Discussion Paper: Annual WEM Report to the Minister
Economic Regulatory Authority
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SkyFarming Submission

Discussion Point 1

While there is naturally a lot of attention being paid to the short term availability of gas supply since the gas explosion, long term availability also needs consideration.

Currently, there is no requirement to include a 'depletion' component to the cost of producing gas (or coal or oil or uranium). It is assumed that allowing future generations to bear the cost of harder to get, and finally non existent, resources, is acceptable. As peak oil becomes more and more apparent, so does this cost.

By allowing the real cost of depletion of a non renewable resource to be externalised, false price signals are given to the market.

Similarly with pollution. To date, all fossil fuels have been allowed to externalise the cost of pollution. As evidence of global warming is becoming more and more obvious, this cost is also becoming more apparent.

It is extremely difficult to put a number on the actual cost of this pollution - what price a planet? Nevertheless, some figure needs to be determined and set. And until such time as the absolute amount of CO2 released in WA stops increasing and starts decreasing, this figure, whatever it starts out to be, needs to increase.

Until a pollution or carbon tax is added to the cost of producing electricity from coal, gas or oil, generation of electricity by these fuels simply do not reflect the true cost of generation.

A third distortion, particularly benefitting the coal industry, is that of grandfathered costs of infrastructure. New coal plant located near old coal plant enjoys the benefit of existing wires, water supply and roads without having to pay for it. No such luck for wind plant south of Perth, for instance.

Discussion Point 5

One the network charges is the Distribution Demand Length Charge for generators connecting at the distribution level. This is calculated on the distance to the nearest substation. Consider a site a long way from the nearest substation, maybe hundreds of kilometres, but very close to a small town whose growth is limited by the restriction on current from the existing powerlines. The distance is simply too vast for a line upgrade and embedded generation is the only real solution. However, such a charge would kill any generation. It is also unnecessary as the generation is right next door to the local and would be roughly similar in size - the limit on the powerline providing electricity to the town also limits the size of the generator that could be connected. This charge should be dropped or changed to distance from nearest load of similar size.

Discussion Point 7

A degree of uncertainty regarding a carbon tax may put off new fossil fuel plant, equally, it does not really encourage renewables, the 20% by 2020 Federal target notwithstanding.

Discussion Point 11

The question of whether Verve is bailed out by the government and to what extent needs to be answered. To what degree can real competition exist in a market when the biggest player is bailed out by the government? And also when the prices at one end, retail, are fixed, how can players survive if costs cannot be passed onto the end user?

Discussion Point 13

Additional wind costs such as network augmentation is usually paid by the proponent in the form of upfront costs and increased network charges.

Then there is the cost of the variation in wind plant output. It needs to be remembered that the system already copes with a demand that constantly varies. Adding increasing levels of constantly varying wind generation means the system needs to handle more variation. What is important is how much does the wind plant output vary and how quick, compared to the load.

The diagram below shows how increasing the number of turbines reduces such variation. The diagram below that shows how wind becomes more consistent the greater the geographical area covered, suggesting that there are benefits to encouraging wind farms further apart.

Given the cost benefits of avoiding paying for pollution that fossil fuel generators enjoy (and costs due to depletion of a non renewable resource) currently enjoy, the scale of this cost by wind plant is considered very minor.

The impact of increasing the number of wind turbines smooths out the variations in wind can be seen in the diagram below;

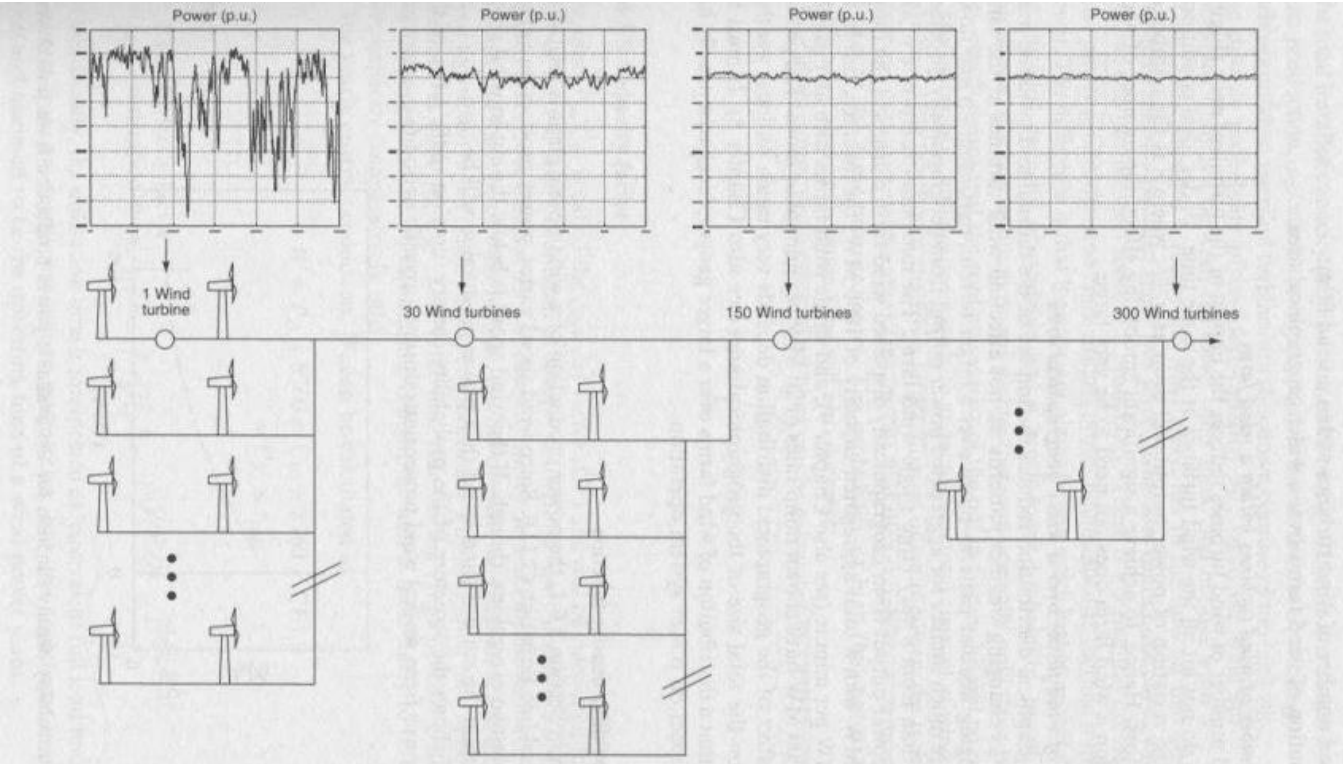
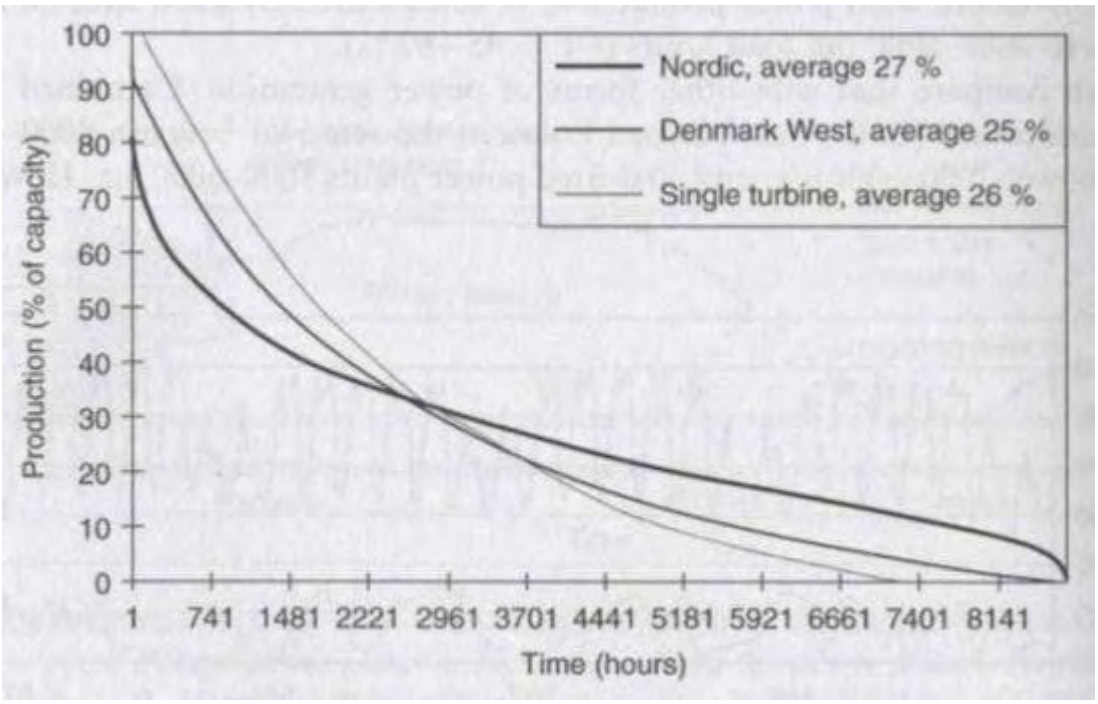


Figure 3.7 Impact of geographical distribution and additional wind turbines on aggregated power production. Time scale on graphics: seconds. Based on simulations by Pedro Rosas (Reproduced from P. Rosas, 2003, *Dynamic Influences of Wind Power on the Power System* (PLD thesis, Ørsted Institute and Technical University of Denmark), by permission of Pedro Rosas.)

Another way of looking at wind variation is to consider the number of hours a year plant is producing at a particular power rating;



H. Holttinen, 2003, *Hourly Wind Power Variations and Their Impact on the Nordic Power System*, Helsinki University of Technology

The flattening out of the curve as the geographical area considered is increased, demonstrates the impact of 'geographical dispersion'. Considering the whole of the Nordic countries, it can be seen that there is never a time when there is full wind output (max is 80% of plant fleet), equally there is never a time when there is no wind and very little time when the wind production is less than 10% of total wind plant.

To accommodate wind better, it may also be worth considering forecasting. This maybe a task for System Management using such software as Garrad Hassan's GH Forecaster (http://www.garradhassan.com/services/ghforecaster/index.php) with real time inputs from the larger windfarms and Bureau of Meteorology stations.

Capacity Credits The current method of issuing wind farms Capacity Credits according to their average outputs is seen as simple and straightforward. The times when the wind plant is generating less than average will be balanced by the times it is generating more than average.

Discussion Point 14

Undoubtedly, the biggest barrier for the implementing of DSM is the very low UNIT cost of electricity. The whole disaggregation of Western Power, and indeed SECWA years ago, was based around lowering the unit price of electricity. If the intention was that this would lower electricity BILLS, the Emperor has been found very naked. These low unit prices have encourage excessive electricity use resulting in higher bills than people might otherwise have had - the installation of air conditioning INSTEAD of insulation is a simple example and directly related to system capacity or demand.

Another barrier maybe the time and effort required to be involved for smaller players.

Discussion Point 15

With each change, a weekly event it seems, an email is sent out with no details other than a rule change has occurred and that actual information is available from downloads at the URL address provided. The recipient than has to go to the website, download a number of pdf files before knowing what it is that is being changed and whether it effects him. A summary of the change being proposed IN the body of the email would save not only a lot of time for the rule participants but also reduce the workload of the IMO servers .