



WIND TURBINE IMPACT ASSESSMENTS

Wind energy is an important pillar of the Energy Strategy 2050. In order to renounce to nuclear energy, additional 4300 GWh of electricity should be produced by wind energy by 2050.

Wind turbines can reflect, distort or mask electromagnetic signals of safety critical systems such as Communication, Navigation and Surveillance (Radar). Moreover, a minimum separation between wind turbines and airplanes is required to avoid any collision. Skyguide assesses the compatibility of wind turbines with Air Navigation Services before start of construction. A clear answer to project developers and authorities is beneficial in terms of project risk.



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Our Mission: Ensure Safety of Air Traffic

By mandate of the Swiss Government, skyguide is responsible for the safety of air traffic control within Swiss airspace and adjacent delegated airspace of neighboring countries. To fulfil this mission, skyguide ensures that technical installations for communication, navigation and surveillance (CNS) are not compromised by external influences and due regard is paid to all obstacle restrictions relating to relevant protection zones.

As safety has to be maintained during all phases of flight, every effort must be undertaken to reduce negative influences on functioning of the systems and procedures to a minimum.

Ground installations are essential for managing and monitoring air traffic.

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- Radars constantly track positions and movements of flights concerned
- Radio stations ensure effective communication between pilots and air traffic controllers
- Navigation aids guide the pilots during the entire flight
- Instrument Flight Procedures (IFP) ensure safe separation of aircraft from any obstacle

Compatibility assessment (CNS and IFP) for each wind energy project

Skyguide conducts for each wind energy project an assessment; analyzing two key aspects:

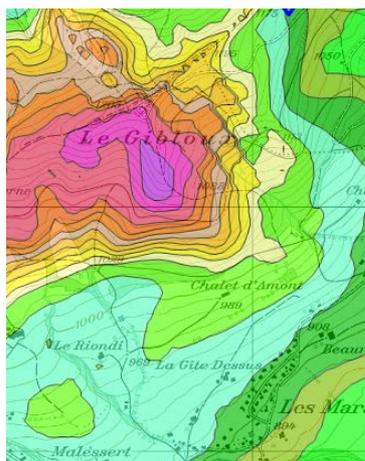
- Whether a wind turbine is likely to impact technical infrastructure or flight procedures of air navigation services. This can also happen at a distance of several tens of kilometers.
- Whether a wind turbine will exceed the acceptable maximum height in a relevant airspace

The objective is to support wind farm developers regarding adequate locations of their projects by providing a dependable reply already very early in the process. The assessment follows the relevant standards and recommendations of the International Civil Aviation Organization (ICAO) as well as art. 2 and 63 of the Ordinance on aviation infrastructure (Verordnung über die Infrastruktur der Luftfahrt, VIL; SR 748.131.1). There will be a positive, negative or conditional outcome regarding the planned wind energy project.

Should an outcome be conditional or negative, skyguide will, where feasible, support the project developer in the solution finding process.

Depending on the installation or procedure concerned, a further in-depth analysis can provide more answers and lead to a solution finding or to mitigation measures (e.g. alternative location, a diminution of height, adaptation of IFP). Every case has to be analyzed individually.

Skyguide conducts the compatibility assessment at the request of a wind energy developer. A copy of the outcome is sent to the Federal Office of Civil Aviation (FOCA). FOCA decides whether a building permit for an aviation obstacle will be granted, based, amongst others, on skyguide's statement.



Wind Turbine Competence Center

The skyguide Wind Turbine Competence center seeks to unify the interests of air navigation services and wind energy industry. It acts both as single point of contact for external parties such as wind farm developers and government authorities and as internal platform for wind energy topics. It constantly improves its assessment methodology by adopting state-of-the-art scientific methods and latest developments.



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