

Inside the ice storm

by Larry O'Keefe, P.Eng.

On January 4, 1998, freezing rain started to fall throughout eastern Ontario, southern Quebec, parts of the Maritimes and the northeastern states. This was not an unusual event, because these areas experience freezing rainfall about 10 times every winter. But over the next four days, the freezing rain continued in Ottawa-Carleton and, by January 9, approximately 70 millimetres of ice had accumulated. This is one storm I'll never forget.

As the ice built up on everything it hit, dramatic events began to unfold. Trees collapsed. Roads were out. But the most serious impact was on the poles and power lines. The accumula-

tion of ice brought excessive weight on the wooden poles and steel towers. These support structures began to fail, causing extensive power outages across the entire region.

Emergency services heeded the call



Individual hydro lines were also knocked out by falling branches and pulled down by trucks where lines were sagging across the highway. At the height of the damage, over 700,000 people in eastern Ontario were without power. As many as six million throughout the provinces felt the impact.

As the ice storm developed, I was working in my regular position, managing wastewater treatment with the Region of Ottawa-Carleton. We were preoccupied with keeping the treatment plant operating throughout the power outages, and equipping the pumping stations with backup generators to prevent system flooding.

Everything changed on Thursday, January 8. At about 9 a.m., regional chair Bob Chiarelli declared a state of emergency in the Ottawa-Carleton area—and I became personally involved with the relief effort. I was assigned the role of generator coordinator with Ottawa's Emergency Measures Unit (EMU). Over the next 13 days, we developed a working group that distributed and installed generators throughout the various cities, towns, villages, hamlets and rural areas of eastern Ontario.

The problem was that there were thousands of people in need, but no generators available. We put out calls to Emergency Measures Ontario, Ontario cities and regions that would have portable generators, the federal government and, eventually, the Canadian military.

The response was overwhelming. Cities and regions throughout Ontario were first to dispatch equipment and support staff. Portable generators, trucks, tree removal equipment and operators were on the road to Ottawa within 24 hours. Work crews trav-

elled through difficult conditions and spent long hours to reestablish power and clean up sites in the aftermath.

The Canadian military arrived in Ottawa on January 9, with equipment, expertise and human resources that proved invaluable in controlling and rectifying the emergency situation. As for the generator requirements, Bill Anderson, the supervisor of the electrical section with Public Works and Government Services Canada (PWGSC), was a valuable contact. This group had generators available and staff to hook them up. Over the next two weeks, we worked closely with the PWGSC to coordinate the plan.

Generators in demand

A dedicated 24-hour emergency call centre took all requests for generators. The details were documented, and the calls were forwarded to the coordinating group. Generators were assigned to groups based on need and where they could achieve the greatest impact.

Large generators went to emergency evacuation centres that had been set up by various municipalities, providing food and shelter to people in areas without power. Seniors' and group homes were tagged as a priority, since the residents in these facilities could not be evacuated to the shelters.

Water treatment and distribution facilities needed generators, so that wells and pumping stations could provide water. Businesses that were considered essential to the relief effort also received generators whenever possible, such as gas stations, food services, milk processing plants, and locations sheltering hydro crews from across Canada and the United States. Farms needed electrical power to feed and water livestock, and milk cattle. People who were too ill to come to emergency centres needed electricity for dialysis machines and respirators at home.

The team response

The emergency relief effort was in place for three weeks, and the generator team developed from a one-person operation into a large-scale coordinating group to deploy generators throughout eastern Ontario. The generator coordination group became the central response agency. Staff worked around the clock to deal with requests for help. There were four main components of the generator group:

- ◆ central control and dispatch;
- ◆ electrical support;
- ◆ shipping and receiving; and
- ◆ field services.

Central control and dispatch

This section comprised people at the EMU responsible for soliciting generators through

rental agreements or donation. This group would assess priorities, and, once a "match" was found, arrange for delivery and hook up.

Coordination was key among the installation teams of regional staff, public works and military. The group provided the central point for coordination to ensure efforts didn't overlap. With over 500 generators in service, it was very important for the group to track where each one was, so it could be recovered when the emergency ended. Documentation began as a paper exercise, but was changed to a digital database as the number of units increased. Information was loaded into laptop computers and updated when units were moved in the field.

Electrical support

Generators are manufactured in a variety of sizes, voltages and different electrical phases. It is critical to check the building wiring against the generator output to ensure compatibility. An incorrect hook-up could start a fire if the wiring overheats.

To eliminate any potential danger, Ontario Hydro inspector John Wilkinson joined the control group. His efforts in reviewing each large generator installation were vital, because it was crucial that generators be hooked up correctly the first time and that the danger of fire be eliminated.

Shipping and receiving

Obtaining, checking, documenting and delivering generators throughout eastern Ontario was a massive assignment. Generators were arriving from a number of sites in various states of readiness. Similarly, the locations requiring generators were spread from the Quebec border to the St. Lawrence Seaway, and as far west as Perth.

Our water distribution garage was transformed into a hub for receiving generators and arranging delivery. Generators would arrive at the Clyde Avenue facility from corporate donors or individual citizens, or by pick-up by regional vehicles or pre-arranged truck delivery. Make, model and serial numbers were recorded, along with the source of the unit, so that it would be returned to the owner. On-site mechanics tested each generator before the control group designated an installation site. Shipping staff then arranged delivery.

To appreciate the magnitude of this assignment, you have to remember that over 500 generators from numerous locations had to be obtained, recorded, approved, delivered, and then moved again if power was restored—all this over a three-week period. We were, in fact, able to recover and return all of the generators.

Field services

The field services group comprised a variety of services. Public Health nurses visited homes to approve requests for small generators for medical reasons. We created a fleet of 25 mobile generators. Units were mounted in trucks and dispatched with staff operators to areas without power.

During the first part of the storm, when temperatures were mild, these mobile units pumped out flooded basements. When temperatures dropped to -20 C, the mobile units switched their services to running furnaces for short periods to return some heat to the houses.



As part of the Region of Ottawa-Carleton's response to the ice storm, emergency relief staff at a dedicated centre took calls for help and set priorities for the distribution of generators.

These units were on the road continually, travelling to communities in need. There was a similar operation for farm relief. Intermediate-sized generators were distributed to local farm groups or volunteer fire departments, which formed teams to travel from farm to farm—crucial to the survival of the animals and family livelihoods. When larger generators were needed, an electrician from the region or PWGSC came on site to make the connection and to ensure that power was restored without complications. Once the generators were operating, teams of mechanics were assigned to specific geographical areas to maintain the equipment. ◆

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Surviving the storm: tips and strategies

Having lived through the ice storm of '98, the Region of Ottawa-Carleton's staff gained hands-on experience and learned valuable

lessons about how to respond to a large-scale emergency. We've completed a follow-up review and updated the Emergency Measures Plan for Ottawa-Carleton. Although we hope that we'll never face something like this again, the knowledge gained is useful to plan for future emergencies.

information and help control conflicting messages that can delay help and jeopardize safety.

- ✓ **Select a site for operations.** To provide a coordinated and effective response to an emergency, prearrange space for the various control groups. The site should be able to accommodate a number of staff and be equipped with backup power and communications systems. Also designate specific sites for providing emergency help, such as community centres or schools for evacuation shelters, or municipal garages for staging areas for work crews or supplies.
- ✓ **Facilitate decision making.** Establish a control group for different areas and give these people the autonomy to make decisions on the use of equipment and resources. Emergencies are often short-term events that call for immediate action. There is not sufficient time to work through the normal channels for requisition of supplies and equipment. Decisions have to be documented thoroughly, so that follow-up audits can be done to justify expenses.

- ✓ **Provide accurate information.** During the ice storm, people were desperate for information about how long they would be without power or where they could go for help. During an emergency, information needs to be provided as quickly as possible, and should portray an accurate picture of the situation. Information should also be centralized to a coordinating group to ensure there are no confusing or conflicting reports.

If people are given correct information—even if it's bad news—they can deal with the consequences. For example, if they know they will be without power for two weeks, as opposed to two days, their response will be drastically different: They will be more likely to evacuate to a shelter or attempt to find alternative power.

- ✓ **Remember that people want to help.** One of the most pleasant and memorable things about the ice storm was the number of people wanting to help. Offers came from individuals, other communities, small businesses, corporations and government agencies, as well as relief organizations. Help came in different ways: checking on neighbours, working at shelters, providing supplies and equipment. This outpouring of kindness and generosity should be expected, based on the Canadian response to recent disasters like the floods in Manitoba and Quebec. Knowing this in advance, the response team must be prepared to organize volunteers, equipment and supplies.

Have a plan

To prepare for emergencies, municipalities should develop an emergency measures plan, identifying roles and responsibilities for emergency response. The plan should deal with everything from localized incidents, such as serious roadway accidents, to large-scale events such as the infamous ice storm of '98. It should clearly identify the staff responsible in an event and the interaction with other agencies, including fire, police and various levels of government.

The following tips may also be helpful in emergency planning:

- ✓ **Provide one-call service.** People need a single telephone number to call to get help or to offer services. If there are different locations for emergency response, people will get confused and contact the various locations in a panic. This will result in a lack of coordination in response efforts and duplication of service delivery. A single point of contact makes it easier to deliver