LIGHTNING PREDICTION

NORTHERN POWERGRID

FACTS

RESEARCH AREA	Network Reliability & Flexibility
START DATE - END DATE	Mar 2018 – Dec 2018
FUNDING MECHANISM	Network Innovation Allowance
ESTIMATED EXPENDITURE	£250,000
PROJECTS PARTNERS	EA Technology
MORE ON	http://www.smarternetworks.org/project/nia_npg_025

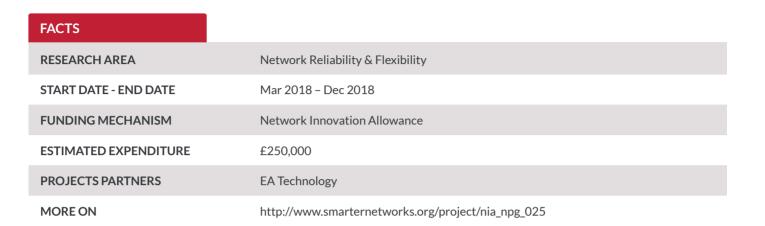## CONTEXT

Lightning strikes are an inherent danger and concern to the electricity distribution system, and although there are systems available to detect lightning strikes that have already occurred, and to some extent forecast lightning from a wider perspective, there are currently no lightning strike prediction tools that can indicate the likelihood of a lightning strike within the next hour within a nominated 1km^2 area.

From a safety perspective, approximately 60 people a year are struck by lightning with a number of them being fatal. Extensive network equipment damage is also caused by strikes with the consequences ranging from supply outages to delays in planned maintenance work.

The ability to better predict lightning strikes would ensure a safer operational environment for field staff and would help in the anticipatory operational deployment of resources to those areas of the network where asset damage, as the result of lightning was expected. Additionally verification of predictions would potentially influence planning and investment to harden those parts of the network most at risk from repeated damage. This would result in a safer and more reliable network and provide a system to assess the impact of climate change on network operations.

APPROACH

This project aims to take existing historical lightning data coupled with new real-time data and analysis and , through a programme of software development, produce an API (Application Programming Interface) based, mobile tool with a web interface capable of predicting lightning risk to people and risk of network asset damage with a much improved geographic certainty over currently available systems. Implications for operational processes to support the improved notice and analysis of lightning strike location will be undertaken.

EXPECTED OUTCOMES

The project seesk to develop a web-enabled software tool, building on existing and new databases, to predict lightning activity to a geographic area of 1km x 1km. This tool will then be subjected to field testing, verification a and a refinement loop before assessing the operational implications of using the tool.

LONG TERM PRIORITIES

Network Environmental Footprint

Network Reliability & Availability

Network Management & Flexibility

Demand-side Response

Network Planning & Design

Communication & Engagement

IT-enabled Process Improvements

Social Responsibility