1. Annex A – Generator Submissions – Factsheets

1.1. ESB – Moneypoint 1, 2 and 3 and Poolbeg

Question 1

The Moneypoint units fire on coal and also use gasoil and heavy fuel oil to start up. The Poolbeg unit fires and starts on gas.

VO&M, Heat rates, Start fuel and No-load fuel
Justification: All these are taken from previous experience of unit performance, and are all in alignment with 2002 review by PB Power on behalf of CER. Start fuel is explicitly quantified for each type of start.

The Poolbeg unit must operate in OCGT mode for a deliberately longer-than-optimal part of its start-up process in order to meet with environmental requirements.

Special notes
Moneypoint units all require gasoil and/or HFO burn in starting from cold/warm/hot starts. A static split of 32% oil/68% coal is assumed as an input to the valuation of starts. This is based on an average of 27/34/36% for cold/warm/hot respectively.

Question 2

P/Q Pairs (€/MWh)
This is built from the fuel requirement, heat rates and carbon rates and prices:

[Bid price (€/MWh)] = [Heat rate] x ([Forward fuel price* + adders**] + [CO_2 Emission Rate x CO_2 Price])

Start-Up Cost (€/Start)

This is built as the sum of two components:

1.   Fuel. This is:

 [Fixed fuel requirement] x ([Forward fuel price* + adders**] + [CO_2 Emission Rate x CO_2 Price])

2.   VO&M. This is a:

[Fixed euro value]

The [Fixed fuel requirement] takes distinct separate values for each of cold/warm/hot states.

No-Load Cost (€/hr)

This is built similarly, based purely on physical fuel and carbon requirements:

[No-Load Cost] = [Fixed fuel req.ment] x ([Forward fuel price* + adders**] + [CO_2 Emission Rate x CO_2 Price])

Comparison to KEMA

Example COD build-ups align well with KEMA validation data.

*The [Forward fuel price] is based on the delay between ordering and delivery of fuel. This is the quarterly index price valid 4 and 2 months

hence for coal and oil respectively. For pipeline gas the [Forward fuel price] is the day-ahead gas index price.

**The adders are for excise duty, transport charges and port charges. These were detailed in €/tonne.

Question 3

No further adjustments

Key Points on ESB COD

- All COD (P/Q Pairs, Start-Up Cost and No-Load Cost) is built 'ground-up' from fuel cost, carbon cost and VOM
- VOM is built into Start-Up Cost
- Start-up process at Moneypoint requires a 32% by-energy contribution from oil (instead of coal)
- No adjustment is made for repeated-start risk

1.2. ESBI -Coolkeeragh

Question 1

Start Fuel values are as per KEMA validation, but no additional justification is given.

Heat Rate values are based on actual measurements from plant.

No Load fuel is an estimated heat consumption of GT.

VOM P/Q Pairs take account for oil, water, chemicals, gases, etc.

VOM No-Load based on GT customer service agreement (indexed per fired hour).

Fixed Start Cost includes additional maintenance and balancing costs along with loss in available revenue due to forced outages associated with GT starts.

Opportunity Cost includes the average outage cost of extra blade inspections due to two-shifting, along with the associated costs of replacing the blades.

Special notes

VOM applied in both No-load, Start-up and P/Q pairs COD.

Fixed Start Cost includes loss in available due to forced outages associated with GT starts along with other VOM costs associated with start-up

1st P/Q pair tranche is reduced by an opportunity cost of avoiding two-shifting.

Question 2

P/Q Pairs (€/MWh)

This is built from the heat rates, VOM and carbon rates and fuel prices:

[Bid price (£/MWh)]

=

[Heat rate] x ([Spot fuel price* + adders**] + [CO2 Emission Rate x CO2 Price])

+

[VOM]

-

[Opportunity costs***]

Start-Up Cost (€/Start)

This is built from the fuel requirement, fixed start cost and carbon rates and fuel prices:

[Start Cost]
=
[Fixed fuel requirement] x ([Spot fuel price* + adders**] + [CO2 Emission Rate x CO2 Price])
+
[Fixed Start Costs]

The [Fixed fuel requirement] takes distinct separate values for each of cold/warm/hot states.

No-Load Cost (€/hr)
[No-Load Cost] = [Fixed fuel requirement] x ([Spot fuel price* + adders**] + [CO2 Emission Rate x CO2 Price]) + [VOM No-load]

Question 3

Coolkeeragh's response highlights that it is particularly vulnerable to cycling operations; hence they have included an opportunity cost in the first tranche of their P/Q pairs (up to minimum stable generation).

This opportunity cost is based on two elements:
   a. Outage cost per MWh for blade inspection caused by repeated cycling
   b. Blade replacement cost per MWh

Item (a) above is evaluated by subtracting the costs saved from not burning gas and costs saved on carbon from the lost revenue due to a blade inspection.

Key Points on ESBI COD

- COD is built 'ground-up' from fuel cost and VOM.
- VOM is built into Start-Up Cost, No Load Costs & P/Q Pairs.
- Fixed Start Cost includes loss in available revenue due to increased forced outages associated with GT starts, along with VOM elements.
- Opportunity cost included in first P/Q tranche to avoid two shifting. This is subtracted from 1st tranche of P/Q pairs, and can reduce the offer price significantly.
- This opportunity cost includes the lost revenue of an additional blade inspection.