

**Excerpt from Eno Center for Transportation Report
NextGen**

Aligning Costs, Benefits, and Political Leadership

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Introduction

The aviation system that is part of the life-blood of our economy is poised to face rising demand with limited additional capacity and outdated technology. This could put considerable stress on the system in terms of congestion and efficiency. The Next Generation Air Transportation System (NextGen) represents a series of incremental policies, procedures, and technological changes to modernize the air traffic control (ATC) system into a more efficient, state-of-the-art satellite-based system.

On the technology side, NextGen is composed of two main components: aircraft based equipment that records and transmits the exact location of the aircraft using Global Positioning System (GPS), and ground based infrastructure that can receive and analyze the GPS data. Infrastructural improvements also entail devising more direct and fuel-efficient routes, and upgrading the computer and backup system used at 20 Federal Aviation Administration (FAA) air traffic control centers nationwide. The infrastructure implementation is currently in the hands of the FAA and funded by the Airport and Airway Trust Fund (AATF), while aircraft equipage is expected to be paid for by the operators.

On-board equipage could allow improved decision-making capabilities and accessibility during adverse weather, as well as better data communications between cockpit and ATC. This more precise system has the potential to reduce the minimum aircraft separation standard and allow more direct flight patterns, thus decreasing fuel consumption, carbon emissions, and congestion.

On the policy-side, there are several obstacles to NextGen that hinder progress and the likelihood of a timely and cost-efficient implementation. First of all, there are uncertainties regarding the extent of the benefits NextGen can potentially provide. It is difficult to make forecasts about how much congestion or fuel consumption can be reduced to make the infrastructure investment worthwhile. This makes it challenging to create sustained political, financial, and industry support for the project.

Secondly, there are doubts about costs and the FAA's ability to deliver technology solutions of this magnitude. In the early 1980s, aviation modernization projects were projected to cost \$12 billion and be ready in 10 years. NextGen infrastructure and equipage is now estimated to cost about \$40 billion with expected completion by 2025.¹ Testimony by the US Department of Transportation Inspector General and a recent report by the Government Accountability Office (GAO) have pointed out cost overruns and delays in several NextGen programs. This continued uncertainty regarding the total infrastructure and equipage cost figure of NextGen has planted seeds of doubt amongst stakeholders and potential NextGen beneficiaries.

Third, the airlines and general aviation users have been hesitant to bear equipage costs due to low profitability, economic turmoil, and a lack of clear incentives to justify investing in NextGen. Operators are unlikely to invest until, at a minimum, the FAA is ready to deliver the promised benefits. This leads to a

stalemate: operators are uncertain whether investing in NextGen is worthwhile, when the infrastructure is not yet fully in place, and without equipage the infrastructure by itself is ineffective. The FAA has mandated equipage of Automated Dependent Surveillance-Broadcast Out (ADS-B) that allows the equipped aircraft to send transmission to other equipped aircraft ADS-B ground stations for all operators by 2020. However, there is uncertainty over when other NextGen on-board equipment will be required, particularly ADS-B In which allows the equipped aircraft to receive transmission from other ADS-B ground stations and other aircraft. Fourth, NextGen faces funding issues that pose some very difficult policy decisions. Work on the ground infrastructure aspect of NextGen is currently funded by the Facilities and Equipment account of the AATF and some progress, albeit slow, has been made on this project. However, recent reports by the Congressional Budget Office and the Government Accountability Office show that current AATF revenues are inadequate to fund NextGen.² Despite recent resolution over the long overdue FAA reauthorization bill, little progress has been regarding securing a full-fledged modernization funding plan. The current bill authorizes a flat amount of \$2.731 billion over four years for NextGen and funding is still subject to annual appropriation. A project that is already endangered by uncertainties regarding its worth would benefit from a stable and adequate funding source.

A fifth problem facing NextGen is lack of Congressional political leadership in prioritizing a project of such potential value. In July 2011 the House of Representatives passed a short-term extension bill that failed to pass the senate, resulting in a shutdown that lasted a fortnight. The AATF received no tax revenues during the shutdown. As Congressional leaders argued over the Essential Air Services program, the trust fund lost over \$400 million in foregone tax revenues. Those are funds that could have potentially been used towards an investment like NextGen. Furthermore, according to the FAA some of the NextGen program delays can be attributed to the furlough of some of the FAA employees in July 2011 and a freeze on contractor funding which resulted in work stoppage orders for several projects.³ This impact of the impasse on NextGen was also documented on the GAO report on the FAA's NextGen cost-management.⁴

In order for NextGen to succeed, there must be greater certainty about potential benefits and costs. In the highly competitive low profit-margin airline industry, few want to take on the burden of paying for something that spreads speculative benefits so widely. It will also be essential to have a mechanism that raises sufficient capital for NextGen infrastructure in a transparent and equitable manner, while imposing minimal burdens on those who pay for it. Without a sustainable, stable, and reliable strategy for both continued infrastructural improvements and incentives for equipage, there is no guarantee that NextGen can be implemented in a timely and cost-effective manner. Without strong political leadership, a clear and unbiased delineation of costs and benefits, a transparent source of funds, and incentives for operators to equip, it is unlikely that NextGen benefits can be delivered in a timely manner if at all.