

Wind farm says massive new rival could cost it "hundreds of millions" in lost energy

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19 Feb 2020

An existing wind farm is crying foul after the government last month gave the conditional go-ahead for a massive new wind farm project on an adjoining property on the West Coast Peninsula near Vredenburg.



The view looking east across the West Coast with the village of Paternoster in the foreground. The recently approved Boulders Wind farm will stand on the hills in the background, directly in this view. Photo: John Yeld

The West Coast One wind farm, that has been operating since 2015, says the huge turbines of the recently approved Boulders Wind Energy Facility will be situated immediately upwind of its own slightly smaller turbines and will deplete its access to the wind resource because of the physical phenomenon of “wake effect”.

The wake effect is the term for changes in wind speed caused by the mutual interaction of wind turbines sited close to each other. Wake losses are energy production losses caused by a wind energy deficit downstream of wind turbine rotors.

What is the wake effect?

Wind turbines extract energy from the wind, and downstream from the wind turbine there is a wake where wind speed is reduced.

As the flow proceeds downstream, there is a spreading of the wake and the wake recovers towards free stream conditions.

The wake effect is the aggregated influence on the energy production of the wind farm, which results from the changes in wind speed caused by the impact of the turbines on each other.

It is important to consider wake effects from neighbouring wind farms and the possible impact of wind farms which will be built in the future.

Source: <https://www.wind-energy-the-facts.org/>

West Coast One has now formally appealed the recent environmental authorisation for Boulders by the national Department of Environment, Forestry and Fisheries (DEFF). Its 72-page appeal, prepared by a prominent Cape Town law firm that specialises in environmental issues, is one of a number of substantial appeals against the approval for Boulders that was issued on 20 January.

In its appeal, West Coast One argues that the presence of its giant new neighbour will cause wake effects that will negatively impact its own energy output, and hence reduce its revenue and economic viability and sustainability, as well as the share of this revenue that is paid to local community shareholders and that trickles down into the local economy.

It has submitted an independent engineering report to show that the wake effects of the turbines at the proposed new wind farm will cause annual energy production losses from its own turbines of between 1.5 and 2.5%, which it terms “a real and valid concern”.

Because it has signed a 20-year supply contract with Eskom, West Coast One says power losses caused by Boulders will represent “significant” revenue losses for them of between R7m and R11m a year based on the current tariff – “and potentially as much as hundreds of millions for the remainder of the Power Purchase Agreement, based on estimated operational data”.

If the impact from the Boulders wind farm is to be completely nullified, only eight of its proposed 45 turbines can be kept, West Coast One says in its appeal.

It has not demanded such a radical reduction in the new rival facility, but it wants appropriate compensation if the new wind farm is to become operational.

This, it says, can be authorised by DEFF minister Barbara Creecy, and must be based on a detailed *Forecast Energy Yield Report* by an independent specialist that identifies the potential energy loss expected at West Coast One caused by the wake effects of Boulders.

A tale of two wind farms

The two wind farm facilities will be very close neighbours, less than one kilometre apart on the high ground of West Coast Peninsula.

The Boulders wind energy facility has been designed with 45 huge turbines, each with a rotor diameter of up to 103 metres and a maximum hub (tower) height of 120 metres, that can collectively add up to 140 megawatts of much-needed renewable power to the fickle national grid.

West Coast One, operated by Aurora Wind Power, has 47 slightly smaller turbines (rotor diameter of 90 metres and a hub height of 80 metres) that can produce 94MW.



Proposed in 2007 in partnership with Investec and later taken up by Engie (formerly GDF SUEZ of France) and local investors, this is a close to R2bn project approved in 2012 as part of the government's Renewable Energy Independent Power Producer Procurement (REIPPP) programme.

Commercial operations started on schedule in June 2015.

One of the investors in West Coast One is a community trust, and the project spends a percentage of its revenue on so-called SED (socio-economic development) projects within the local community.

After two previous wind farm proposals for neighbouring properties never came to fruition, the Boulders wind farm project was initiated by a German-owned developer, Vredenburg Windfarm, in 2018.

Last month, after a lengthy, tense and complicated environmental impact assessment (EIA) process, DEFF issued a formal Environmental Authorisation for Boulders – a key step in the approval process for the new wind farm, although authorisation was conditional on several design changes being implemented.

A 20-day appeal process kicked in on 20 January, and objectors had until 10 February to submit any appeals that would be adjudicated by Creecy.

West Coast One's appeal is mainly, but not exclusively, based on the argument that the projected energy loss caused by the impact of the proposed Boulders project will have adverse consequences for the socio-economic benefits flowing from West Coast One. Such consequences, it argues, should have been fully investigated during the environmental impact assessment (EIA) process that formed the basis for the environmental authorisation – but weren't.

It says this omission is contrary to the principles and provisions of the National Environmental Management Act (NEMA), under which EIA regulations are promulgated, and makes the authorisation reviewable.

It points out that DEFF has set a precedent on three previous occasions by requesting wind farm developers elsewhere to appoint an independent party to compile a wake effect report, to quantify the impact on other wind energy facilities.

"The minister [Creecy] is requested to remit the [approval] decision back to the department for reconsideration based on the applicant [Boulders] first supplementing the EIA process with the relevant and necessary information to address the impacts as motivated in this appeal."

In the appeal process, Boulders will have an opportunity to respond before 2 March to all the appeal comments. DEFF will then add its own comments, and submit a comprehensive summary with a recommendation to Creecy for a final decision.