Renewable energy market growth must evolve to a competitive and sustainable Industry

Cost of Power Production and research opportunity

Vison

The appropriate "Approving Authority" for renewable energy facilities will oversee all renewable energy facilities applications to: -

- Approve the **cost of power production** (before subsidies or grants) to enable continuous improvement in the competitive position of all power into the State grids.
- Determine a contribution by all renewable facilities to a **"Research Fund"** of at least 2.5% of their revenue.
- Approve the **developers' approach** to the following aspects: - ecological, noise, positioning, community consultation, neighbouring activities and economic connection to the grid;
- Stipulate the "joint" responsibilities of the Site Landowners, Developer of the facility and the providers of the renewable technology are all **equally accountable** for all outcomes in the **first 10** years of operation.
- Approve the submitted **monitoring** of the facilitys' outputs, maintenance and operations such that it will be made available for benchmarking of all facilities across the Nation.

Premise

The provision of energy (electric power in this case) to the Australian Nation is a Sovereign responsibility for which each State is accountable; either through self-funding or outsourcing to a third party. This accountability has with it the obligation to minimise the cost to society via electricity charging and any payments made to renewable operators, their stakeholders or investors.

Context

Victoria is in a fabulous position to make a step-change to the Renewable Energy generation. Shifting from an immature industry of unmonitored production costs to a planned scale of operation ensuring a reduction in production costs as is being promised.

I have contacted 2 Federal Departments seeking clarification on policies or goals for the cost of Windfarm power production. Their websites both talked of renewables being clean, unobtrusive and at low cost, they both replied by saying the cost of energy was outside their scope, one added the cost of power was not an element of sustainable energy for Australia.

This Sovereign responsibility for power production cannot be dismissed. Privatisation of power facilities is not a release of the State's responsibility, but an empowering of private organisations to increase the competitive position of our power supply chain. When the Victorian power industry was privatised the SEC structure and outcomes where benchmarked and considered the base for acceptable levels of infrastructure and efficiency.

Graph 1 Page 3 "48 Windfarms in Victoria ranging from: - operating not operating or seeking Planning Approval listed (Left to Right) by Size of Maximum Capacity" is demonstrating that in this case 80% of the power is provided by 35% of the facilities or in fact in the strict Pareto Theory the

"Significant Few" of 20% of the facilities are producing 60% of the power output. Also, in Pareto's modelling, in any industry the "trivial many" is collectively the most unco-ordinated, sometimes very agile while being statistically the most vulnerable group in an industry. (the "trivial many" is the 80% of participants only producing 20% of the output). I would judge that in this case 31 of the Victorian Facilities make up the trivial many category.

My belief is the Trivial Many in capital intensive industries rarely provide Added Value to society.

Graph 2 page 4 Looking at the same 48 wind facilities in the order of "commissioning". When extracting the data from DELWP (www.energy.vic.gov.au/renewable-energy/wind-energy/wind-projects). I was expecting to see a growth pattern indicating economies of scale being introduced over time. This is not the case. -The blue line is the number of turbines. I am asserting there is a relationship between the number of turbines and the Economies of Scale. –

Live example

Using data from a developer's site and using my experience of Total Life Costing methods I completed a costing of the applicant's facility. (I am happy to provide my spreadsheet calculations). I am excluding any subsidies / incentives from the State as these are direct costs to society.

My calculations established a cost per KWh of $0.142. I had previously been informed, the Australian goal for renewable energies would be about $0.04 to $0.07 per KWh. This allows for Poles and Wires (infrastructure), the wholesalers and retailers margins. I was also informed the Europe was aiming at $0.03 per KWh.

DELWP Vic, provided the following site report from CSIRO https://www.csiro.au/en/News/News-releases/2018/Annual-update-finds-renewables-are-cheapest-new-build-power This is most enlightening and If I have understood it correctly, I do believe it is revealing a possible lower price in future from Wind and solar generation. They too talk about moving to a mature industry. One area concerns me, the emission taxation should not be the method for making renewable energy look less expensive. The emission tax should only to diminish the coal fired power.

Please consider adding value to the Victorian Electricity Grid by adopting a planning approval process that is empowered to: -

i. Refusing permits to any energy facility not able to produce competitive energy at a cost lower then $0. 07C per KWh. (Excluding any subsidies to the facility or its stakeholders)

ii. Stimulating a research component where every renewable energy facility will contribute to state research fund to address power technology, noise and economies of scale.

iii. Monitoring all renewable energy facilities (publicly) for conformance to: - "Well Maintained, Competitive and low noise" production facilities, (as are our public transport system, education standards, TAC, and Hospital capacity).

iv. Agreeing a solution to the complete removal of footings (soil contamination) through the owner and operator at the end of life of the project. To be resolved by 2021 (before the first facility -2001- is removed or refurbished).

v. Developers, initial landowners and the provider of technology are to be jointly and severally held directly accountable for absolute compliance to their proposal outcomes for the first 10 years of the life of the facility.

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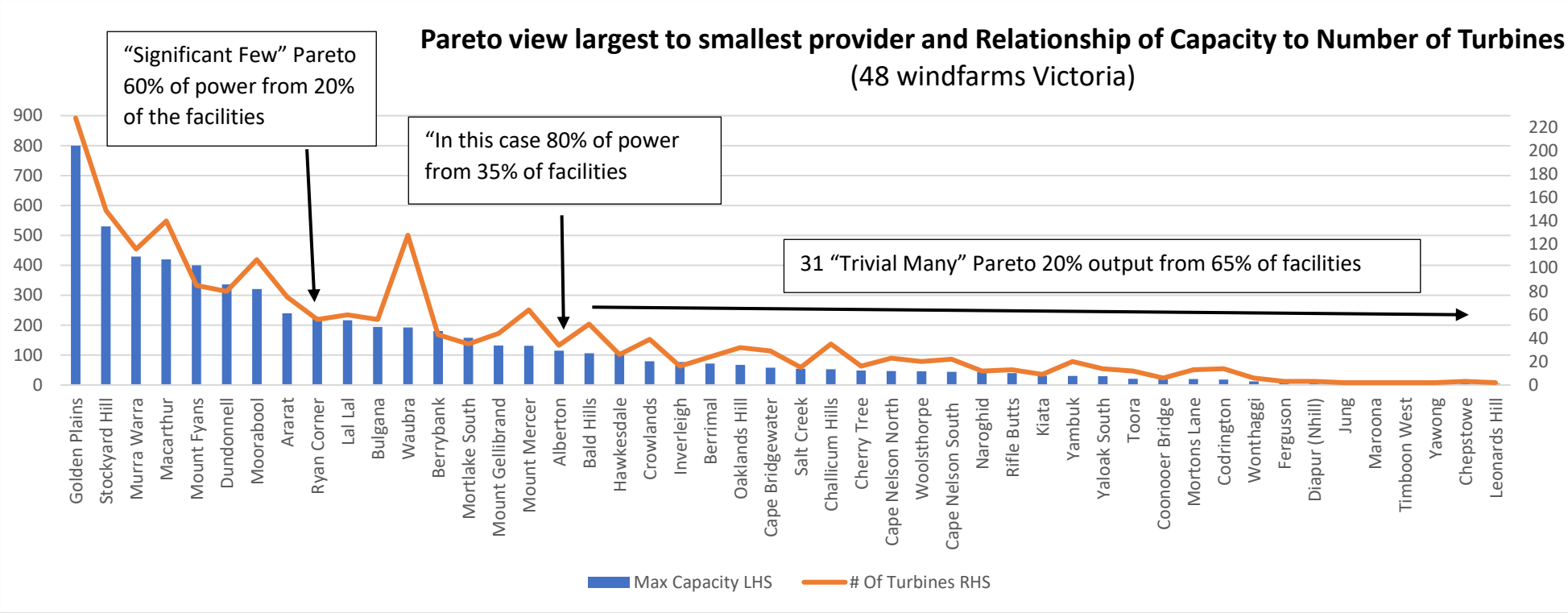
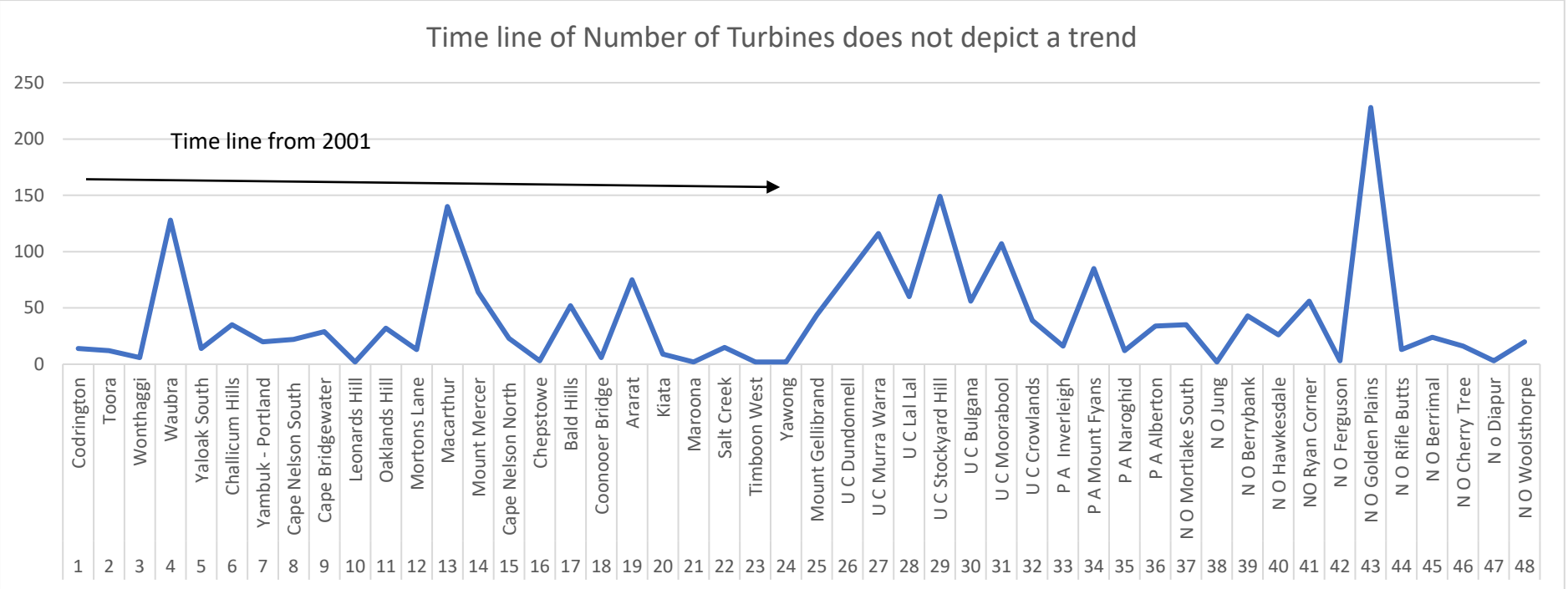


Source: - www.energy.vic.gov.au/renewable-energy/wind-energy/wind-projects

48 Windfarms in Victoria (operating, under construction and seeking approval) demonstrating the Pareto principle and the relationship between the Number of turbines an economy of scale.

Note: Waubra has started in stages with more turbines to come and lift its output.



Relative size of installed maximum capacity, by time line of approval commencing in 2001.

Source: - www.energy.vic.gov.au/renewable-energy/wind-energy/wind-projects

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I would like to see a publicly available Renewable Energy monitoring and benchmarking process and for an enforcement that all new renewable energy facilities must be less expensive than those previously constructed. This I believe is a planning authority's responsibility, not a post construction assessment.

***The cost of production is to exclude any / all subsidies to the power facilities or its stakeholders**.

I have been told the planning process does not have the authority to include the Competitive Position of a facility as this is outside the scope in particular price. This is saying to me; the cost of generation is irrelevant to the Australian population. This is a recipe to ensure our: unemployed, underprivileged, destitute and pensioners will all have to restrict their power consumption.

I am happy to be corrected on any of the forgoing. I maintain this market is not a "free Market" and it remains the Sovereign (State and Federal) responsibility to provide power to the nation's population. As such the State Planning Authorities must add a discipline and rigorously review the cost of production in the planning application process; ensuring a demonstrable continuous improvement to all aspects of power supply chain sustainability.

An individual customer cannot choose power generator "A" against a more expensive generator "B". While the retailors can offer "deals" the power in the grid is not segregated for each generator rather all power enters the grid giving us a supply at an undisclosed average cost. The power market's forces will not drive this market to economic maturity quickly, if at all. I agree, my retailor can negotiate with wholesalers and then they, with their generators, but normal market forces will be debilitated given the current processes of balancing supply and demand, utilising all infrastructure for all generators and customers, these all impact the retail invoice price, or total cost to society and eventually the level of Government support.

- Is it possible to have Planning Departments (DELWP and not Councils) review renewable energy applications including examination of production cost of that facility (not against coal but to past renewable energy facilities)?

This document is not about the selling or retail price or the wholesale prices at any of the levels but the cost of production. I thank you for reading this document and I look forward to your comments. The Red areas are my call to action points.