# Concerns rise over solar farm glare risks to RAF pilots and Lincolnshire farming



Concerns regarding the impact of expanding solar farm projects on both aviation safety and agricultural productivity have come to the fore, particularly highlighted by Dr Caroline Johnson, the Conservative MP for Sleaford and North Hykeham. In a recent debate, she raised alarms about the potential dangers posed by glint and glare from solar panels, suggesting that they might dazzle pilots, including those from the iconic Red Arrows, the RAF's aerobatic team.

Dr Johnson's concerns centre around the siting of large-scale solar farms in rural Lincolnshire, a region she describes as the "nation's bread basket," contributing significantly to the UK's agricultural output. She remarked that solar panels could hinder farmland productivity, claiming the area is home to some of the most fertile land in the country, with yields significantly above national averages. In her view, the introduction of solar farms could lead to the industrialisation of this vital countryside, thereby jeopardising its agricultural heritage.

Moreover, her apprehension extends to the safety of RAF pilots based at nearby installations. During her address in the House of Commons, she stated: “I ask the minister to give due consideration to the three RAF bases local to my constituency, RAF Waddington, RAF Cranwell, and RAF Digby.” She argued that the reflective nature of solar panels poses a serious risk, especially during training exercises where pilot proficiency is paramount.

Despite her assertions, some members of Parliament, including Labour MP Sarah Russell, challenged Dr Johnson’s claims, questioning whether the concerns were warranted given that solar panels have coexisted with aviation operations in other countries, such as Spain, without significant issues. Russell pointed out that pilots have continued to operate safely in regions with extensive solar farms, suggesting that the risks may be overstated.

Echoing this sentiment, Liberal Democrat MP Edward Morello noted that any solar farm developments require a glint and glare report as part of the planning process, specifically if they are near air force bases or airports. Energy minister Michael Shanks reiterated this, emphasising that solar panels are designed to absorb rather than reflect light and that potential glare issues are systematically assessed during planning.

Historical precedents illustrate the complex relationship between solar farms and aviation safety. Instances have been documented in which solar power plants, such as the Ivanpah Solar Electric Generating System in California, resulted in pilots reporting temporary visual impairment due to glare. The Federal Aviation Administration has responded to such concerns by implementing mitigation measures to ensure aviation safety.

As discussions around renewable energy intensify, the balance between environmental initiatives and safety considerations will need close scrutiny. The push for solar energy is aligned with global sustainability goals, yet concerns about agriculture, local communities, and aviation safety must be addressed comprehensively in the planning and implementation stages.

While five significant solar farms have already been approved in Lincolnshire, the debate remains unresolved, reflecting a broader tension between renewable energy expansion and preserving rural landscapes and operational safety. As highlighted by Dr Johnson, “This is land we can least afford to lose,” suggesting that the intricate specifics of agricultural viability and national security will continue to challenge policymakers in the pursuit of a greener future.

The ongoing discussion around solar farm development underscores the need for clear and informed dialogue among stakeholders, balancing the urgency for renewable energy solutions with the practicalities of existing agricultural and military operations.

### Reference Map

1. Paragraph 1: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html)
2. Paragraph 2: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html), [[2]](https://www.parallelparliament.co.uk/mp/caroline-johnson/debate/2023-07-19/commons/westminster-hall/planning-and-solar-farms)
3. Paragraph 3: [[2]](https://www.parallelparliament.co.uk/mp/caroline-johnson/debate/2023-07-19/commons/westminster-hall/planning-and-solar-farms)
4. Paragraph 4: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html), [[4]](https://blog.aci.aero/environment-and-sustainability/safety-assessments-for-airport-solar-panel-installations/)
5. Paragraph 5: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html), [[5]](https://ases.org/relieving-a-glaring-problem/)
6. Paragraph 6: [[3]](https://www.theverge.com/2014/3/19/5525074/pilots-say-theyre-blinded-by-glare-from-ivanpah-solar-power-plant), [[4]](https://blog.aci.aero/environment-and-sustainability/safety-assessments-for-airport-solar-panel-installations/)
7. Paragraph 7: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html), [[5]](https://ases.org/relieving-a-glaring-problem/), [[6]](https://nap.nationalacademies.org/read/22399/chapter/5)
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9. Paragraph 9: [[1]](https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html), [[2]](https://www.parallelparliament.co.uk/mp/caroline-johnson/debate/2023-07-19/commons/westminster-hall/planning-and-solar-farms), [[7]](https://www.researchgate.net/publication/326824310_The_Potential_Hazard_Analysis_Method_of_Glare_for_Photovoltaic_near_airports_or_within)

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## Bibliography

1. <https://www.independent.co.uk/news/uk/home-news/red-arrows-solar-farm-glare-mps-b2751803.html> - Please view link - unable to able to access data
2. <https://www.parallelparliament.co.uk/mp/caroline-johnson/debate/2023-07-19/commons/westminster-hall/planning-and-solar-farms> - In a Westminster Hall debate on July 19, 2023, Dr. Caroline Johnson, MP for Sleaford and North Hykeham, expressed concerns about large-scale solar farms potentially industrializing the countryside and impacting agricultural productivity. She highlighted the risk of glint and glare from solar panels affecting RAF pilots, particularly those operating from RAF Waddington, RAF Cranwell, and RAF Digby. Dr. Johnson emphasized the importance of preserving Lincolnshire's productive farmland and questioned the appropriateness of siting solar farms in rural areas.
3. <https://www.theverge.com/2014/3/19/5525074/pilots-say-theyre-blinded-by-glare-from-ivanpah-solar-power-plant> - In 2014, pilots reported being blinded by the glare from the Ivanpah Solar Electric Generating System, the world's largest solar power plant at the time, located on the California-Nevada border. Complaints included temporary visual impairment and difficulty scanning for other aircraft due to intense reflections from the plant's heliostats. The Federal Aviation Administration (FAA) acknowledged the concerns and stated they would be addressed in accordance with the plant's permit conditions.
4. <https://blog.aci.aero/environment-and-sustainability/safety-assessments-for-airport-solar-panel-installations/> - This article discusses safety assessments for airport solar panel installations, focusing on the risks associated with glint and glare. It explains that sunlight reflecting off solar panels can pose hazards to pilots, air traffic controllers, and ground personnel. The piece emphasizes the importance of calculating potential glare effects during the design phase and suggests mitigation measures, such as re-orienting panels, to reduce risks. The article also touches on electromagnetic interference concerns related to solar panel installations at airports.
5. <https://ases.org/relieving-a-glaring-problem/> - The article addresses the issue of solar glare and its potential impacts on aviation safety. It highlights instances where glare from solar installations has caused visual impairment to pilots and air traffic controllers. The piece suggests that proper design and siting of solar energy systems are crucial to mitigate glare-related hazards. It also mentions the use of anti-reflective coatings and glass texturing as potential solutions to reduce glare from solar panels.
6. <https://nap.nationalacademies.org/read/22399/chapter/5> - Chapter 3 of the 'Guidebook for Energy Facilities Compatibility with Airports and Airspace' examines the impact of energy technologies, particularly solar installations, on aviation safety. It discusses how glare from solar panels can affect pilots and air traffic controllers, leading to visual impairment and potential accidents. The chapter outlines methods to assess and mitigate glare, including glare analysis and proper siting of solar facilities. It also highlights the importance of considering these factors in the planning and approval processes for energy projects near airports.
7. <https://www.researchgate.net/publication/326824310_The_Potential_Hazard_Analysis_Method_of_Glare_for_Photovoltaic_near_airports_or_within> - This research paper presents a method for analyzing the potential hazards of glare from photovoltaic (PV) installations near airports. It discusses how reflections from PV panels can cause visual impairment to pilots during critical phases of flight, such as landing and takeoff. The paper emphasizes the need for thorough glare analysis and mitigation strategies to ensure aviation safety when planning solar energy projects in proximity to airports.