



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of the Administrator

800 Independence Ave., S.W.  
Washington, DC 20591

April 30, 2021

The Honorable Maria Cantwell  
Chair  
Committee on Commerce, Science, and Transportation  
United States Senate  
Washington, DC 20510

Dear Chair Cantwell:

Enclosed is the Federal Aviation Administration's (FAA) report to Congress titled, Report and Recommendations on Certain Aviation Safety Risks, meeting the requirements of Section 330 of the FAA Reauthorization Act of 2018.

In Section 330 of the FAA Reauthorization Act of 2018, the FAA was directed to identify safety risks associated with power outages at airports caused by weather or other factors, and to recommend actions to improve resilience of aviation communication, navigation, and surveillance systems in the event of such outages.

We look forward to continued collaboration with your staff and would be happy to schedule time to brief you further if desired.

A similar letter has been sent to the Ranking Member of the Senate Committee on Commerce, Science, and Transportation and the Chair and Ranking Member of the House Committee on Transportation and Infrastructure.

Sincerely,

A handwritten signature in black ink that reads "Steve Dickson". The signature is fluid and cursive, with the first name "Steve" and last name "Dickson" clearly legible.

Steve Dickson  
Administrator

Enclosure



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April 30, 2021

The Honorable Roger F. Wicker  
Ranking Member  
Committee on Commerce, Science, and Transportation  
United States Senate  
Washington, DC 20510

Dear Ranking Member Wicker:

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April 30, 2021

The Honorable Peter A. DeFazio  
Chair  
Committee on Transportation and Infrastructure  
House of Representatives  
Washington, DC 20515

Dear Chair DeFazio:

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Steve Dickson  
Administrator

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800 Independence Ave., S.W.  
Washington, DC 20591

April 30, 2021

The Honorable Sam Graves  
Ranking Member  
Committee on Transportation and Infrastructure  
House of Representatives  
Washington, DC 20515

Dear Ranking Member Graves:

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Steve Dickson  
Administrator

Enclosure



**FAA**  
**Air Traffic Organization**

## **REPORT TO CONGRESS:**

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### **Report and Recommendations on Certain Aviation Safety Risks**

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**FAA Reauthorization Act of 2018 (Pub. L. No. 115-254) Section 330**

## **Statutory Requirement**

The Federal Aviation Administration (FAA) submits the following report in response to the requirement in Section 330 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254). Section 330 requires the FAA to submit to the appropriate committees of Congress a report that:

(1) identifies safety risks associated with power outages at airports caused by weather or other factors, and recommends actions to improve resilience of aviation communication, navigation, and surveillance systems in the event of such outages; and

(2) reviews alerting mechanisms, devices, and procedures for enhancing the situational awareness of pilots and air traffic controllers in the event of a failure or an irregularity of runway lights, and provides recommendations on the further implementation of such mechanisms, devices, or procedures.

## **Power Outages at Airports**

There are several safety risks associated with power outages at airports, including a loss of communications, an impact to navigation systems, and a reduction to surveillance services. Due to these known risks, the Air Traffic Organization (ATO) intentionally builds power redundancy into the most critical systems at an airport to enable the provision of air traffic services in the event that the primary source of power fails. Public utility companies generally provide the primary source of electrical power for national airspace system (NAS) facilities.

During utility power failures and outages, the FAA relies on backup power systems to provide electrical power to NAS facilities. The FAA acquires backup power by obtaining commercial electrical power from separate sources, or by installing battery or generator systems. For systems that are critical to air traffic operations, the FAA generally provides redundancy in the form of battery or generator standby power sources. In some cases, the FAA acquires more than one power redundancy. In addition, the FAA monitors its power needs and proactively switches between power sources in advance of adverse weather conditions. Furthermore, the FAA develops and trains its workforce on contingency plans in case the redundant systems fail. If such an event occurs, other FAA facilities are prepared to provide the necessary air traffic services until power is restored.

The FAA recommends the continuation of the actions described above to support the resilience of aviation communication, navigation, and surveillance systems in the event of power outages at airports.

In addition, the FAA recommends consideration of microgrid technology at airports as a promising solution to supplement the existing utility power infrastructure and improve resilience. A microgrid is a local energy grid with control capability, which means it can disconnect from the traditional grid and function autonomously as physical or economic conditions dictate. When the microgrid is not connected to the traditional grid, it functions as a self-sustaining independent energy system. In the case of airports, a microgrid could isolate electricity users with a local source of supply that is usually attached to a centralized national grid and can function independent of that grid. A microgrid could, therefore, be configured to supply a second, independent power feed to ATO systems and other terminal loads. Accordingly, the FAA

recommends the continued evaluation of microgrid technology to determine whether it could satisfy the FAA's requirements and provide a viable means to further improve resiliency of aviation communication, navigation, and surveillance systems in the event of power outages.

### **Failure or Irregularity of Runway Lights**

In response to Section 330, the FAA reviewed the alerting mechanisms, devices, and procedures for enhancing the situational awareness of pilots and air traffic controllers in the event of a failure or an irregularity of runway lights.

Airport runway lights are protected from power failures in a manner similar to the critical systems discussed above. Airport runway lights have an electrical power configuration that consists of an emergency power unit<sup>1</sup> or an alternate prime power source,<sup>2</sup> both of which provide redundant sources of power in the event of power failure or irregularity. Airfield lighting systems are designed to provide an automatic changeover from the utility electrical power to the alternate source of power within 15 seconds after a power failure occurs.<sup>3</sup> In addition, the FAA recommends that an adequate number of battery-powered emergency runway lights be available at all lighted airports for emergency use.<sup>4</sup> Furthermore, airport runways and taxiways have physical signage and pavement markings that provide the pilot with situational awareness in the event of a complete loss of power. The FAA finds that the secondary power sources, battery-powered emergency runway lights, and airport signage and markings are sufficient devices to ensure pilots and air traffic controllers maintain situational awareness in the event of a failure or an irregularity of runway lights. The FAA therefore recommends the continued use of these devices.

With respect to alerting mechanisms and procedures, the FAA uses a variety of methods to notify the flying public of certain situations, including the failure of airport runway lights. The FAA may provide notification to pilots who are receiving air traffic services. The FAA may also issue a Notice to Airmen (NOTAM), which is generally used to notify pilots of potential hazards that could affect the safety of flight, to alert pilots of airport runway light failures or irregularities and enhance situational awareness. Additionally, the FAA may share information through the FAA System Command Center and Automatic Terminal Information System (ATIS). The FAA finds that these notification mechanisms and procedures are sufficient to alert pilots and air traffic controllers of runway light failures or irregularities. As a result, the FAA recommends the continued use of these methods to support situational awareness.

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<sup>1</sup> An "emergency power unit" is any self-contained device (e.g. engine generator, battery backup, thermo-electric device) from which electrical power can be obtained upon failure of the prime power source.

<sup>2</sup> An "alternate prime power source" is a system substantially separate from the first power source in that it is arranged so that any single equipment failure, accident, lighting strike, or other damage that interrupts power from the first source will not normally interrupt power from the second source.

<sup>3</sup> Advisory Circular (AC) 150/5340-30J, "Design and Installation Details for Airport Visual Aids."

<sup>4</sup> Advisory Circular (AC) 150/5345-50, "Specification for Portable Runway and Taxiway Lights."