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Engineering, Economics and Regulation of the Electric Power Sector

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Case study for recitation (March 19, 2010)

Bidding code of good practice to prevent the exercise of market power¹

Start by reading the Bidding Code of Practice (BCoP) that has to be followed by the agents in the Single Electricity Market (SEM) of Ireland. (See the reading material 1 below; concentrate your reading on the Annex of the document, which is the actual code).

Assume now a mostly thermal electric power system, with the following market design:

- Complex bids: up to 5 (Q, P) pairs per generating unit and per hour, plus start-up costs.
- Consumers pay to generators on the basis of the system marginal energy price. The system marginal price of energy at any given hour is computed as the sum of two terms:
 - The price P (€/MWh) of the last (i.e. more expensive) (Q, P) pair that has been used to meet the market demand.
 - The sum of the costs (€) of all start-ups that have taken place during that hour.

The system is such that the minimum cost dispatch dictates that several thermal units will have to shut down during the night and early morning, when demand is lowest, and then they will have to start-up again when demand picks up later during the morning. Now assume the following situations:

- SITUATION A: In order to avoid this two-shift regime, some generators modify their bids, either by reducing the value of P in their first (Q, P) pair or by increasing the declared start-up cost. Do you think that this is in violation of the BCoP?
- SITUATION B: Some generators realize that the two-shift regime increases significantly their maintenance costs. Assume, for instance, that a forced outage of three days of duration happens approximately after 25 start-ups. Do you think that including these extra costs in the bids somehow (by the way, how do you suggest to do it?) would be in violation of the BCoP?
- SITUATION C: Assume now that in the considered market there is a capacity payment mechanism to remunerate generators with a daily amount whenever the generator is available. The same generators as in Situation B consider that a regime of two shifts will increase the chance of being unavailable and losing

¹ Based on similar situations in the Single Electricity Market (SEM) of Ireland, where the existing Bidding Code of Practice had to be interpreted.

the capacity payment remuneration. Again, do you think that including these extra costs in the bids somehow (by the way, how do you suggest to do it?) would be in violation of the BCoP?

- SITUATION D: Assume now that in the same considered market one generator includes in its energy bids (for the spot market of the next day) the estimated foregone (i.e., lost or not received) profit for the generator on the following day if, when trying to start-up the plant, it fails to function and it has to be down for one entire day. This foregone profit is computed as the profit that would not be obtained on the next day (if the unit fails when starting up) multiplied by the probability that the generator fails to start up.

Reading material

- Reading material: (read at least the Annex of this document, which is the current Code of good practice in the Irish Single Electricity Market) "*The bidding code of practice. A response and decision paper*", July 2007. It is published in the website of the All Island Project:
<http://www.allislandproject.org/en/homepage.aspx>

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