



DS3 System Services Auction Design Industry Forum

Principles for Efficient Procurement of Ancillary Services

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Auctions are not “one size fits all”



- TSOs internationally procure system services through a mix of tariff-based schemes, tenders and simple auction formats.
- Choice between auction formats is a trade-off between encouraging *cost-based bidding* and offering *rewards for winning*.
- An efficient auction design depends on:
 - Degree of competition;
 - System needs;
 - Incentives to participate; and
 - Incentives to deliver.



Any efficient system for procuring DS3 services in Ireland will require careful design and may (not) include auctions for some services

Auctions will give inefficient outcomes where competition is lacking



- Plan A of the DS3 consultation, the main proposal, is to use auctions instead of tariffs.
- Auctions are beneficial in competitive markets, but not otherwise
- There are lots of constraints on the provision of ancillary services that limit the range of suppliers and reduce competition
- In some – or many – cases, competition will be impossible, auctions will be inefficient and the I-SEM needs a Plan B
 - Some services may have a only few providers
 - Combinatorial auctions are particularly open to abuse in non-competitive conditions
- It is short-sighted to propose auctions for all DS3 products, when it can be foreseen that some DS3 markets will not support competition



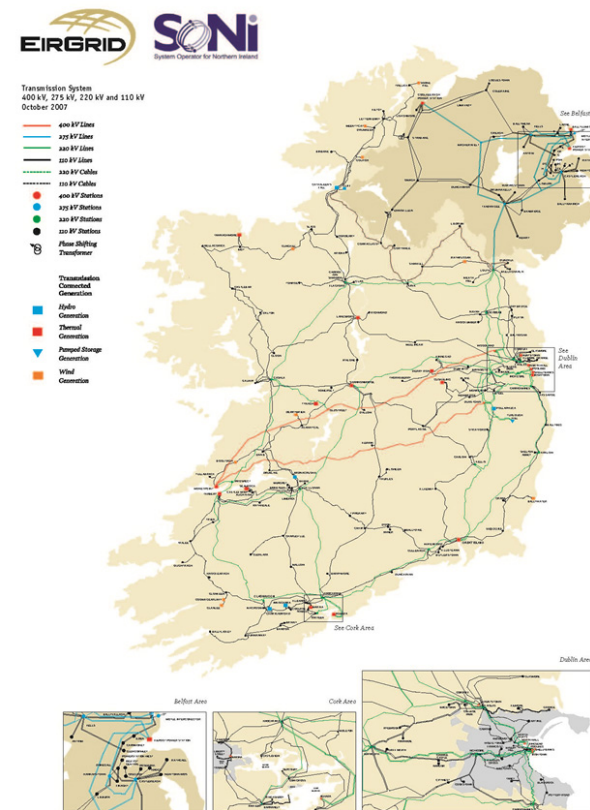
An efficient set of proposals for DS3 procurement mechanisms would cater for *both* competitive *and* non-competitive conditions

An auction will only provide cost-reflective signals where demand reflects system needs



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- DotEcon argues that for auctions to encourage cost-reflective bidding, there must be “meaningful difference” between winners and losers (i.e. there must be some profitable opportunities open to winners that are not open to losers).
- Ignoring locational constraints in the DS3 auction would likely result in an infeasible pattern of procurement...
- ... and in practice, the TSO may come to rely on “losers” from the auction.
- To avoid discrimination and inefficient procurement the TSO must:
 - Truthfully reveal system needs; and
 - Have incentives to refrain from obtaining ancillary services through mandated Grid Code actions from losers.



The TSO should run local (rather than national) auctions for system services where system needs are local

Winners must earn revenues for providing system services that provide incentives to participate



- The “fixed commitment model” requires market participants to forecast their availability.
- Transfer of risk to suppliers of system services may:
 - Deter participation; and/or
 - Result in high costs of procurement.
- The “Contingent Commitment Model” gives constrained-on generators no incentive to provide any ancillary service with a cost > 0 (see RHS panel).

DotEcon’s Contingent Commitment Model

- **Fully-loaded/part-loaded generators:**
 - DEC at “energy price”.
- **Non-runners (out-of-merit plant) – option A:**
 - INC at energy price.
 - Provider loses money wherever ancillary services payment $<$ cost of ancillary services *plus* energy market losses.
- **Non-runners (out-of-merit plant) – option B:**
 - INC at the generator’s own incremental cost (offer price), less ancillary service payments.
 - Provider loses money if cost of ancillary services > 0 .

Alternative product definitions would allow winners to earn revenues for providing system services e.g. requiring an INC at incremental costs for out of merit plant

Combinatorial auctions plus uniform pricing will discourage delivery of some services



- DotEcon proposes a combinatorial auction (a common method in spectrum auctions).
 - In combinatorial auctions, bids can reflect costs (or valuations), even where costs are only defined for bundles of services .
 - However, unlike spectrum services, some DS3 services have high marginal costs (as well as fixed costs)
- DotEcon proposes to set uniform prices for individual services within bundled packages, just below the prices in losing bids.
- Uniform prices need not cover the costs of providing *each service*, so even the winners will not want to deliver some services (see right-hand panel).

Uniform clearing prices – Simplified example

	Cost Service A	Cost Service B	Bid
Bidder 1	60	40	100
Bidder 2	40	60	100
Bidder 3	55		55
Bidder 4		55	55

- **Demand:** 2 units of A and B
- **Winners:** Bidder 1 and Bidder 2
- **Price:** €54/unit (from Bidders 3 and 4)
- **Problem:** Price does not cover cost of providing service A for Bidder 1, or service B for Bidder 2

Possible solutions include *separate* auctions for each service or setting fixed prices for *bundles* of services



An efficient auction would:

- Only be possible given *competition* for provision:
 - Abandon auctions for uncompetitive services; and
 - Prevent leverage of market power from one service to another.
- Have a target demand which reflects the need for system services:
 - Local needs would require local demand; and
 - TSO needs to have an incentive to reveal demand.
- Ensure all “winners” have a prospect of making positive profits from participating:
 - Contingent commitment model, option a, will only reward constrained-on generators when their ancillary services payment $>$ (negative) energy margin plus costs of system services.
 - Contingent commitment model, option b, does not reward constrained-on generators for providing system services at all.
- Result in prices for system services which provide incentives to deliver them, *ex post*:
 - Abandon *uniform prices for individual services* combined with *combinatorial bids*.

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