

Carbon and Electricity Generation

The generation sector of the electricity industry is characterised by high capital investments and relatively low operating costs; the strategic management of costs focusing on capital and fuel. Manage these well to maintain asset values and competitive advantage. Competitive generation pricing requires a generation sector where all players can strategically manage costs and a forum where they can equally transact their products.

Capital and fuel costs vary significantly across generation technologies and an optimum portfolio of plant to meet the total system load profile at minimum cost requires a mixture of high capital, low operating cost plant and low capital, high operating cost plant. There is a known step wise supply cost curve between generation technologies which leads to a natural order in the preferential running of the plant (merit order) and the resultant lowest cost to customers.

To achieve lower carbon intensity outcomes, the proposed CPRS when applied to the generation industry, must alter the underlying generation cost structures so that the natural merit order is changed in preference to lower carbon intensity plant. Unless a change in the natural merit order occurs, CPRS costs will have been incurred without a reduction in the generation sectors carbon footprint.

Regulation can also change the natural merit order, which is the outcome of schemes like the Queensland gas scheme. Regulation of this type imposes the additional generation costs directly onto customers and does not require a central "collection and redistribution" principle like the proposed CPRS.

Each time the merit order is changed, there is a step increase in the underlying costs of generation. Typical steps in the cost of generation are \$35/MWh (coal), \$80/MWh (gas), \$150/MWh (wind) and \$250/MWh (solar). A reduction on the carbon footprint at generation prices between these steps can only occur with the introduction of new technologies.

Gas generation alone replacing coal will not deliver the proposed long term carbon reduction targets and new technologies must be in place. As wind and solar can not produce sufficient volumes at reasonable prices to be considered as a long term replacement for coal or gas fired generation, regulation may be the appropriate method to bring forward these technologies in a controlled and cost effective manner. Suggestions by the suppliers of cheaper forms of energy to force these technologies to compete in the same market are self serving.

Within the next 10 years, there is no generation technology other than gas that can respond in the volumes of energy required to meet the proposed short term carbon reduction profile. Should gas become the immediate and prime fuel source across the globe for carbon reduction, there is doubt about the ability of the gas generation plant manufacturers to meet the rapidly expanding demand for their plant and if they can, what will be increased cost of plant supply.

Pricing of gas supply will be a critical element in the near term. Until recently, the long term strategic management of fuel supply by the government owned electricity industry prevented a linkage of the domestic and international fuel prices which succeeded in keeping generation costs low for decades. With the gas market now being dominated by international companies, the domestic and international price linkage is getting stronger and unless a gas generator is positioned well in the gas supply chain, they face strong upward gas price pressures.

As there is no change in the carbon intensity of electricity generation until a cost barrier is crossed, the "one size fits all" carbon market clearly has economic inefficiencies when the main carbon emitters, the stationary energy sector, sets the underlying carbon prices for all industries at the cost cross over points. For an economic balance to be struck between financial pain and carbon benefit, individual industry segments could argue to be separately regulated.

As a result, in the near term, there appears to be a need for well directed regulation within the energy policy mix so that electricity customers do not suffer a step change in costs.



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