13th Nov 2013

Attention: Ms Claire Collins

Energy Efficiency and Affordability Division
Department of communications, energy and Natural Resources
29-31 Adelaide Road
Dublin 2


Dear Claire,


Aughinish have operated a large scale 160MW High Efficiency Combined Heat and Power (“HE-CHP”) plant at its site in Askeaton, County Limerick since 2006 under the CAP05 Capacity Auction. Since commercial operation the HE-CHP has played a major role in contributing to Ireland’s energy efficiency targets and reduction in CO2 emissions accounting for an average saving of around 330,000 tonnes per annum1.

Background

The owners of Aughinish invested over €110,000,000 installing a 160 MW high-efficiency CHP at the alumina manufacturing facility in County Limerick, an investment which has significantly decarbonised its production process.

The alumina manufacturing facility, which operates on a continuous 24-hour, 364 days-a-year basis, employing circa.460 full time highly skilled workers on site, has a constant demand for high quality steam. The HE-CHP provides that steam and is therefore an integral and indispensable component of the facility and its continued operation. Prior to installing the HE-CHP, steam for the alumina

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1 Aughinish’s data and SEAI reference data for CO2 emissions

Aughinish Island, Askeaton, Co Limerick – Ireland – Tel. +353 (0)61 604000 – Fax +353(0)61 604242 – www.rusal.com
DIRECTORS: K Bezzubov, R Bogaudinov, D A Clancy, D Goldberg, A Rakita, O Stasev, K Strunnikov
facility was exclusively generated by heavy fuel oil boilers. Aughinish recently invested additional millions in further decarbonising its production process by converting a number of its other processes from heavy fuel oil to gas. Such investments, which build on and leverage the HE-CHP, will bring additional energy efficiencies.

In the event that the HE-CHP could not run due to network constraints and export the power it produces to the grid, then the ability of the alumina plant to operate would be fundamentally restricted. Turning off the HE-CHP would also have an immediate impact on the national CO2 emission levels as a significant amount of CO2 would have to be produced from other less efficient sources. The ability therefore of the HE-CHP to export its power to the grid is critical not alone to the operational running of the alumina manufacturing facility (meeting its continuous heat demand) but also to Ireland achieving its emission targets.

It is also important to note, the embedded HE-CHP at Aughinish has been technically certified. It has satisfied the high-efficiency tests specifically set by the Commission for Energy Regulation as producing high efficiency combined heat and power.

The Directive and High Efficiency CHP

The interdependent nature of a HE-CHP and its heat load/host is a well understood feature of cogeneration technology and HE-CHP is recognised and accepted within the EU as having a major contribution to helping achieve the efficiency targets. The Directive acknowledges the definite role that HE-CHP generation has to play in delivering the EU’s headline 20% energy efficiency targets by 2020 and further improvements beyond 2020.

Aughinish Response

Aughinish’s response to the consultation focuses on the current electricity market and operating regime that has the potential to hinder the HE-CHP at Aughinish from contributing fully to the efficient supply and use of energy as required under the Directive through the risk of inefficient curtailment of the HE-CHP plant during periods of excess capacity.

Aughinish contend that the implementation of the Directive must remove this barrier to HE-CHP as this is a specific requirement under Article 15 of the Directive (guaranteed access and dispatch). This could be achieved by ensuring HE-CHP is used to maintain system security in conjunction with renewable generation as part of an energy efficiency strategy. In our response below we comment on how an integrated approach recognising the adaptability and heat demands of the HE-CHP plant operating within a Trading Site could be used to offer balancing services and other operational services to support and complement increasing renewable energy generation.

The consultation also considers other demand side measures for implementing the Directive and Aughinish has submitted comments on Articles 6, 7, 8 and 14 as part of our support for the Directive.

Article 6 – Purchasing by Public Bodies
Article 6 obliges Member States to ensure that central governments purchase only products, services and buildings with high energy-efficiency performance. Although the Directive does not introduce a new approach to EU rules on energy efficiency procurement but only extends the scope to additional items, the consultation foresees a number of steps in implementing Article 6 with a timeline of 5 June 2014 for governments to purchase high efficiency products services and buildings.

The consultation question 6.1 as stated, “How can we further incorporate energy efficiency principles into public procurement?” seeks other additional options on how these principles may be applied.

It is our view that a requirement to purchase low carbon produced electricity from suppliers should be incorporated as part of the public procurement procedural rules and be part of the Better Energy programme for Energy Suppliers and the Public Sector Programme for strategic energy management as proposed under the NEEAPII².

This approach would also be consistent with the statement released by EU Energy Commissioner Günther Oettinger on 7th November 2013 when he said: "The ultimate aim of the market is to deliver secure and affordable energy for our citizens and business. Public intervention must support these objectives. It needs to be cost-efficient and be adapted to changing circumstances." This statement was given as part of the discussion around the European Commission Memo³ issued on 5th November 2013 as part of the guidelines on public interventions in electricity by Member States and how if they are not carefully designed they can severely distort the functioning of the market and lead to higher energy prices both for households and businesses.

By considering this option renewables would have an increased consumer demand for their product, it would be an efficient use of the network and system balancing services and it would be an additional option than just support from government intervention. We believe the Department should consider this approach further.

**Article 7 – Energy efficiency obligation schemes**

Aughinish supports the target proposed by the Minister of an annual 550 GW-hr (63 MW) energy saving target on energy suppliers. Moreover, Aughinish, by utilising energy management systems, has constantly improved the manufacturing plants efficiencies. Aughinish is currently the most energy efficient alumina refinery in Europe. A key enabler for this is the continuous operation of the HE-CHP.

Aughinish operates its HE-CHP plant within a Trading Site which effectively means that the plant is dispatched on a gross basis i.e. 160MW to the network but settled on a net basis. This means settlement for energy produced reflects the demand consumption of the alumina plant and actual electricity exported from the site to the network. As part of this arrangement, Aughinish operates as

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an electricity supplier to supply its own on-site demand. As a result, the large scale nature of the HE-CHP at Aughinish alone reduces approximately 2% of transmission losses of its demand load when operating the plant (circ 6.3GWh (0.8MW @ 90% utilisation).

The best ever annual total steam efficiency achieved at Aughinish was 5.86 GJ/t in 2008, whilst the best ever quarterly performance was 5.59 GJ/t in Q3 2012. All indications are that Aughinish can consistently achieve 5.60 GJ/t provided there is stable alumina plant operation and the continuous heat demand is satisfied from high efficiency cogeneration. This is a reduction of 4.4% and the reduced raw energy is 15 MW or almost 25% of the Government target. With the provision of investment incentives Aughinish could probably seek to achieve 5.35 GJ/t or a saving of 29 MW (based on 2Mt production).

**Article 8 – Energy audits and energy management systems**

Aughinish acknowledges that high quality energy audits are essential in order to identify areas where improved efficiency is possible. Aughinish has a proven track record in this regard and fully supports the proposals in the Directive. In 2014, Aughinish will achieve certification to the ISO50001 management system. Aughinish is also a long term participant in LIEN and the Energy Agreements Program.

**Article 14 – Promotion of efficiency in heating and cooling**

Aughinish notes the Directive requires that Ireland must develop strategies that may be adopted to 2020 and 2030 in order to realise the potential for HE-CHP to meet demand and that any support for HE-CHP must be predicated on the efficient production of electricity and the useful heat.

As part of this comprehensive assessment and strategy the biggest issue regarding barriers to development of HE-CHP in Ireland is the failure of the regulatory authority to recognise the importance of heat demand to the host as part of the energy mix when considering electricity dispatch.

As mentioned, the Aughinish plant operates within a Trading Site definition under the Trading & Settlement Code in the Single Electricity Market (“SEM”). Formal recognition of the “demand” side requirements (both electricity and heat) from an operational perspective would remove a significant barrier to efficient HE-CHP operation and ultimately efficient dispatch of generation plant operating within the SEM.

As stated above, Aughinish recently invested additional millions in further decarbonising its production process by converting a number of its other processes from heavy fuel oil to gas. Under different circumstances, Aughinish may have considered installing an additional HE-CHP unit at the site but due to the regulatory uncertainty in operating HE-CHP under the SEM, this is not considered an attractive option at this time. The Department should recognise these barriers to HE-CHP investment as part of the implementation of the Directive.
Article 15 – Energy transformation, transmission and distribution

Aughinish welcomes the focus on efficient operation of electricity and gas networks and the new requirement on energy efficiency and criteria to be considered. We see this as integral to the secure operation of the network and bolstering the contribution that HE-CHP can make in ensuring that this requirement is delivered.

The European Commission Guidelines on State Intervention for Renewables raised concerns about back-up capacities for renewable energy when there is no sun or wind as electricity must still be produced in sufficient quantities to deliver energy to consumers and keep the electricity grid stable. It recognises that with the increase in renewable energy production it is a challenge to organise and finance back-up-capacities of power plants which are flexible enough to be turned on and off whenever needed. The Communication gives guidance on how these back-up capacities can be designed in a cost-efficient way. The effect of these guidelines in conjunction with Article 15 means that HE-CHP offering balancing and other operational services can be effective back up capacity if operated efficiently while recognising the heat demands of the host. Article 15(2) requires the authorities to take into account the need to ensure continuity in heat demand when dispatching generating installations. HE-CHP must therefore continue to benefit from the priority dispatch rights provided for under the Directive in order to be effective.

Currently, although HE-CHP plant has priority dispatch status, the HE-CHP plant can be dispatched down or even off under the existing rules under SEM-11-062. This is in stark contrast to the efficiency principles of Article 15 of the Directive. High efficient cogeneration combined with variable renewable energy generation is the most carbon friendly generation mix that can maintain the grid in a reliable and safe manner. Rather than hamper variable renewable energy generation, the natural benefits of HE-CHP could be used in a complimentary way.

This highly efficient generation mix is also hampered by the priority dispatch of power supplied through the Interconnector. With no regard for national emission targets this constraint upon the transmission system operator is perverse with respect to the Energy Efficiently Directive. This is an incentive which is detrimental to the overall efficiency of generation and incurs additional operating costs which impacts on the competitiveness of the Irish economy.

In periods of excess capacity we believe that the Aughinish HE-CHP can be adaptable and predictable in its operation. The Trading Site status in conjunction with balancing services and demand side management should be utilised by the System Operators before less efficient generators.

When the Department is meeting with the CER and Eirgrid on how best to give effect to the provision of Article 15 and the guidelines laid out in the Communication, Aughinish would wish to
participate in the implementation oversight group with specific regards to the discussions around balancing services and the treatment of HE-CHP as part of a Trading Site operation taking into consideration electricity and heat demand response.

We look forward to further discussions with the Department, CER, and Eirgrid on these important issues.

Yours faithfully,

Sent via e-mail and accordingly not signed.

John G Ryan
Energy Manager