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### **A4A Impact Analysis of FAA's 5G Airworthiness Directive**

Despite distinctly expressed concerns by the aviation sector, in February 2021, the Federal Communications Commission (FCC) auctioned spectrum in the C-band that is adjacent to spectrum utilized by aircraft equipment known as radio altimeters.

Subsequently, and in response to the anticipated interference issues, in December 2021, the Federal Aviation Administration (FAA) issued two airworthiness directives (ADs) that will severely restrict the operation of all types of civil aircraft, including commercial transport airplanes, business, regional and general aviation airplanes, and both transport and general aviation helicopters equipped with radio altimeters, if the FCC and/or 5G telecom companies do not adequately account for and take steps to mitigate interference issues.

Airlines for America (A4A) surveyed its members to assess the potential impact and found:

The expected costs to the flying public, shippers and airlines are significant as the AD will materially disrupt airline operations. For example, if the AD were applied in arrears to A4A members' 2019 operations, approximately **345,000 passenger flights, 32 million passengers, and 5,400 cargo flights** would have been impacted in the form of delayed flights, diversions, or cancellations. A4A estimates that U.S. passenger airlines would incur an incremental **\$1.7 billion in operating costs annually**. Separately, A4A cargo operators estimate that the directive would have cost them **\$400 million annually** resulting from the disruption to their time-sensitive operations.

Further, the FAA AD will exact a heavy toll on passenger and shippers in the form of lost wages and productivity as well as higher operating costs. According to the FAA, the value of air travelers' time is worth \$47.10 per hour. In 2019, the actual duration of the average flight arrival delay was 64 minutes. Based on this, A4A estimates **the annual impact cost to passengers to be approximately \$1.59 billion**.

Airline customers rely on airlines to transport time-sensitive perishable products such as pharmaceuticals, vaccines, organs, critical supply chain parts, and many other high-value items. The lack of serious mitigations on the part of 5G telecom companies to address interference issues will significantly disrupt and harm the economy at a time when supply chains are already stretched thin.

Of note, the A4A estimates are conservative and do not account for the cascading ripple effect to not only airline operations but the economy-wide supply chain as a whole. Delays and cancellations typically have ripple effects as subsequent flights are either delayed or cancelled. These ripple effects include additional cost of delays to passengers and airlines, passenger/shipping re-accommodation costs, the cost to restore airline operations, and lost productivity, amongst others. It is not unreasonable to double the original impact estimates. Separately, there are other costs to consider such as customer goodwill, infrastructure investments, aircraft equipment modifications, and additional training of flight crews in the

procedures necessary for safely overcoming faulty radio altimeter indications, and additional structural investments needed to manage airline operations and customer expectations.

Finally, and of great importance, while the toll on the aviation workforce cannot be quantified, the dramatic and swift action that will be necessary to react to the AD could have significant impact on human factors as operational disruption translates into longer duty days for crews and fatigue-related risk.