

## **NEED FOR A NEW, 'SMART' ELECTRICITY GRID**

*A ROBUST AND STABLE ELECTRICITY TRANSMISSION SYSTEM IS AN ESSENTIAL PREREQUISITE FOR A COMPETITIVE ELECTRICITY MARKET AND IS CRITICAL TO A MODERN ECONOMY.*

*NORTHERN IRELAND'S ELECTRICAL NETWORK IS OLD; MOST WAS BUILT IN THE 1950S AND 1960S AND WAS DESIGNED TO BRING ELECTRICITY TO RURAL HOMES, FARMS AND COMMUNITIES.*

*SIGNIFICANT GEOGRAPHIC AREAS LACK A STRONG GRID AND EXPERIENCE NETWORK OVERLOADS; THESE WILL INCREASE AS RENEWABLE ENERGY CONTRIBUTIONS INCREASE TO 15%.*

*CLIMATE CHANGE AND ENERGY PRICE AND SECURITY ISSUES DRIVE A SHIFT TO MORE SUSTAINABLE RENEWABLE ENERGY SUPPLIES.*

*AN INTELLIGENT GRID SYSTEM IMPROVES RELIABILITY AND EFFICIENCY, INCLUDING BY DETECTING AND ISOLATING FAULTS AND REDUCING WASTAGE.*

*NEW 'SMART' TECHNOLOGY IMPROVES VISIBILITY OF ENERGY USAGE THAT ENABLES CLOSE MONITORING OF ENERGY CONSUMPTION AND REDUCING CONSUMPTION AND BILLS.*

### **KEY RECOMMENDATIONS:**

-  Northern Ireland has abundant and varied renewable energy resources which need to be realised to meet the 40% target. Wind power is currently the most developed, but must be supplemented by renewable technologies which do not suffer from the intermittency of generation problems of wind such as tidal, hydro, geothermal, solar, biomass, biofuel, and waste products. Development of these resources can be at both macro and micro scale, with many of these suitable for farm or community scale use.
-  Northern Ireland needs to upgrade its electricity grid to allow for renewable energy input to meet its 40% target and to allow connections to Ireland, Great Britain and the rest of Europe.
-  The urgent need for renewable energy in Northern Ireland must be part of the political and public debate. Every development should include incorporation of renewable energy and carbon management.
-  Strategic planning and development of grid infrastructure is urgent and it must integrate with local resource availability.
-  Integration of renewable promotion must be part of the strategic aims of all relevant government departments (DoE, DETI, DARD, DCAL, DSD, DRD, OFMDFM) and ensure conflicts and detrimental outcomes are avoided.

# NEED FOR A NEW, 'SMART' ELECTRICITY GRID

### **Developing Energy Infrastructure**

Northern Ireland requires extensive investment in its elderly electricity grid in order to maximise its use of onshore and offshore renewable electricity resources and enable connection to other countries for both import and export of electricity.

This investment should include plans for 'smart grid' technologies to deliver more efficient management of the electricity transmission and distribution networks and provide for expected changes in information, communication and other technologies.

Enhancing North-South interconnector capacity is part of a package of measures to improve the robustness of the transmission and distribution grid networks on an all island basis. The second North-South electricity interconnector will bring greater security and resilience of electricity supply, will increase transmission capacity and encourage competitiveness in the Single Electricity Market for the benefit of all consumers. Importantly, it will also facilitate growth in renewable energy generation.

Northern Ireland needs to ensure that investment delivers an electricity grid with greater capacity and the resilience to manage future fluctuations in supply and demand and provide increased security of both price and supply.

### **Building a Smart Grid**

Smart Grids in Northern Ireland will facilitate the transition to a low carbon economy by changing the way energy is supplied and used. In addition, it will deliver energy efficiency, improved services for consumers, reduced costs and carbon emissions and improvements in retail competition.

When fully deployed, distribution intelligence will enable an electric utility to remotely monitor and coordinate its distribution assets, operating them in an optimal manner using either manual or automatic controls. An intelligent system could even detect and isolate faults in specific pieces of equipment and route power through a backup system instead, maintaining power reliability.

### **Pilot Smart Grid NI**

The proposed pilot is estimated to cost around £16 million and it will provide a system based demonstration that can eventually be deployed at full scale throughout the Northern Ireland network. Little has changed in the past 100 years on how our Electrical energy has been supplied and distributed and the Smart Grid will help to overcome the constraints arising from connecting new renewable energy sources.