



This screen capture shows how ESIS can calculate and display the location of hospitals most accessible from any Hydro One site.

Hydro One Achieves Advance in Use of GIS To Meet Emergencies

*By Lawrence Moule
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Hydro One has achieved a worldwide breakthrough in the application of GIS to emergency management.

The utility has implemented what it believes to be the first system in any province or state that identifies and locates the closest providers of police, fire and hospital services to any given point on a map of the entire jurisdiction.

This is done automatically and instantly. A user can click on an asset of Hydro One, such as a transmission station, or type in the name or locale of an asset anywhere in Ontario, and the system shows contact information for the best available emergency services.

The system has the potential to save lives by ensuring that Hydro One crews can reach help in an emergency no matter in what remote area of Ontario they may be working.

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Hydro One Tracks Emergency Service Contacts All Across Ontario

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The system is called ESIS, or Emergency Service Information System. The second phase of its implementation was completed in January. It is the first system of its kind to integrate the complex web of emergency services across the province

– thousands of phone numbers and hundreds of locations, all constantly updated.

ESIS also advances the application of GIS to emergency management because it makes critical information easily accessible to a wide community of users, says Eldon Feaver,

senior engineer with Hydro One's Network Operations Division, who is managing the implementation project.

“Select any asset, say the Trout Lake transmission station,” Feaver says. “Press one button and the system grabs the most current information on

Job Safety Planning: ESIS Report

emergency service information system
powered by AGSI
Angus GeoSolutions Inc.

Created On : Jan 16, 2007
 Created By : angusu

Emergency Service Information Report

Job Location : TROUT LAKE TS, HWY 63 N, NORTH BAY, NORTH BAY
 Sector #4/Operation Service Area NIPissing/Station Zone Northern

Police	Phone #	(705) 472-1234
Ambulance	Phone #	(705) 474-7400
Fire	Phone #	(705) 472-1221
Nearest Hospital	Name	NORTH BAY GENERAL HOSPITAL - SCOLLARD SITE
	Address	750 SCOLLARD ST, NORTH BAY, ONTARIO
	Phone #	(705) 474-8600
OGCC	Phone #	(866) 384-4743 (GRID)
Station	Phone #	(705) 840-3000
FCP	Name	Martindale
Poison Control	Phone #	(613) 737-1100
MOE Spills Action Centre	Phone #	(800) 268-6060
MOL	Phone #	(705) 564-7400
ESA	Phone #	(877) 372-7233
TSSA	Phone #	(877) 882-8772 (TSSA)
MNR	Phone #	(705) 475-5550
LDC	Name	NORTH BAY HYDRO
	Phone #	705-474-8100
Gas Company	Name	UNION GAS
	Phone#	(877) 969-0999
Search & Rescue	Phone #	(800) 267-7270
Phone Company	Name	TEL-19 BCE ONTARIO: BELL MOBILITY
	Phone#	(800) 668-6878

emergency service information system
powered by AGSI
Angus GeoSolutions Inc.

Nearest Hospital Emergency Map

NORTH BAY GENERAL HOSPITAL - SCOLLARD SITE
 750 SCOLLARD ST, NORTH BAY, ONTARIO
 (705) 474-8600

This illustration shows the kind of two-page report that ESIS automatically generates when a user clicks on the location of a Hydro One asset, such as the Trout Lake transmission station. The report shows both contact information for appropriate emergency-service providers and maps to the nearest hospital.



Senior engineer Eldon Feaver leads the ESIS project implementation for Hydro One.

emergency service providers in the area, creates a map to show where the nearest hospital is, along with an insert showing detailed road directions, and generates a PDF with the map and the data.

“This system is accessible in real time to 3,400 users in the corporation with minimal training, at affordable cost. We don’t need middleware.”

Remote Locations

ESIS was created to meet a need by Hydro One to provide updated emergency-contact information to employees and reduce safety risks in remote locations.

As the primary operator of rural Ontario’s electricity transmission and distribution system and the largest electricity-delivery company in the province, Hydro One sends work crews to

locations that are so remote that telephone services of any kind are unavailable.

Those employees communicate with a provincial dispatch centre by means of Hydro One’s private radio network. If an employee calls on the radio to report an emergency, the dispatch centre needs to know right away who to telephone for help.

Hydro One began to develop the ESIS in 2003 to provide an interactive Web solution, available at any time, to deliver improved ability to respond to emergencies affecting employees, assets or the general public. The application is primarily designed to support job-safety planning by travelling crews as well as the emergency dispatch function.

The first stage of implementation, completed in April 2006, provided text-based information. The second stage completed in January is based on an interactive map interface permitting custom queries by users.

ESIS is accessed by a browser and appears as an icon on the home page of Hydro One’s intranet. A user can query the system to find emergency-service information based on various search criteria: Hydro One facility information, Hydro One organizational boundaries or

geographic location.

A dispatcher can use this information to call an emergency service on behalf of a remote employee and, if necessary, stay on the phone and guide that service provider to reach the distressed caller, or guide the caller to a hospital, based on directions provided by ESIS.

For work crews who have direct access to land-based or mobile telephones, ESIS provides emergency-service information they can carry in printed form while travelling.

“If remote staff are in their hotel rooms and want to get information because they have a job tomorrow at another site, they can connect to ESIS over the Internet and download the relevant information through their browsers,” Feaver says.

Data within ESIS is of three types: emergency service providers, Hydro One assets and geographical data, including spatial and attribute data. It is housed on an Oracle database hosted by Q9 Networks Data Centre.

All of the data, spatial and textual alike, is accessed directly from browsers through Web-portal technology developed and supplied by Angus GeoSolutions Inc. (AGSI). The technology platform, called Go360, uses

Web services to gather and filter data of all kinds directly from a corporate database.

“This is the first emergency-management system to work entirely from a database, giving access to maps and emergency dispatch numbers on the fly,” says AGSI vice-president Geoffrey Cameron.

Complex Challenge

Managing the data stored in ESIS is challenging because of its complexity and the need for continuous updates.

To begin with, a very large amount of spatial and attribute data is needed for Hydro One assets – including 1,017 distribution stations, 611 transmission stations, 119 office locations, circuits and towers associated with more than 20,000 kilometres of transmission lines, and much more.

This is augmented by geographic data aligned with that of the Ontario Parcel Alliance, covering municipalities, roads, railways, topography and hydrology. It includes parcel data so that, in the event of an emergency such as a chemical spill at a Hydro One site, ESIS can generate a list of surrounding properties to be notified.

The data for emergency-service



This screen capture illustrates how the interactive mapping interface appears to users of the ESIS system.

providers is wide-ranging and ever-changing. It includes attribute and spatial data for hundreds of hospitals, provincial and local police stations, ambulance and fire services, all of which have separate and often overlapping regions of jurisdiction.

There is also data about government ministries and agencies, safety associations, other utilities and lesser-known landmarks and organizations – such as the roads that Hydro One itself has built into remote areas, up to 60 kilometres long, which don’t appear on ordinary maps, or ferry services in Eastern Ontario that might have to be contacted to help vehicles cross rivers in a hurry.

Hydro One is responsible for keeping its own data current, while AGSI is contracted to update all other data. It has a

team of 36 remote field crews devoted full-time to tracking about 200,000 changes a month in the ESIS data.

Fire-department phone numbers often change, for example, because of rotations among members of volunteer fire departments. All such changes are input to ESIS by the remote field crews using their browsers, and verified afterward by calls made to the new numbers.

ESIS is still in development. Feaver says the system will be able to integrate in future with real-time safety initiatives such as Work Alone and AVL (automatic vehicle location) to increase worker safety by ensuring their ability to signal for assistance and be located in an emergency.