

NI Network Position

Bronagh Lunney

NIE

NIE

- Present position
 - Generating windfarms
 - Windfarms committed
- Way forward
 - Special Protection Schemes
 - Dynamic line rating
 - New build



NI Wind - Present Position

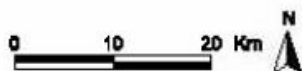
Generating capacity	182 MW	17 windfarms
Committed/in construction/application	210 MW	10 windfarms
TOTAL (Oct 2007)	392 MW	
In Planning (Oct 2007) (Excl off-shore)	>1000 MW	35 windfarms

NI Wind

<i>Dates</i>	<i>Generating capacity total</i>	<i>Number of windfarms connected</i>
Up to May 2007	120 MW	12
May 07 - Oct 07	182 MW	17
End of 2008	305 MW	23

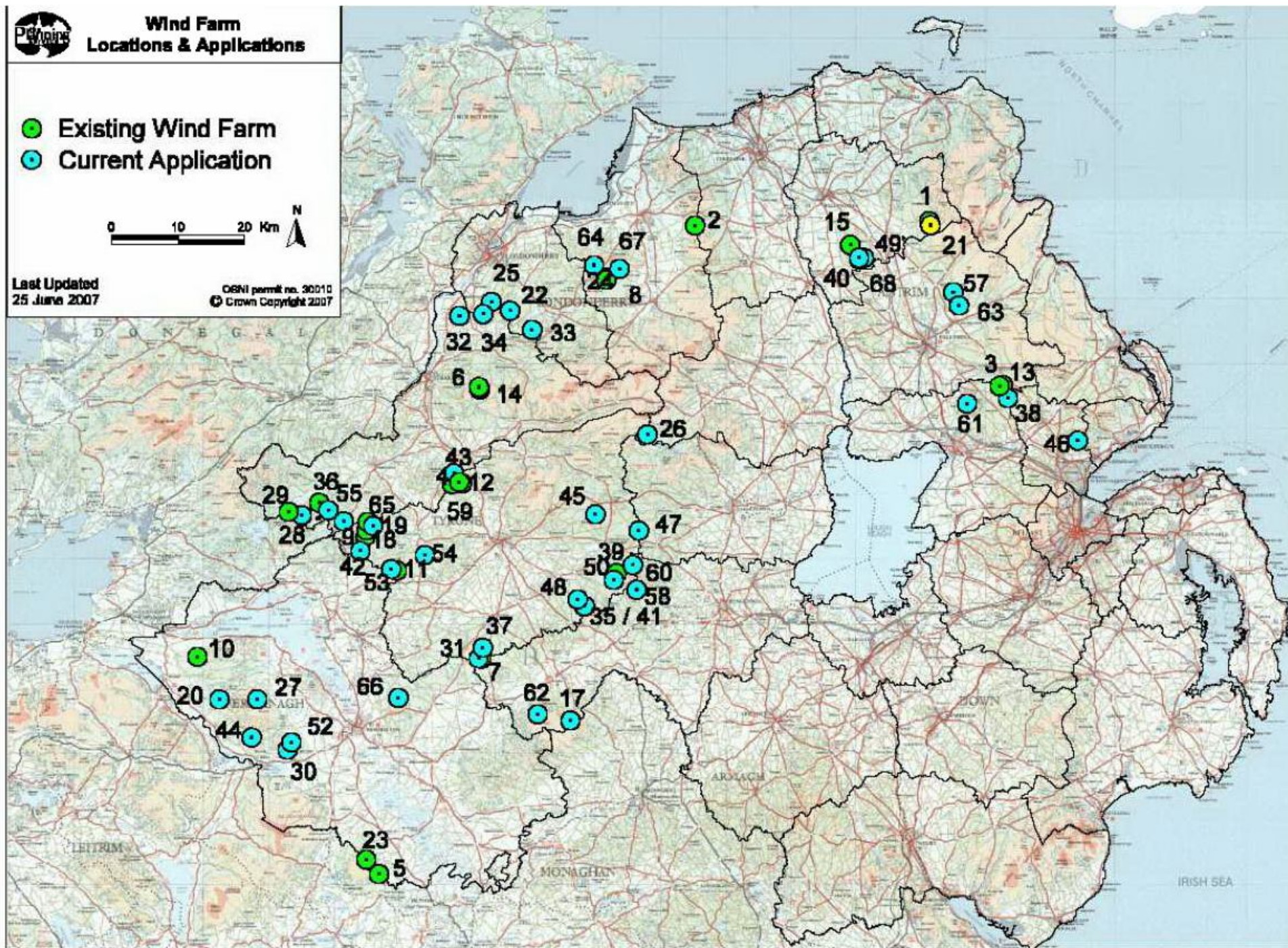


-  Existing Wind Farm
 Current Application

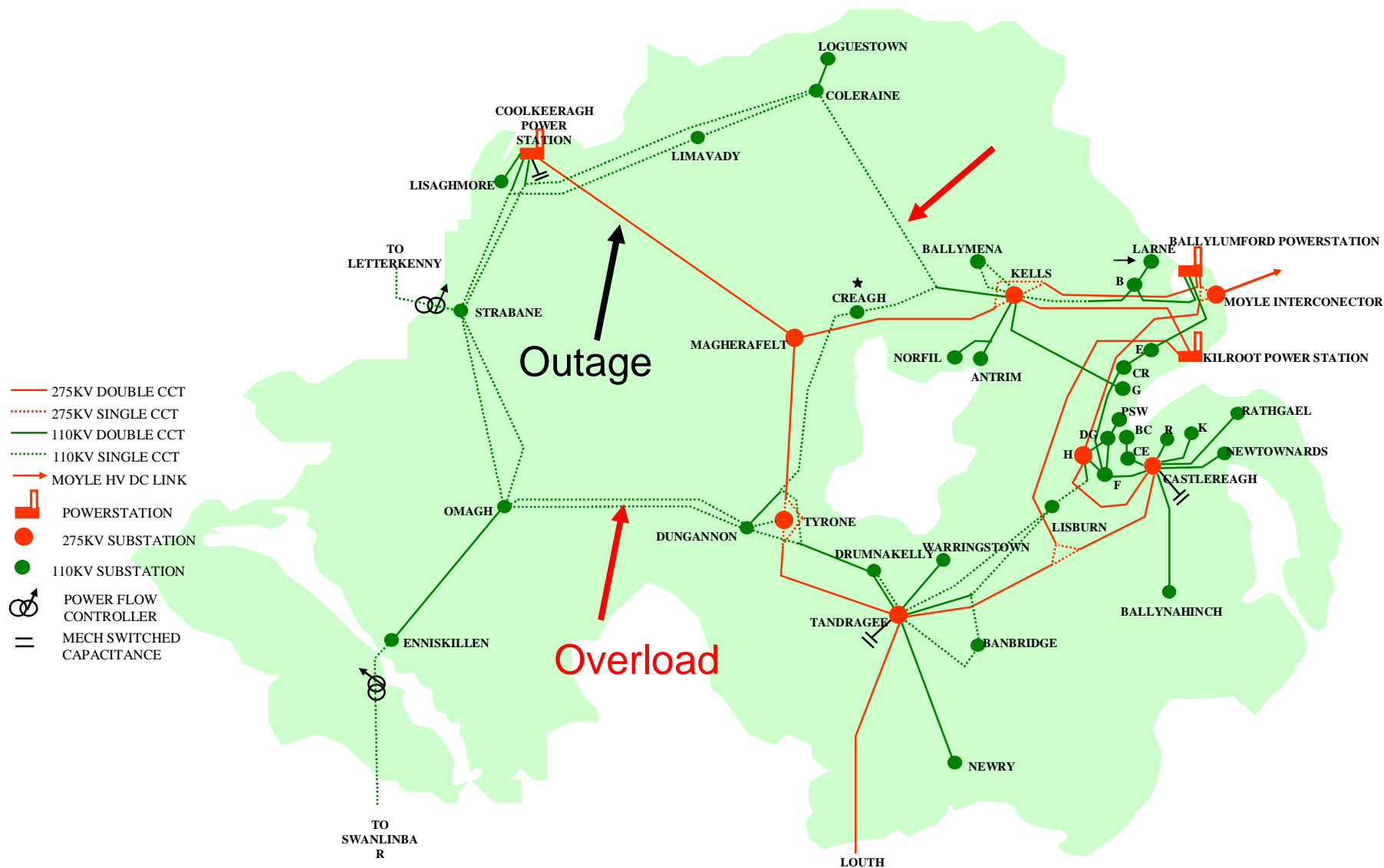


Last Updated
25 June 2007

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TRANSMISSION NETWORK with more than 350MW of wind



Assuming high wind in North West at low load time and
Coolkeeragh run back scheme employed

Other outages

- Dungannon Drumnakelly 110kV
- Tamnamore 275/110kV transformer

Up to 21 days per year required for
maintenance and trip combination

NIE – Way forward

- Pre and post fault constraints
 - Special Protection Schemes
- Dynamic Line Rating
- New build - 110kV and higher

Post-fault Special Protection Scheme 1

- Operates for overload detected on Dungannon Omagh circuits
- Runback signal to controlled windfarms to relieve overload
- Complex and expensive
- Limit to windfarm capacity connected due to spinning reserve (300MW)

Post-fault Special Protection Scheme 2

- Operates for loss of Coolkeeragh Magherafelt 275kV double circuit
- Runback signal to connected windfarms to relieve overload on Coleraine Kells circuit
- Simple and inexpensive
- Limit to windfarm capacity connected due to spinning reserve

Present position

- No capacity left for post-fault constraints in North west of network
- Pre-fault constraints to be considered. This involves requiring zero or reduced wind farm output in case a fault occurs. It is likely to be applied below a certain network loading level.
- This could be at least all-summer.

Dynamic Line Rating Project

- Monitoring wind and temperature on conductor on Dungannon Omagh 110kV circuits to calculate actual rating when the wind is blowing
- Wind quiet areas may be replaced with higher rated conductor or higher poles
- Extend to Dungannon Drumnakelly circuits and Coleraine Kells circuit
- Early measurements to be known March 08.
- At least full year of data required for reliance on dynamic rating

Future

- Consider re-conductoring Dungannon Omagh 110

But

- Difficult to get outages for work and expensive
- Consider new 110kV circuit between Dungannon and Omagh connecting windfarms between substations – potential clusters.
- Consider 275kV station near Omagh and 275kV circuit between Dungannon and Omagh

Both of these solutions are

- Expensive
- Long lead time (> 5years)

Future

But what are the system operational issues that need to be addressed to enable higher levels of wind penetration to be facilitated?