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The calm before the storm

With the worst of the wintry weather behind us, utility providers are likely to be reviewing their storm damage procedures to ensure that networks are restored as quickly as possible in the event of power outages. Alex Eachus considers how network operators can perform more accurate and timely assessments – and keep their customers in the picture

Winter has again provided its fair share of stormy weather for the UK, with Scotland bearing the brunt and leaving 120,000 homes without power after gale-force winds hit power lines. The power distribution operations of Scotland's utility providers had to quickly draft in extra engineers and support staff, and were forced to work in extreme conditions to restore power to consumers as quickly as possible.

Last winter it was the turn of Southern England to deal with severe storms that brought much disruption and left more than 16,000 customers without power. While all utility providers have plans and procedures in place to restore power networks as quickly and as safely as possible, regulators are pushing for ever more effective communication strategies that exploit all mediums – TV, radio, mobile and online - so that customers stay fully informed on what is happening and when power is likely to be restored.

Assessing the damage

The challenge of effective customer communications is not one that utility providers are taking lightly. The first problem they face, of course, is that although weather forecasts can tell us where and

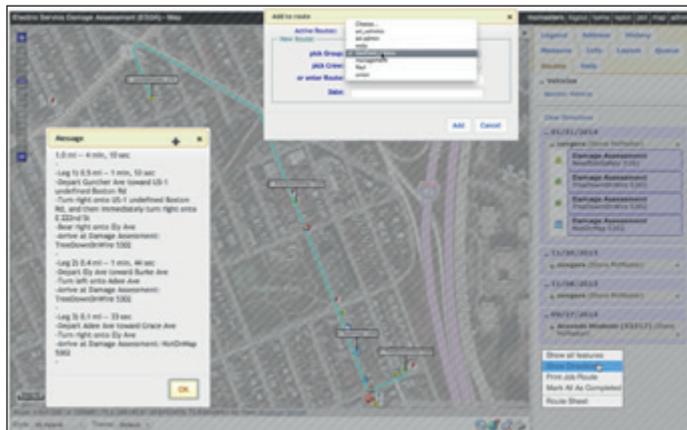
when extreme conditions are likely to hit, the potential damage to power lines is completely unpredictable. Snow, floods or severe storms and gales have the ability to take down power lines across a wide geographical area or disrupt sub-station operation, often in areas where access is remote and communication signals are poor.

Once damage occurs, it is down to storm damage assessment crews to visit affected locations, often in arduous and poorly-lit conditions. In such circumstances, it can prove difficult to give an accurate assessment to operational staff who, in turn, must assess what resources in terms of engineers and equipment should be mobilised to restore power.

Field engineers have conventionally made their assessments using pen, paper and printed maps and have communicated their findings by phone or radio. Often it was only when they returned to the office that full details could be provided as to the extent of the repairs required. This not only delays the start of the power restoration process but also hinders timely updates to customers. Although network providers have been cautious about adopting new technology due to risk of failure, they are now starting to embrace its



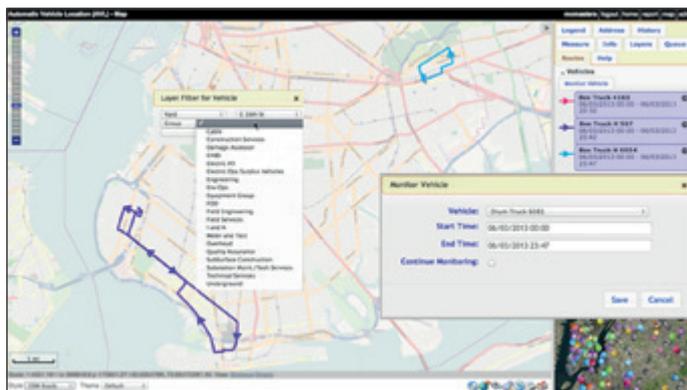
GeoField provides field crews with asset management workstations with all utility network data on-board a secure, encrypted database.



This job assignment, routing and directions module is available as an option



The central back-office management console of ConEdison's EMS provides a secure, role-based login for reviewing the situation in the field (Image SAMsix)



ConEdison workforce tracking is facilitated by the AVL module that tracks all EMS devices

potential to speed field processes by passing accurate updates back to operational centres in a timely manner.

GIS-based field mapping and data collection software running on smartphones, tablets and laptops makes this possible by giving field engineers the ability to locate assets in the field and log data for assessment and reporting purposes.

Learning lessons

Across the Atlantic, network operators embraced new technologies in 2012 to improve the quality of storm damage assessment data collection in the wake of Superstorm Sandy. So severe was its impact that it left 7.5 million New Yorkers without power and caused almost US\$62 billion in damage.

The effects of this devastating storm were far reaching and, following a substantial review of its storm damage assessment procedures, New York's electricity network operator, Con Edison¹ decided to roll-out an asset-based field solution to enable a more effective and accurate response in the event of future storms. To this end, ConEdison worked with UK-based Sigma Seven and its US-based partner, SAMsix², to develop an Emergency Management Suite (EMS) that improved the accuracy and reporting of field assessment data in near real-time.

The EMS uses Sigma Seven's field management software, GeoField, that allows incident notes and photos to be captured at the scene of any damage. Details on assets are automatically attached and the assessment is electronically relayed back to HQ where it can be reviewed in near-real time. GeoField is accessible on tablets and provides access to field maps and any associated data that a field engineer may need to make an accurate report.

Ready to go

The UK gets off fairly lightly when it comes to extreme weather, certainly in comparison to the USA and Canada where such events

are far more frequent. Even so, this example demonstrates that these types of solutions are already in use and ready to go when the next storm arrives.

The unpredictability of extreme weather will remain a challenge for utility providers and network operators, but field-based GIS and asset software can help significantly, integrating effectively with other systems to give a clear, joined-up picture of damage caused; the repair job needed, and, of course, how quickly consumers are likely to be re-connected.

- ¹ www.coned.com
- ² www.samsix.com



Alex Eachus is with the Business Development Team at Sigma Seven (www.sigmaseven.com) and has a pivotal role in developing the company's Utility business, both in the UK and overseas



Improved field reporting means ConEdison can keep customers updated through a variety of media