ITC Programme vs Constraints Modelling

Based on the planned transmission network rollout, EirGrid ran the ITC Programme to identify the expected firm transmission capacity available to each of the eligible Gate 3 projects for each year from 2010 to 2025. Connected and committed generation, both conventional and renewable, processed prior to the Gate 3 direction (for example, Gate 1 and Gate 2 projects in the case of renewable projects) are assumed to have rights to any firm transmission capacity on the network ahead of Gate 3 projects and this is reflected in the network models used for the Gate 3 Firm Access Quantity (FAQ) analysis. The FAQ analysis in any given year involves the assessment of the transmission network's firm access capability during three distinct load scenarios, winter peak, summer peak and summer valley.

In contrast, the constraints model uses the methodology of production cost modelling to assess the 'physical' levels of curtailment and transmission constraint that generators might expect to experience in the period from 2011 through 2022. For every hour of each study year, the model uses optimisation algorithms to commit and dispatch generators with the objective of minimising the cost of generating power to meet demand while satisfying all operational and security constraints. The commitment and dispatch is governed by a set of operational rules to ensure power system security as well as a set of draft, high-level dispatch principles that were provided to EirGrid by the CER. Reductions in wind generation output relative to the theoretical unconstrained wind energy available are split into reductions due to curtailment and reductions due to transmission constraint by a post-processing calculation. However, there are times when generation reduction at a node can be due to both curtailment and constraint. In this case, our methodology allocates reductions to curtailment. As a result, a low reported level of transmission constraint for a node does not always mean that there are no network limitations affecting it, as output reductions may be reported as curtailment.

Importantly, the draft dispatch rules provided by the CER and used in the constraints model do not take account of access rights. This is also consistent with current dispatch practice. As a consequence, all wind generators at a node share equally in the effect of curtailment/constraint affecting that node no matter whether they are pre-Gate 2, Gate 2 or Gate 3 or whether or not they have firm access. Depending on the market rules (currently being consulted on as part of the 'Principles of Dispatch…' consultation), the Firm Access Quantities derived using the ITC model may be used to determine the level of compensation that a generator would receive for the curtailment/constraint experienced (this is not examined in the constraints analysis).