



**PRICE IMPACT UNDER THE SEM
FOR YEARS 2008 – 2013**

November 2006

Introduction

1. This short paper examines the price impact of moving into the Single Electricity Market. In doing so it projects SEM pool prices in 2008 through to 2013 and compares these (for the first three years) with the counterfactual generation wholesale price that would prevail in ROI and NI if the All Island Project did not proceed (the Annex details the methodology, key assumptions and price data).

Price Impact

2. On current fuel price projections, electricity prices in 2008 on average would rise by up to 0.9% in NI adding Euro 10 million to the electricity bill and by up to 3.0% in ROI, consistent with a total capacity payment of €687m, which is at the upper end of current estimates.
3. In 2009, the pool price begins to fall with entry of new plant and the “business as usual” price in NI begins to rise as the LTI3 gas contract ends. Consequently, prices in NI would fall by up to 0.9% and may also fall in ROI by up to 1.9%. However if capacity payments are set high then this may cause a slight increase in prices in ROI with a slight decrease still occurring in NI.
4. Prices fall further in 2010 (by up to 4.6% in ROI and 2.2% in NI) as further new entry of generation plant occurs. The direction in price movement is unambiguously downwards.

Medium Term

5. Price comparisons becomes increasingly unreliable moving beyond 2010. However it is still useful to look at the pool price projections alone. As further new entry occurs to replace older less efficient plant and to meet new

demand wholesale SEM generation prices continue to fall during the period from 2011 through to 2013 where prices finally settle at a level broadly equivalent to that of a new entrant.

METHODOLOGY

The jurisdictions of ROI and NI are treated as two separate customers respectively. The price comparators to the pool price are the Bulk Supply Tariff for NI and the Best Net Entrant/BPA transfer price for ROI. Fuel prices assumed are the latest forecast for 2008 by market analysts (see below). For the pool price calculation it is assumed that: the capacity payment mechanism fund is as currently projected; there is no new entry of plant until 2009; and the full cost of carbon is reflected in the pool price.

KEY ASSUMPTIONS**(a) Fuel**

The following are the current fuel price projections for 2008 onwards:

Gas: summer 40 p/therm (60 c/therm); winter 55 p/therm (82 c/therm)

Coal: £38.4 per tonne (Euro 57.32 per tonne)

HFO: £176.6 per tonne (Euro 263.2 per tonne)

Distillate: £321.0 per tonne (Euro 479.1 per tonne)

Carbon: £10.4 per tonne (Euro 15.45 per tonne)

Uplift payments for start up and no load costs for 2011 to 2013 are held constant at 2010 levels.

(b) Capacity

The Capacity Payment Mechanism pot is assumed to be between Euro 548 and 687 million consistent with fuel prices above with different technologies providing the range.

(c) Constraint Payments

Under SEM, the imperfections charge levy is assumed to equal Euro 95.1 million of which Power Procurement Business receives Euro 21.9 million in constrained off payments (at Kilroot/Ballylumford) which is passed back to NI customers. Constraint payments disappear in 2013 when the new interconnector is built.

(d) Price Comparators

For NI, the price comparator is the BST equivalent equal to the Bulk Supply Tariff projection for 2007/08 with additions for payments for reserve capacity currently recovered through the system support levy and an existing spill charge for renewables within the PSO levy - both costs to be recovered through the market post SEM (in total Euro 7.4/MWh). The BST has been calculated using the above fuel price projections. The value of free carbon allowances is assumed to be passed through to customers in the counterfactual (ie business as usual - no SEM pool case) and is reflected in the BST comparator.

LT13 gas burn in NI ends at 31 March 2009. Therefore only half the benefit of burning LT13 gas in winter is assumed for the 2009 NI price comparator. The full benefit of LT13 gas is worth Euro 5/MWh so the NI business as usual price comparator rises by Euro 2.5/MWh in 2009 and by Euro 5/MWh in 2010 when full loss of LT13 benefit occurs.

For ROI the price comparator is the BNE/BPA transfer price recalculated for 2008 using the above fuel price forecast. Again the value of free carbon allowances is assumed to be passed through to customers in the counterfactual/business as usual scenario and is reflected in the BNE/BPA comparator.

The all island SEM pool price facing suppliers (ie System Marginal Price (SMP) - as derived from the Plexos model including 100% of the cost of carbon - plus the Capacity Payment Mechanism (CPM) plus Constraint Payments.

It should be noted that the Plexos model has not been validated nor is the uplift calculation consistent with the current rules as outlined in the Trading and Settlement Code.

(e) Exposure to Pool Price under SEM

Under SEM in NI, the PSO levy ensures that NIE Power Procurement Business sets the price paid for by 75% of the market leaving 25% of NI demand potentially exposed to the SEM pool price. For ROI under SEM the market is 100% exposed to the SEM pool price (see footnote 1). Any increase (or decrease) in the NI/ROI electricity bill resulting from exposure to the pool price is assumed to be spread across all customers - the burden (or benefit) is equally shared.

(f) Capacity Plan

The following is assumed for new entry and exit of generating plant and represent additions and closures to/from the position in 2008:

- 2008 (which is 2007 with 3% increase in demand, and Huntstown 2 in for the full year) – no new entry of plant
- 2009: Growth 3% in demand per year, add 1 X 400 MW CCGT
- 2010: Growth 3% in demand per year, add 2 X 400 MW CCGT
- 2011: Growth 3% in demand per year add 800 MW of OCGT plus 2200MW of CCGT, Close Tarbert and Great Island and Ballylumford steam units

- 2012: Growth 3% in demand per year add 800 MW of OCGT plus 2200MW of CCGT, Close Tarbert and Great Island and Ballylumford steam units
- 2013: Growth 3% in demand per year add 800 MW of OCGT plus 2600MW of CCGT, Close Tarbert and Great Island and Ballylumford steam units

For example compared to the position at 2008 - by 2013 Tarbert, Great Island and Ballylumford's older steam units will have closed to be replaced by 800 MW of OCGT and 2,600 MW of CCGT (also is required to meet new demand at 3% per annum).

The capacity plant ensures that peak demand throughout the period from 2008 to 2013 remains between 70% to 75% of installed capacity (ie a margin over the peak of between 25% and 30% of installed capacity).

PRICE DATA FOR 2008

(1) SEM Pool Price

| Euro/MWh | ROI | NI |
|----------------------------------|-------------------|-------------------|
| POOL PRICE COMPONENTS: | | |
| (a) SMP | 67.81 | 67.81 |
| (b) CPM | 14.29 to 17.91 | 14.29 to 17.91 |
| (c) Constraint Payments | +2.64 | +2.64 |
| (d) Less PPB Constraint receipts | +0.00 | -2.38 |
| (e) SEM Pool Price | | |
| equals (a) + (b) + (c) – (d) | 84.74 to 88.36 | 82.36 to 85.98 |

(2) Business as Usual

| Euro/MWh | ROI | NI |
|---------------------------|------|------|
| PRICE COMPARATORS: | | |
| (f) BST Equivalent | - | 81.5 |
| (g) BNE/BPA Equivalent | 84.4 | - |

(3) Price Impact

| | | |
|--|-------------------|-------------------|
| PRICE IMPACT: | | |
| (h) Gross Percentage Rise In Electricity Price (compares (f) and (g) with (e)) | +0.3% to +3.0% | +0.7% to +3.7% |
| (i) Exposure to Pool price ¹ | 100% | 25% |

¹ It should be noted that the ROI customer is not strictly 100% exposed to the pool price but this figure has been used as a working assumption for the purposes of this paper. Currently in ROI there are a number of generators whose output is priced as part of the PSO process. Therefore the customer sees the PSO volumes at the PSO benchmark price rather than the pool price. Further work is required to ascertain exactly the level of exposure to prices but it is expected to be between 90% - 95 %.

| | ROI | NI |
|--|------------------|-------------------|
| (j) Net Increase in Electricity | | |
| Prices Percentage | | |
| Equals (h) times (i) | +0.3% to 3.0% | +0.2% to +0.9% |
| Net Increase in Electricity | | |
| Prices (Euro Million) | +9m to +107m | +2m to +10m |
| (see Footnote 1) | | |

PRICE DATA FOR 2009

(1) SEM Pool Price

| Euro/MWh | ROI | NI |
|----------------------------------|-------------------|-------------------|
| POOL PRICE COMPONENTS: | | |
| (a) SMP | 65.45 | 65.45 |
| (b) CPM | 13.78 to 17.28 | 13.78 to 17.28 |
| (c) Constraint Payments | +2.64 | +2.64 |
| (d) Less PPB Constraint receipts | +0.00 | -2.38 |
| (e) SEM Pool Price | | |
| equals (a) + (b) + (c) – (d) | 81.87 to 85.37 | 79.49 to 82.99 |

(2) Business as Usual

| Euro/MWh | ROI | NI |
|---------------------------|------|------|
| PRICE COMPARATORS: | | |
| (f) BST Equivalent | - | 84.0 |
| (g) BNE/BPA Equivalent | 84.4 | - |

(3) Price Impact

| | | |
|--|-------------------|-------------------|
| PRICE IMPACT: | | |
| (h) Gross Percentage Rise In Electricity Price (compares (f) and (g) with (e)) | -1.9% to +0.7% | -0.8% to -3.7% |
| (i) Exposure to Pool price ² | 100% | 25% |

² It should be noted that the ROI customer is not strictly 100% exposed to the pool price but this figure has been used as a working assumption for the purposes of this paper. Currently in ROI there are a number of generators whose output is priced as part of the PSO process. Therefore the customer sees the PSO volumes at the PSO benchmark price rather than the pool price. Further work is required to ascertain exactly the level of exposure to prices but it is expected to be between 90% - 95 %.

ROI

NI

(j) Net Increase (+) /Decrease (-) in Electricity

Prices Percentage

Equals (h) times (i)

-1.9% to

-0.2% to

+0.7%

-0.9%

Net Increase (+)/Decrease (-) in Electricity

Prices (Euro Million)

-68m to +26m

-2m to -10m

(see Footnote 2)

PRICE DATA FOR 2010

(1) SEM Pool Price

| Euro/MWh | ROI | NI |
|----------------------------------|-------------------|-------------------|
| POOL PRICE COMPONENTS: | | |
| (a) SMP | 62.49 | 62.49 |
| (b) CPM | 13.25 to 16.61 | 13.25 to 16.61 |
| (c) Constraint Payments | +2.64 | +2.64 |
| (d) Less PPB Constraint receipts | +0.00 | -2.38 |
| (e) SEM Pool Price | | |
| equals (a) + (b) + (c) – (d) | 78.38 to 81.74 | 76.0 to 79.36 |

(2) Business as Usual

| Euro/MWh | ROI | NI |
|---------------------------|------|------|
| PRICE COMPARATORS: | | |
| (f) BST Equivalent | - | 86.5 |
| (g) BNE/BPA Equivalent | 84.4 | - |

(3) Price Impact

| | | |
|--|-------------------|-------------------|
| PRICE IMPACT: | | |
| (h) Gross Percentage Rise In Electricity Price (compares (f) and (g) with (e)) | -2.0% to -4.6% | -5.9% to -8.7% |
| (i) Exposure to Pool price ³ | 100% | 25% |

³ It should be noted that the ROI customer is not strictly 100% exposed to the pool price but this figure has been used as a working assumption for the purposes of this paper. Currently in ROI there are a number of generators whose output is priced as part of the PSO process. Therefore the customer sees the PSO volumes at the PSO benchmark price rather than the pool price. Further work is required to ascertain exactly the level of exposure to prices but it is expected to be between 90% - 95 %.

ROI

NI

(j) Net Increase (+) /Decrease (-) in Electricity

Prices Percentage

Equals (h) times (i)

-2.0% to

-4.6%

-1.5% to

-2.2%

Net Increase (+)/Decrease (-) in Electricity

Prices (Euro Million)

-72m to 163m

-16m to -24m

(see Footnote 2)

POOL PRICE PROJECTIONS FOR 2011 TO 2013

ROI

| Euro/MWh | 2010 (as above) | 2011 | 2012 | 2013 |
|-------------------------------|--------------------|-------------------|-------------------|-------------------|
| POOL PRICE COMPONENTS: | | | | |
| (a) SMP | | 57.26 | 57.99 | 57.0 |
| (b) CPM | | 12.75 to 15.98 | 12.35 to 15.49 | 11.98 to 15.02 |
| (c) Net Constraint Payments | | +2.64 | +2.64 | +0.0 |
| (e) SEM Pool Price | | | | |
| equals (a) + (b) + (c) | 78.38 to 81.74 | 72.65 to 75.88 | 72.98 to 76.12 | 68.98 to 72.02 |

NI

| Euro/MWh | 2010 (as above) | 2011 | 2012 | 2013 |
|-------------------------------|--------------------|-------------------|-------------------|-------------------|
| POOL PRICE COMPONENTS: | | | | |
| (a) SMP | | 57.26 | 57.99 | 57.0 |
| (b) CPM | | 12.75 to 15.98 | 12.35 to 15.49 | 11.98 to 15.02 |
| (c) Net Constraint Payments | | +0.26 | +0.26 | +0.0 |
| (e) SEM Pool Price | | | | |
| equals (a) + (b) + (c) | 76.0 to 79.36 | 70.27 to 73.5 | 70.6 to 73.74 | 68.98 to 72.02 |