

Factors for consideration in planning new generation in Ireland

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Generation in ROI - 2005

- 6403 MW capacity – end of 2005 (Eirgrid quarterly report)
- Expected additions: CCGT about 800MW (Tynagh and Hunstown II) + wind about 1000 MW by 2012 (end of 2005- 640 MW)
- Wind farm applications totalling 2,813MW as at December 2005

Changing setting

- SEM (November 2007)
 - Northern Ireland capacity: 2100 MW – no expected changes
- Second phase of ETS (continuing variability of carbon emission prices)
- New Wales – ROI interconnector (after 2012)
- Increased demand
- Aging generation plants

Causes for concern

- Increase in wind needs to be backed up by conventional generation (Denny and O'Malley suggest that the maximum efficient amount of wind generation is 20%-30% of total installed capacity)
- No flexible generation committed to
- Move towards more gas
 - Price volatility
 - Security of supply

Simple comparison

- Market seems to deliver more baseload generation
- Would the system be better off with more CCGT or OCGT (peak plant)?
- Does the new Capacity Payment Mechanism in the All-Island Market reward one form more than the other?

Simulation conducted for 2010 based on optimal dispatch model

On the margin is it better to have:

- 1 CCGT – 400 MW
- 2 OCGTs – 200 MWs each

All-Island Market

Main revenue sources for generators:

- From the SMP price, in proportion to the amount generated by each generating plant
- From capacity payments

Capacity payments (not finalized):

- assigned to capacity that is available
 - all plants are assigned the same capacity payment per unit of installed capacity if they are available for the same amount of time

Comparison of costs and returns in All-Island Market

	2 OCGT (200 MW each)	1 CCGT (400 MW)
Operating costs (€ thousand) p. a.	39	110
Cost (€/MWh)	52	35
Capacity payments (€/kW) p.a.	50 - 100	50 - 100
Return on capital (%) p.a.	0 – 13.7	7 – 13.9
System operating cost p.a. (€ mill.)	1.23	1.21

Preliminary findings

- Market gives incentive for CCGTs
- System costs are lower with a marginal CCGT plant than with OCGTs
- The size of capacity payments does make a difference. The higher the capacity payments the higher the returns on OCGTs
 - Capital costs are lower

Caveats

- Model does not include start up and ramp up costs. How would this affect the analysis?
- Increase costs to the plants affecting both CCGT and OCGT
 - Since OCGT is more likely to cycle through shut-down and start up, this might push towards more market incentives for baseload generation
- Increase in the costs to the system from new baseload, given that it will be above older baseload plants in merit order \implies will have to shut down or cycle more often
- Model does not include ancillary services. How these are priced might change incentives

Conclusions

- Market seems to provide more incentives for baseload generation (especially CCGTs, producing relatively little pollution)
- Costs of increasing baseload generation capacity are not well analyzed
- Current capacity payment structure might give too many incentives to wind generation
 - 70% of all payments are ex-ante, so will get payment even with no wind



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