

19th November 2009

Our Ref: 39043

Mr. John Leahy
Commercial & Regulation
EirGrid
The Oval
160 Shelbourne Road
Ballsbridge
Dublin 4

Re. Commission Direction to EirGrid to Offer Connection to Acres

Dear John,

I refer to EirGrid's correspondence to the Commission of 1st May 2009 in which EirGrid referred to the Commission a generator applicant, Acres, which requested that it be processed for connection outside of the Group Processing Approach (GPA). EirGrid referred the Acres request to the Commission in accordance with the Commission's direction CER/05/049, given that it has the potential to impact on plant being processed under the GPA. There has since been follow-up correspondence on this matter between the Commission and EirGrid as detailed below.

As set in CER/05/049, this request has been considered by the Commission on a case-by-case basis, taking account of the public/system benefits from the project and the potential impacts that connection "fast-tracking" it may have on prior connection applicants¹.

The Commission has considered the public/system merits and impacts of the Acres application and now sets out a decision on the matter as follows.

Background

Acres submitted its connection application to EirGrid on 17th December 2008. We understand from EirGrid that the application is for a "hybrid" generating plant, consisting of a 17.5 MW wind farm project combined with a 2 X 9 MW motor-generator set, along with various pieces of "back-up" equipment (see later), for a single site in Co. Donegal.

A meeting was held between the Commission, EirGrid and Acres in June to discuss the high-level system benefits that the project could bring to bear if it were connected. On 26th June the Commission requested EirGrid to engage with Acres to ascertain whether its detailed plans could likely provide the "Research, Development & Demonstration (R, D & D)" system benefits that it alluded to. A report on the matter was accordingly issued from EirGrid

¹ This request pre-dates the recent Commission decision on the policy for bringing forward non-GPA renewable connection applicants in CER/09/099 so it has not been expressly considered in that context; however it does not contradict any principles in that decision.

to the Commission in late September, along with follow-up responses in October following further Commission queries.

Public / System Benefits from Acres

EirGrid has informed the Commission that the project's central concept of using a 17.5 MW wind farm connected to a 2 X 9 MW motor-generator set means that, from a power system perspective, it would act as a synchronous rather than as an asynchronous generator (as with a typical wind farm). EirGrid has stated that this provides synchronising torque and system inertia, thereby acting as "glue" that keeps generators and the system together following a fault - known as fault ride-through. EirGrid considers it likely that there could be a shortage of this "glue" in the future as asynchronous wind farm connections increase. However EirGrid has said that it will only be able to ascertain the extent to which projects such as this provide a viable long-term system solution to the potential shortage of "system glue" after one is connected and has demonstrated workability. Therefore the project's key contribution is as an R, D & D project in assisting in the management of a system with higher wind penetration. The project can also, as a synchronous generator, provide reactive power capability which could be of localised benefit in Donegal as more wind farms connect.

In addition to the wind farm and motor-generator set, Acres has proposed that a "back-up facility" will be provided in phases as follows:

1. In the first phase 17.5 MW of diesel generators converted to run on Dimethyl Ether (DME), which Acres says is a low carbon fuel, will be connected to the motor-generators. This is expected to be complete within 2 years of a connection offer;
2. In the second phase, de-clutchable DME-fuelled turbines will be connected to the motor-generator set and the DME diesel generators will be removed. This requires a further 18 months. A flow battery storage pack will also be connected directly to the wind farm. It is expected that this would happen at the same time that the DME-fuelled turbines are introduced (so there will be two "back-ups" to wind). The full project should therefore be running circa 3.5 years after receiving an offer.

EirGrid has stated that the fact that the wind farm/motor-generator set is to be "backed up" means that the synchronous output benefit is further enhanced, as without such back-up the benefits of synchronous output would be more intermittent, being completely dependent on the wind. EirGrid has also referred to how the flow battery concept provides particular R, D & D benefits as, unlike with a diesel generator, it would provide for synchronous output from either wind or a battery with no fuel being used.

Finally, there is a general network planning/development cost efficiency benefit arising from a wind project which includes such back-up ability. This is because there would be a variable (wind) and non-variable power source using the same network infrastructure - with a higher load factor on the connection asset - rather separate projects using different connection lines.

Impacts on Other Applicants

There are about 3,500 MW of wind and conventional projects ahead of Acres in the connection queue and in the current Gate 3 ITC Programme which would likely interact with it (for scheduled firm capacity). There are also about 1,500 MW of such applicants ahead of it in the connection queue which are *not* in Gate 3, i.e. they would be in Gate 4 and beyond. Bringing Acres ahead of these could, among other things, impact on their scheduled firm connection dates (given the scarce nature of transmission capacity) and it could also impact on the constraint levels of non-firm plant connected in the area, including Gate 3 plant². If Acres were brought ahead of Gate 3 applicants, it could also delay the timing of the Gate 3 offer programme due to a required re-running of the ITC Programme.

The Commission believes that bringing Acres ahead of Gate 3 applicants would be disproportionate to the benefits of doing so, given that this would not only potentially delay Gate 3 scheduled firm connection dates but also the Gate 3 offer programme.

Direction to EirGrid

According to EirGrid, Acres provides a rare system benefit as an R, D & D project, by using asynchronous wind generators, “backed-up” and ultimately with a battery store, to provide synchronous output. Through this EirGrid can learn whether such projects could/should be more widely applied in the future to meet the system challenges of increased wind penetration. The Commission believes that there is strong merit in bring forward this application for an offer in view of this EirGrid advice, the case specific nature of the application, the system R, D & D benefits it can provide and the Commission’s statutory responsibility to encourage research and development into methods of using renewable forms of energy.

Accordingly, and taking account of the impacts of bringing forward the project for connection, the Commission hereby directs EirGrid, pursuant to section 34 (1) of the Electricity Regulation Act, 1999, to issue a connection offer to Acres. To provide for a proportionate impact on prior connection applicants, this is on the basis that it would not negatively impact materially on:

- The scheduled firm connection dates of Gate 3 renewable projects and conventional projects eligible for an offer with the Gate;
- The Gate 3 offer programme; and,
- The shallow connection costs for local Gate 3 generation projects³.

These criteria should in any event provide for a non-firm connection offer issuing to Acres in the coming months. Furthermore, the project should be assessed over the next month for potential inclusion in the Gate 3 ITC Programme, using its 17th December 2008 application

² This depends on the SEM dispatch rule set which is currently under consideration.

³ If, after the system operators have assessed at a high level the local shallow method analysis for Gate 3 generators in Donegal, it turns out that Acres does significantly increase shallow connection costs for other generators, then the system operator will inform the Commission and it will make a decision on the issue at that stage.



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received date (i.e. it is not brought ahead of Gate 3 applicants in the ITC Programme). Based on this assessment, if it is not expected to materially impact on other Gate 3 projects' scheduled firm capacity dates or the Gate 3 offer programme, it should also be issued a firm offer along with other Gate 3 projects in Donegal. If Acres does materially impact, then it should be included in application date order for determination of scheduled firm capacity - and a subsequent firm offer - in the next running of the ITC Programme.

In order to maximise the R, D & D benefits from the project, any offer to Acres is also on condition that it agrees to provide EirGrid the following:

- The wind "back-up" facilities referred to above;
- Access to disturbance recorder information which would need to be installed on site providing voltage, current waveform information, etc. This would help analyse the true capability of the set;
- Metered output data, both active and reactive, on a 15 minute basis; and,
- Sufficient testing rights and access.

Please correspond with Acres over the next week to inform it of the details surrounding this matter.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Andrew Ebrill', written over a horizontal line.

Andrew Ebrill
Manager, Electricity Transmission

CC: Cathy Mannion, Director, Electricity Networks and Retail, CER;
Commissioners Michael G. Tutty and Dermot Nolan, CER; and,
Dan Hannevig, Acres.