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Transmission and distribution networks and equipment

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2 Magnet Road | Knights, Boksburg | 1413. Tel: +27 (0) 11 820 5006 okkie.van-zyl@actom.co.za | www.actom.co.za



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Electrical transmission and distribution equipment are crucial components of the power grid, which is the network of interconnected power generation, transmission, and distribution systems that deliver electricity from power plants to homes, businesses, and industries. The grid must be as efficient as possible to reduce losses and avoid problems such as harmonics, flicker, imbalance, and others that have become serious concerns. To meet power quality standard limits, compensation is provided by specialised equipment. Articles in this issue discuss how the grid can be made more resilient and how power quality can be assured.

EDITOR

Roger Lilley Cell: 082 569 7495 Email: rogerl@nowmedia.co.za

ADVERTISING

Katia dos Santos Cell: 076 410 6909 Email: katias@nowmedia.co.za

Mark Yelland Cell: 074 854-1597 Email: marky@nowmedia.co.za

COORDINATION **Charmaine Manicom** Email: charmainem@nowmedia.co.za

DESIGNER Adéle Gouws Email: adele@dezignhq.co.za

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Travel & Trade Publishing (Pty) Ltd 32 Fricker Rd, Illovo, Johannesburg

PUBLISHER

SANEA

Anton Marsh Email: antonm@nowmedia.co.za







Assessing wind farms' visual impact on diverse landscapes

n the pursuit of a greener and more sustainable future, renewable energy sources like wind farms have emerged as a promising solution to combat climate change. Wind energy offers clean, abundant power, but the deployment of wind turbines has raised concerns about their visual impact on diverse landscapes. As these majestic structures dot the horizon, the challenge lies in preserving the natural beauty and aesthetic appeal of our surroundings while embracing the benefits of renewable energy. This article delves into the visual impact of wind farms on different landscapes, the importance of accurate impact assessments, and how innovative tools like TurbineVu 360 can mitigate the impact, while promoting responsible renewable energy expansion.

Visual impact of wind farms

Wind farms, characterized by their towering turbines, inevitably alter the visual landscape. The perception of this visual impact varies from person to person and community to community. Some view wind turbines as a symbol of progress and a cleaner future, while others find them intrusive and disruptive to the aesthetics of their surroundings.

Impact on diverse landscapes

The visual impact of wind turbines is heavily influenced by the landscapes in which they are situated. In open plains or coastal areas, wind farms may blend harmoniously with the environment, becoming an accepted part of the natural scenery. On the other hand, in hilly or mountainous terrains, turbines might stand out more prominently, potentially altering the visual character of the landscape.

In rural settings, where quaint charm is treasured, the presence of wind turbines can create a contrasting juxtaposition between the traditional and the modern, leading to diverse opinions among local communities. Similarly, in scenic coastal regions, where uninterrupted ocean views are cherished, wind turbines might raise concerns about preserving the serenity and aesthetics of these areas.

Understanding aesthetic values

Assessing the visual impact of wind farms requires an understanding of the aesthetic values of the surrounding landscape. While visual preferences are subjective, it is essential to appreciate and respect the unique features that make each landscape special to its inhabitants. As communities engage in discussions about wind farm projects, these aesthetic values should always be considered in order to strike a balance between progress and landscape preservation.

Importance of impact assessments

To navigate the complex terrain of wind farm development, proactive and accurate impact assessments are crucial. Traditional methods of assessing visual impact through physical site visits can be time-consuming and may not capture the complete picture. This is where innovative technologies like TurbineVu 360 step in to revolutionize the assessment process. By providing independent and data-driven visual assessments, developers foster information transparency and empower stakeholders to make informed decisions.

TurbineVu 360: An advanced impact assessment tool

TurbineVu 360 is a cutting-edge spatial analytics tool that allows for the visual impact evaluation of unlimited numbers of turbines for both existing and planned wind farm developments.

It is a fully automated and scalable process which generates rapid results over large areas, eliminating the need for time-consuming field visits, solving the complexity of quantifying visual impacts by providing decision-ready metrics for the entire affected landscape, regardless of the geographical extent of the wind farm development, and the number of turbines involved.

With TurbineVu 360, developers, policymakers and landowners can efficiently and independently assess both existing and potential visual impacts of wind turbine infrastructure on the landscape. For greenfield developments, TurbineVu 360 offers a proactive method for evaluating alternative turbine placement scenarios to help mitigate and minimize visual intrusions and maintain the scenic beauty of the surroundings.

How TurbineVu 360 works:

- Data Input: TurbineVu 360 requires a set of turbine locations, along with individual tower and blade measurements.
- Automated Analysis: The tool processes the data and generates detailed heatmaps, indicating the visibility of turbines from various locations in the landscape.
- Heatmaps and Reports: TurbineVu 360 provides a comprehensive report and digital GIS map datasets, presenting a quantification of the number of turbines visible from different locations. It categorizes visibility into three classes: blade-tip visibility, blade & hub visibility, and full turbine visibility.

Benefits of TurbineVu 360

- Informed Decision Making: Wind farm developers can make well-informed decisions about turbine placement and design, ensuring projects are aligned with the surrounding landscape and community preferences.
- Community Engagement: Transparency and accurate visual impact assessments enable developers to engage with local communities and address concerns, fostering acceptance and support for wind farm projects.

- Landscape Preservation: By identifying potential visual hotspots, TurbineVu 360 facilitates the preservation of natural beauty and scenic views in various landscapes.
- Efficient Project Planning: The rapid and automated nature of TurbineVu 360 expedites the project planning phase, enabling developers to explore multiple design options and scenarios efficiently.

Conclusion

As we march towards a sustainable future, wind farms play an indispensable role in driving the transition to renewable energy. However, their visual impact on diverse landscapes demands careful consideration. Accurate impact assessments, like those offered by TurbineVu 360, empower us to make informed decisions that strike a harmonious balance between progress and aesthetics. By embracing innovative technologies and understanding the aesthetic values of each landscape, we can ensure that renewable energy development respects and preserves the natural beauty of our world. Ultimately, by working together, we can create a greener, more sustainable future without compromising the intrinsic beauty of our planet.

For more information, contact GeoTerralmage at https://geoterraimage.com/

