about 150 participants, daily.

## **A virtual laboratory to learn from experience**

There is no question that some of the practices that have been put in place in response to COVID-19 will become the new norm as we emerge from the pandemic. Given COG's role enabling collaboration, COG is examining and experimenting to strengthen learning on how to run on-line meetings most efficiently.

We are striving to achieve our mission of Excellence through Collaboration by achieving excellence in collaboration.

*-- A longer version of this article appeared on COG channels on April 24. It has been shortened and updated for COGnizant Spring/Summer 2020.*



# A full-court press

*From incident command to emergency response, cleaning staff to communicators  
— in the station or working from home —  
everyone had a job to do to keep Canada's nuclear plants generating during the pandemic*

## Ontario Power Generation



Members of the Pickering COVID Command Centre. Pictured left to right: Brendon Ramdoo, Rob Davidson, Sara Rasouli, Phil Ross, Karen McDougall, Jeff Ross.



Members of the COVID Command Centre at Darlington. Pictured left to right, Pieter Den Decker, Heather Rambukkana, Alain Levesque, Marlene Ramphal, Jason Price, Matthew Mairinger.

Examples of COVID-19 response initiatives by Canadian Nuclear Laboratories, including the continued work of their burst testing program and CNL's contributions to an international collaborative low-cost ventilator project, see pages 14, 32 and 45.

CANDU OWNERS GROUP

Across OPG's operations, operators, technicians, and trades at the nuclear, hydro and thermal stations worked diligently to ensure units generated power safely and reliably; nuclear and dam safety workers are protecting the community and our operations; advisors worked to assess employees' health; and security teams, emergency response personnel, and cleaning staff kept the sites safe.

In keeping with advice from the Public Health Agency of Canada and the Ontario Ministry of Health, OPG took a number of actions to ensure safe, reliable electricity generation while protecting the health of our employees and the public. The utility activated the Crisis Management Communications Centre, which provides executive level oversight, along with the Infectious Disease Incident Response Team and activated business continuity plans. It launched a "Solutions Team" mandated to collect, evaluate, and quickly implement ideas to help ensure safety for essential employees and to further support front-line health care workers and supplied critical staff with surgical masks or half-face respirators for extended close contact work.

As well, OPG implemented a work-from-home policy, closed public access to visitor facilities and identified areas for access by critical staff, only. OPG also implemented hygiene protocols and products along with site hygiene teams to ensure safe work planning and training protocols for cleaning were in place.

## Bruce Power



Members of the Bruce Power Emergency Management Centre, left to right: Dean Burleigh, Lisa Clarke, Crystal Roote, Tim McKay, Zafar Hussain, Christian Morton, Mark Slade, Kevin Schmidt, Mikael Davaze, Jason Bloomberg, Chris Allen, Dave Batte, Sarah Foster, Natasha Boucher.

Bruce Power formally stood up its Emergency Management Centre (EMC) on March 13, four days before the Province of Ontario declared a state of emergency in response to the COVID-19 outbreak.

Two crews rotated through the EMC to maintain a level of consistency, while two separate locations were utilized to allow for sanitation between shifts. After the initial response, the EMC moved to a one-crew system in March and was stood down in June after long-term planning teams were established.

Bruce Power's EMC was successful in helping to implement several safety enhancements during its COVID-19 response as the situation evolved, including minimizing staff on site, sanitation protocols and the implementation of mandatory face mask use.

## New Brunswick Power

Within 24 hours, on March 16, Point Lepreau's Incident Command Structure (ICS) was set up and protocols established to ensure essential staff could safely access the site and continue to produce electricity. At the same time, workers whose presence on site was not essential were given instruction to ensure they could continue to support the site effort while working from home.

In the months that ensued, Point Lepreau continued to adjust its protocols and standards as the circumstances evolved, responding to new information with additional measures, as required. Like other utilities, this included mask, face shield physical distancing, hygiene protocols and new pathways for regular communications with employees. The local and First Nation communities and stakeholders were kept abreast of the plant's measures to ensure everyone knew what to expect and how Point Lepreau was responding to ensure safe, reliable service during these most uncertain of times.

One of the early activities the plant had to undertake was work to successfully postpone the spring outage to the fall, allowing more time to ensure the pandemic situation was well understood and workers, both from NB Power and external contractors, would be well protected during these maintenance activities.

On Friday, June 19, 2020 the ICS stood down and through vigilance and new heightened safety processes, life at the plant has begun a path back to a new normal. The Station Health and Safety team will continue to monitor and respond to COVID-19 Station related issues.



NB Power's Incident Command Structure, left to right: Wade Greenlaw, Kathleen Duguay, Chris Wilson, Zach Beauchemin, Rob Stears, Halley Mawhinney, Corinne Braam, Nick Reicker. Absent from photo: Daphne Thorne, Patti Wiggins, Eric Gardner, Michael Hare, Tim Harrigan.





CNNO Third Qinshan Plant staff in the control room where masks were required and access restrictions were in place during the COVID-19 pandemic.

# COG International Members rise to the COVID challenge

*Around the world, COG member utilities responded to the COVID-19 pandemic with initiatives designed to ensure employee safety and continue the reliable delivery of clean electricity when it was needed most*

## CNNO completes outage ahead of schedule with COVID safety measures in place

Through the pandemic, CNNO rolled-out various measures to control the spread of COVID-19 at its Third Qinshan Plant and continued with some plant maintenance activities.

Response measures included creation of an Epidemic Prevention and Control Group looking at all aspects of pandemic management affecting plant operations as well as employee health and safety. The group also developed initiatives to curb COVID-19's spread.

Other COVID-19 response initiatives included:

- Tracking of employee travel and movement including limited access to control room and other sensitive areas as well as daily reporting and completion of epidemic prevention and control checklists;
- Employee temperature checks and personal health

coding (different codes signify different states of employee health e.g. only staff with green "good health" coding were permitted on-site);

- Strengthened personal protection protocols such as wearing of masks in work environments and other personal protective equipment (PPE); and
- PPE training and post-quarantine employee certification ensuring staff who completed a home quarantine period were granted clearance to return to work.

By early-March, CNNO gradually resumed normal plant operations. A planned maintenance outage of Qinshan Unit 2 went ahead on May 1, after a one-month COVID-related delay, and was completed on June 2, five days ahead of schedule.

During the pandemic, no COVID-19 infections were reported at the Qinshan Plant.

## KHNP follows government's lead with multi-faceted COVID response

At Wolsong Nuclear Plant, KHNP restricted all international travel for employees and visitors, during the pandemic. Employees and visitors coming from other countries were isolated for two weeks and tested within three days of arriving in Korea. These individuals were then tested again at the end of the two-week isolation period. All KHNP meetings, involving visitors, were moved to teleconference or virtual meetings.

On April 25, KHNP completed a 228-day outage of Wolsong Unit 3 and on July 22 will start a Unit 4 outage until October.

Korea became a world-leader in COVID-response as one of the first countries to introduce mass testing, contact tracing and tracking technology to control the outbreak. Because of this comprehensive approach and KHNP's own enhanced safety, hygiene and physical distancing measures, staff were able to return to the office once Korea's outbreak situation had stabilized.

## NA-SA develops exclusive protocol for international inspections during pandemic

In Argentina, NA-SA launched several health and hygiene protocols and preventive measures across its facilities including Embalse Nuclear to protect employees and contractors.

Suppliers and contractors signed a sworn statement of health, employees were required to use private vehicles and most meetings were moved to teleconference and virtual environments with strict exceptions.

An exclusive protocol for international nuclear inspections was developed for the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) and the IAEA to ensure compliance with its international commitments.

As with other international utilities, remote work policies supported by an employee information safety campaign were instituted. For on-site staff, body temperature checks and

control room access restrictions were also implemented.

NA-SA reported five COVID-19 cases across its sites with none reported at Embalse.

## NPCIL India continues safe operations at its plants

At NPCIL's seven nuclear sites, plants operated safely and as normal, through the pandemic. NPCIL head office staff worked-from-home which continued into June. Some staff returned to the head office but only when required to.

At the height of the pandemic, some NPCIL plant staff lived in secluded townships with strict physical distancing rules imposed and no visitors permitted from outside the townships. The Government of India also issued pandemic guidelines and NPCIL complied with required preventive measures.

NPCIL continues to comply with the government's evolving pandemic policies.

## SNN Romania applies learning from SARS in its pandemic response

In the early stages of the pandemic, SNN identified essential staff they needed to be able to properly operate Cernavoda Nuclear Plant. Approximately, 500 staff were isolated on the campus, close to the plant, for 72 days. SNN also established a list with backup personnel for emergency scenarios.

Transportation was provided by SNN busses between the plant and the campus. Food was provided on the campus via the cafeteria. A new store was also opened for essential items employees needed.

The planning SNN had previously done for SARS was helpful as it developed protocols and procedures in response to COVID-19.

On June 20, SNN began a 43-day outage at Cernavoda which had been delayed by the pandemic. Regular office staff returned to work in early June, with mandatory mask wearing, while those at greater health risk continued to work remotely.



NA-SA Embalse Plant employees enter the site during the COVID-19 pandemic. NA-SA implemented a number of preventive health and hygiene measures across its facilities in Argentina.



# Supplier participants innovate, repurpose through pandemic

Through the COVID-19 pandemic, COG’s supplier participants repurposed their operations, as needed, in response to the health-care crisis, to develop new innovations and to achieve some notable business milestones.

The nuclear supply chain continued to deliver materials for development of nuclear medical diagnostics and industry members partnered with other companies, research organizations and universities to move into new areas of design and manufacturing to help supply ventilators and face shields.

Their achievements benefited communities across North America and around the world during challenging times.

Below are some examples of supply chain contributions to the efforts to fight COVID-19, shared by COG’s Supplier Participants.



## ATS Automation

ATS Automation used its specialized life sciences capabilities to support the production of medical equipment, such as ventilators and respirators, to address the COVID-19 pandemic across North America.

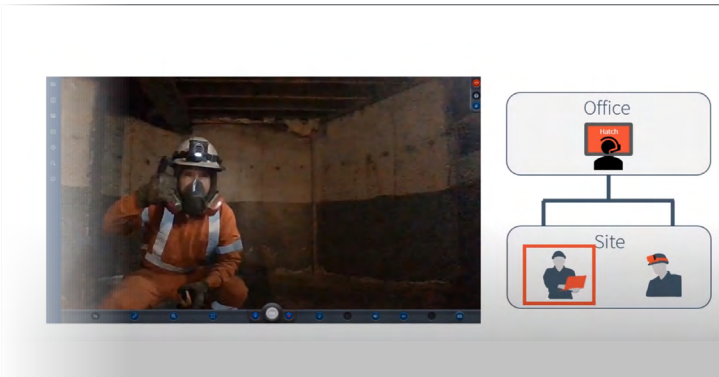
Photo: ATS Automation

## Hatch

Hatch offered its clients practical and cost-effective virtual approaches using innovative digital collaboration technologies to tap into expert skills and knowledge remotely.

This included technology to remotely complete on-site inspections, which would have normally required a visit to the site. This allowed maintenance staff to continue to perform asset maintenance and diagnostics, walkthroughs, inspections and training, while keeping everyone safe.

Photo: Hatch



## Kinectrics

Kinectrics adapted its test capabilities normally used for testing of HEPA filters and respiratory PPE for the nuclear industry towards medical needs. This “Made in Ontario” model ensured a long-term stable supply of testing to the province and to the rest of Canada.

The organization also made a financial and business commitment to put into service the full suite of testing required for surgical masks in compliance with the ASTM F2100 standard, based out of its facilities in Toronto.

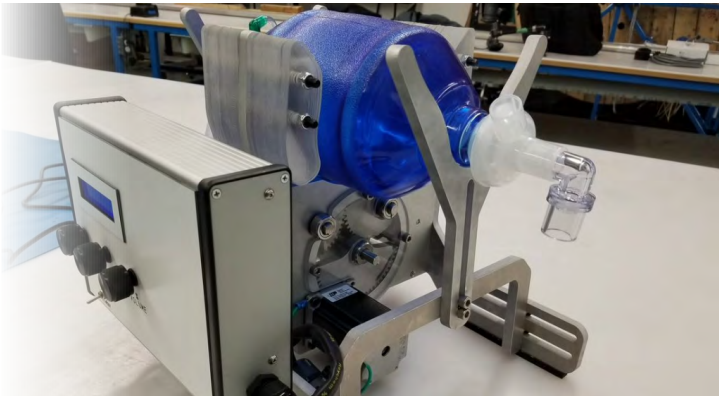
Photo: Kinectrics



## NUVIA

NUVIA won a place on a four-year contract to deliver engineering design support to the U.K.’s Radioactive Waste Management as part of that country’s High Activity Waste Framework.

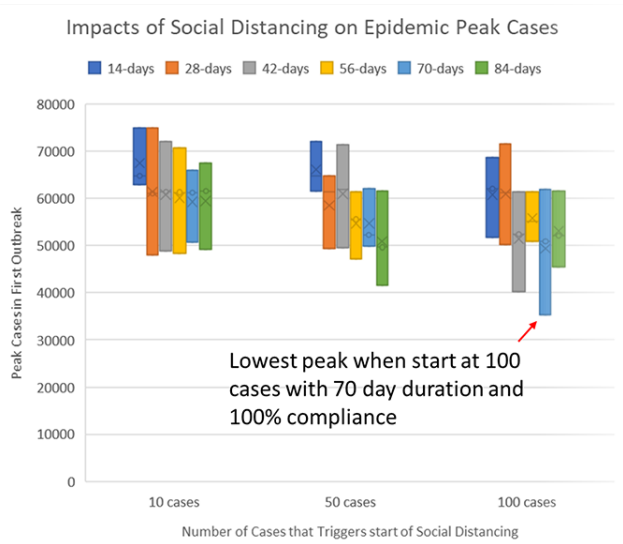
Illustration of proposed U.K. waste disposal facility.  
Photo: Radioactive Waste Management



## Promotion

Promation developed low-cost ventilator prototypes, which it provided to Toronto’s University Health Network, in response to the sudden surge in demand due to COVID-19 and other future health emergencies.

Photo: Promation



## SNC-Lavalin

SNC-Lavalin announced its subsidiary Candu Energy Inc. was awarded two additional five-year vendor-of-record agreements by OPG to provide specialized engineering and nuclear engineering services.

The firm will deliver nuclear engineering services for the Darlington and Pickering sites and the Western Waste Management Facility including design support for nuclear plant modifications and balance of plant engineering.

### SNC’s Smart City simulator

SNC-Lavalin’s U.S.-based Atkins business used its City Simulator, map-based software tool, to model epidemics to explore how communities can restart their economies while keeping residents safe.

SNC’s Lavalin’s map-based software modelling tool. Photo: SNC-Lavalin



## Westinghouse

Westinghouse unveiled a first-of-a-kind installation of a 3D-printed thimble plugging device at Exelon’s Byron Unit 1 during the plant’s scheduled spring refuelling outage.

Photo: Westinghouse



# Giving back in a time of need

#ExcellenceThroughCollaboration became #AssistanceThroughCollaboration for the nuclear industry during the COVID-19 pandemic. From initiatives to give back to the most vulnerable in our local communities and those on the health-care frontlines to the creation of crucial personal protective gear and medical equipment, nuclear utilities and suppliers together made a difference as we all kept physically apart. Some of the stories of generosity and innovation are captured throughout this issue of COGnizant.

Here are five ways the nuclear community went beyond keeping the lights on to help in the fight against COVID-19.

1

## Supporting those in need

[Ontario Power Generation \(OPG\)](#) and [Bruce Power](#) made donations totalling more than \$1 million to approximately 40 community food programs across the province.

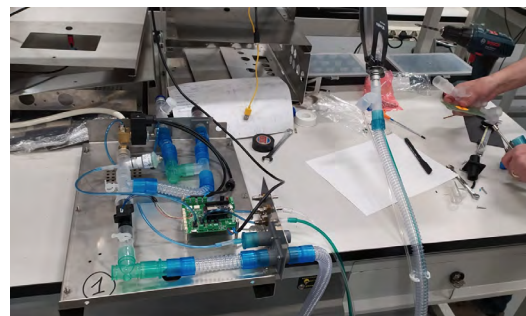
New Brunswick Power created provisions for customers having difficulty paying their bills due to illness, job loss or requirements to self-isolate. In addition to suspending disconnections for non-payment, the company deferred bill payments for residential and small business customers and waived late payment charges.



2

## Developing medical innovations

[Canadian Nuclear Laboratories](#) collaborated on the design of a new easy-to-produce ventilator as part of an international team working on a solution that could be manufactured with off-the-shelf parts from established supply chains.



3

## Sharing knowledge

Bruce Power supported an [information sharing campaign](#), created in tandem with local public health officials, to protect residents in Grey, Bruce and Huron counties. The multi-platform campaign included 100,000 newsletter mailouts, a #StayAtHome video ad spot and a series of virtual town halls and Q & A sessions, including one featuring NASA astronaut Captain Scott Kelly, sharing his experience of self-isolation aboard the International Space Station.



#PoweringCommunity

4

## Strengthening communities

Many in the nuclear supply chain responded to the crisis with generosity and creative solutions.

COG supplier participant, Cameco, the Saskatchewan-based mining and fuel services company, launched a \$1 million relief fund for Saskatoon and northern Saskatchewan charities, municipalities and First Nation band offices impacted by COVID-19.

SNC-Lavalin's Infrastructure team built a drive-through screening clinic outside the Montreal McGill University Health Centre, as part of its multi-faceted response. With two evaluation and testing booths, the clinic served Health Centre staff. The clinic's booths were equipped with heat, electricity, light and WIFI.

PCL Construction coordinated financial contributions and donations of N95 masks and negative air filtration machines to health-care facilities where its construction sites were located. It also helped supply laptops to students learning remotely during the pandemic.

[Read more](#) on the COVID-19 responses of COG's Supplier Participants.



5

## Creating and donating PPE

WIN Canada members along with [OPG staff hand-sewed nearly 9,000 cloth masks](#) for the community.

NB Power partnered with the University of New Brunswick to 3D-print approximately 5,000 ear savers for frontline workers designed to make wearing face shields more comfortable. The organization also worked with local Indigenous and surrounding community members to make cloth face masks to increase the stockpile of protective equipment available to staff at Point Lepreau.

Combined, [OPG](#) and [Bruce Power](#) provided over 100 front-line organizations and Ontario's Ministry of Health and Ministry of Long-Term Care with nearly 2.3 million pieces of medical equipment including N95 masks and Tyvek suits. Bruce Power's personal protective equipment (PPE) donation, alone, was the largest announced private-sector donation of PPE in Canada. The Cobalt-60 harvests of both organizations were also used to sterilize medical devices.

Both organizations were involved in the production of 3D-printed face shields.



Revisit how COG members and suppliers responded to the COVID-19 pandemic in March and April, making a difference in their communities and around the world:

[COG member response stories – April 24](#)

[COG member response stories – April 9](#)

[COG member response stories – March 30](#)





COG's Charity Committee supports several causes, like Daily Bread Food Bank, throughout the year. The food bank reports demand has increased 20 per cent. Photo: Daily Bread Food Bank.

## Support for an urgent cause

*The COG team raised more than \$5,500 for Toronto's Daily Bread Food Bank and food banks in COG member communities, coming together even when physically apart.*

CANDU Owners Group (COG) team members have responded to the COVID-19 pandemic by collaborating to support our community's most vulnerable people.

COG's Charity Committee organized a two-week virtual raffle campaign to support Toronto's Daily Bread Food Bank pandemic response efforts. The campaign raised \$5,560 for one of the country's largest food-based charitable organizations and for local food banks in COG member communities. Money was raised through bids by COG staff on electronic gift cards for various retailers with an added contribution from Querencia Partners, COG's communication consultant.



COG's charity committee is comprised of employees: Sonia Qureshi, Rachna Clavero, Kelsey Rodger, Esther Sun-Lee, Jullaine Hardinge, Donna Tuck, Amanda Nascimento, Anjana Mistry and Tania Rose.



Sonia Qureshi and Tania Rose, members of COG's Charity Committee, which organized the staff donation to the Daily Bread Food Bank in response to the COVID-19 pandemic.

"In these uncertain times, COG staff feel very grateful to be employed by a company that enables us to work-from-home and keep safe," says Tania Rose, COG Fuel Channel Project Coordinator. "We know there are many people who are not as fortunate. Many people are now facing financial challenges and food insecurity. We felt raising funds for the Daily Bread Food Bank would have an immediate and real impact, locally, for those people affected by this pandemic."

In the months since the pandemic was declared by the World Health

Organization, Daily Bread reports food bank demand has increased 20 per cent. The number of families seeking food each day has risen from 120 to more than 300, an increase Daily Bread CEO Neil Hetherington called "completely unheard of." According to Food Banks Canada, food bank use across the country is expected to "keep going up and up and up."

COG's Director of Joint Projects and Services Sonia Qureshi says she has been impressed by the commitment to citizenship initiatives by COG staff in their personal lives as well as through COG initiatives such as this one.

"A donation like this, and our support for charities throughout the year, shows the generosity of our staff and great work of the charity committee. It also shows COG's ongoing commitment to give back and support our community, in the spirit of collaboration."

Daily Bread Food Bank provides people living on low incomes with food support through its 130-plus member agencies' food banks. It also offers homemade meals to agencies that operate shelters or drop-in programs and its kitchen feeds up to 5,000 people across Toronto, weekly.

COG's Charity Committee plans events throughout the year to raise funds for various organizations. In February, the committee presented a cheque for more than \$2,000 to the Canadian Red Cross resulting from a COG employee campaign. Last year, COG staff helped raise more than \$8,000 for charitable causes in Durham Region and across Canada.

[Click here](#) to donate to Daily Bread Food Bank's pandemic response efforts.

To find a food bank to support in your local community (within Canada), [visit the Food Banks Canada website](#).

*With files from Global News Toronto.*

## Read more from this issue of COGnizant

Join us online for more content and access to the information you need to stay connected and innovate in your own program area.

*Find the full issue of COGnizant [here](#)*

*Or visit:*

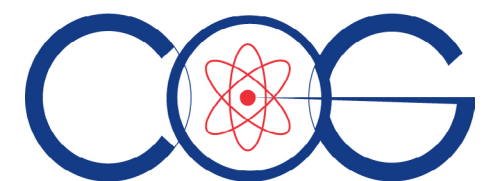
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[@CANDUOwnersGrp](https://twitter.com/CANDUOwnersGrp)*

**CANDU Owners Group (COG)**  
655 Bay Street, 17th Floor  
Toronto, ON M5G 2K4 Canada  
Phone: 1-416-595-1888  
Fax: 1-416-595-1022  
Email: [cog@candu.org](mailto:cog@candu.org)

CANDU Owners Group Inc.



*"Excellence Through Collaboration"*