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Managing Air Traffic Congestion Through the Next Generation Air Transportation System: Satellite-Based Technology, Trajectories, and - Privatization?

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"There are many excellent pilots who would rather do anything than land a private airplane at Newark, Cleveland, or Chicago."
—*'Aviation' Magazine, August 1935*

I. INTRODUCTION

On a late Friday afternoon, daily commuters face unbearable traffic congestion on the nation's highways trying to get home for the weekend. In recent decades, a very similar congestion effect has developed at nearly every major airport in the country, especially the nation's busiest.[1] During my own personal flight training, I had the unpleasant experience of witnessing this problem firsthand. Indeed, what originally seemed like a relatively simple task—communicating with an air traffic control tower and landing the aircraft—turned into a time consuming and costly adventure. I quickly discovered that the controllers will divert any aircraft away from the runway and put it behind a long line of planes trying to arrive home, meaning that every plane remains in the air far longer and expends far more fuel. This added fuel expense was relatively minimal for me, especially in comparison to the extravagant costs for major airlines, which are forced into these diversions even more frequently.[2] This begs the question: With the number of

1. In 2010, the costs of air traffic congestion nationwide will surpass forty-six billion dollars. Mike Chalmers, *Air Traffic Diversion to NCCo Proposed*, THE NEWS J., Feb. 21, 2009, http://www.delawareonline.com/article/20090221/NEWS02/902210347; *see also infra* Part II.B.2 (discussing the effects of air traffic congestion and delays on the airspace system).

2. For instance, the most commonly used general aviation aircraft is the four-seat Cessna SkyHawk 172R, which has an hourly estimated fuel burn rate around seven and a half gallons per hour. In contrast, a Boeing 747-100 has an approximate fuel burn rate of 3,638 gallons per hour. Nova, Aircraft Specifications, http://www.pbs.org/wgbh/nova/teachers/activities/3203_concorde_02.html (last visited Oct. 10, 2009). Using a modest wholesale fuel price of $2.15 per gallon (price in 2007), an extra fifteen minutes in the air would cost a private pilot in a SkyHawk $4.03 (plus any additional

aircraft in the airspace growing rapidly, how do we efficiently manage the demand for open skies?

In 2007, "congested skies brought a 10 percent spike in delays," and with projections of air travel demand more than doubling by 2025, the need for an air transportation infrastructure to efficiently accommodate demand has never been more important.[3] The current system is running primarily on air traffic control (ATC)[4] technology developed in the 1940s, resembling "something that was used to guide the Beatles during their first trip to America."[5] Over half of a century later, Congress has finally called for the creation of the Next Generation Air Transportation System (NextGen),[6] and nearly every political constituency is heavily anticipating the transformation, including President Barack Obama's Secretary of Transportation, Ray LaHood, who has called NextGen the Federal Aviation Administration's (FAA) next priority.[7]

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rental fees), and $1,955.43 for the commercial airliner. As illustrated, every extra minute the airlines spend in the air cuts into their bottom line on each flight. For links to data on fuel rates, see *id.*; CESSNA, 172R SKYHAWK: INFORMATION MANUAL 5-5 (1996).

3. Mary E. Peters, Sec'y of Transp., U.S. Dep't of Transp., Remarks at the FAA Forecast Conference (Mar. 10, 2008), *available at* 2008 WL 741173.

4. Congress defines an "air traffic control system" (ATC) as:

> [T]he combination of elements used to safely and efficiently monitor, direct, control, and guide aircraft in the United States and [its] assigned airspace, including . . . facilities, equipment, and systems employed to detect, track, and guide aircraft movement; . . . published procedures that explain required actions, activities, and techniques used to ensure adequate aircraft separation; and trained personnel with specific technical capabilities to satisfy the operational, engineering, management, and planning requirements for [ATC].

49 U.S.C. § 40102(a)(47) (2006).

5. Mary E. Peters, Sec'y of Transp., U.S. Dep't of Transp., Remarks to the National Business Aviation Association, Atlanta, Georgia (Sept. 25, 2007), *available at* 2007 WL 2775205. For a discussion on the history and development of the ATC system, see *infra* notes 49–50 and accompanying text.

6. *See* Vision 100—Century of Aviation Reauthorization Act, Pub. L. No. 108-176, §§ 709–10, 117 Stat. 2490, 2582–85 (2003). Europe's equivalent to NextGen is the Single European Sky Air Traffic Management Research Programme (SESAR). The SESAR program focuses solely on redefining the ATC system, whereas NextGen "takes what is called a 'curb-to-curb' approach, and includes not only air traffic control, but also airports, airport operations, security and passenger management . . . ." *The Next Generation Air Transportation System: Status and Issues: Hearing Before the Comm. on Science & Technology*, 110th Cong. 15 (2008) [hereinafter *Hearing on the Status of NextGen*] (hearing charter). For further discussion on the SESAR program, see generally SESAR CONSORTIUM, SESAR MASTER PLAN (2008) (laying out the foundation for implementation and purposes of reform); SESAR CONSORTIUM, THE ATM TARGET CONCEPT (2007) (discussing the technical aspects of the new air traffic management system).

7. *Nomination of Honorable Ray LaHood to be Secretary of the U.S. Department of Transportation: Hearing Before the Subcomm. on Commerce, Science and Transportation*, 111th Cong. 46 (2009) [hereinafter *Nomination of LaHood*] (statement of Ray LaHood, Sec'y of Transp.).

The fundamental goal of NextGen is to "[e]stablish an agile air traffic system that accommodates future requirements and readily responds to shifts in demand from all users."[8] As such, the system will be designed specifically to "respon[d] to market elasticity, hav[ing] the flexibility to deliver capacity and efficiency improvements, and ensur[ing] that equipment and personnel are able to support a wide range and number of operations tailored to customer needs."[9] Undoubtedly the technology needed to incorporate such a system is currently available.[10] But NextGen leaves one significant issue unaddressed, namely, the lack of governmental accountability needed to keep pace with rapidly changing technology.[11] As one author noted, the

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8. JOINT PLANNING & DEV. OFFICE, NEXT GENERATION AIR TRANSPORTATION SYSTEM: INTEGRATED PLAN 27 (2004) [hereinafter INTEGRATED PLAN].

9. *Id.*; *see also The FY04 Budget for Aeronautics Research and Development Programs at the FAA and NASA: Hearing Before the Subcomm. on Space & Aeronautics*, 2003 WL 1064901 (2003) [hereinafter *Hearing on NASA Budget*] (statement of Dr. Jeremiah Creedon, NASA, Assoc. Adm'r for Aerospace Technology) ("Any future system must have the flexibility to move and expand and adapt, to be responsive to [consumer] demands on the transportation system. And even if it is revolutionary, it must still allow continuous safe operations to occur even in the face of unpredicted events."). The need for an agile air transportation system is critical, as noted by Congress:

> If our aviation system does not proactively respond to these challenges, there will be severe economic and social consequences. If we fail to capitalize on the opportunities to improve the industry then congestion, higher consumer prices, deteriorating air quality and an increased risk to aviation safety are all foreseeable repercussions.

H.R. REP. NO. 110-238 (2007). NextGen also has called for the development of airport infrastructure to accommodate the future capacity needs in the system. INTEGRATED PLAN, *supra* note 8, at 25. However, as this Comment explores, many of the capacity expansions could be quickly overrun by excessive demand. *See generally* discussion *infra* Part III.D.

10. Despite the availability of technology, the progress of the NextGen transition thus far has been mixed. In August 2007, the federal government invested $1.8 billion for the Automatic Dependent Surveillance—Broadcast (ADS-B) ground stations, but the technology needed to realize these benefits is still in the process of being developed. *Status of FAA's Efforts To Develop the Next Generation Transportation System: Hearing Before the Comm. on Science & Technology*, 110th Cong. 5–6 (2008) (statement of Hon. Calvin L. Scovel III, Insp. Gen.). In addition, the FAA has issued the proposed rulemaking for the necessary technology, ADS-B, and anticipates full implementation by 2020. Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. 56,947, 56,950 (Oct. 5, 2007) (notice of proposed rulemaking); Mark A. Kellner, *GPS Soars High with FAA*, WASH. TIMES, Mar. 2, 2009, http://www.washingtontimes.com/news/2009/mar/02/air-traffic-control-evolves-as-faa-adopts-gps/ ("The FAA's goal is to mandate placement of GPS-based equipment in all planes . . . by 2020."). For continuous updates on the progress of NextGen, see 'Fly NextGen' Aviation Blog, http://blog.flynextgen.com/ (last visited Oct. 10, 2009).

11. Nearly every year since NextGen was authorized, Congress has criticized the FAA for its handling of NextGen and the management of technology in the air traffic management system, citing slow implementation, cost overruns, and faulty investment decisions. S. REP. NO. 110-418 (2008), *available at* 2008 WL 2736832 ("The Committee believes that the FAA is already failing to reach for new capabilities when it makes investment decisions for two programs in the agency's portfolio . . . [and] does not feel confident that the FAA knows how to [sic] it will move from the current system to NextGen."); H.R. REP. NO. 110-238 (2007) ("The Committee notes that FAA has had a history of problems managing modernization projects in the past. NextGen is a complex, multibillion modernization project, and FAA must establish effective controls and oversight to ensure the FAA delivers new capabilities on-time and within budget."); S. REP. NO. 109-109, at 35 (2005), *re-*

FAA "develop[s] capacity in terms of a 10-year time frame," while the airlines and consumers generating the demand "are changing decisions every three months."[12] Forming an increasingly accountable FAA to engineer a successful transition to NextGen, however, would only address part of the air traffic congestion issue, leaving government-operated airports to continue mismanaging access to the national airspace system.

Given the relatively fixed amount of airport facilities available,[13] the fact that the demand from air carriers has continuously outpaced supply has resulted in significant flight delays that have rippled throughout the country.[14] Yet Congress continues to impose regulatory control over municipally-owned airports across the country, forcing them to provide non-discriminatory access to the airfield.[15] With the non-discriminatory access

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printed in 2006 U.S.C.C.A.N. 1260 ("[I]t is perplexing that FAA is making so much of [NextGen], and seeking ways to pay for it, when the Agency cannot complete . . . critical effort[s] . . . that w[ere] scheduled to be completed years ago."); S. REP. NO. 108-342, at 35 (2004) ("[O]ver the past 15 years, the FAA seems to continue to find new and innovative ways to increase the cost of the procurement and the taxpayers' exposure to future system . . . costs."). With the flaws of implementation and criticism continuously rising, the question of whether the FAA could maintain the pace of changing technology after NextGen is complete may pose a problem for the government-managed ATC system.

12. *Study: Nation's Air-Transportation System Must Become More 'Agile'*, ASCRIBE NEWSWIRE, Oct. 5, 2006, http://newswire.ascribe.org/cgi-bin/behold.pl?ascribeid=20061005.060213&time=09+06+PDT&year=2006&public=0 [hereinafter *Agile Transportation System*]. The professor from Purdue University continued:

> You can almost think of it as a video game where the service providers are adding flights and subtracting flights and doing the best they can to satisfy changing demand, and the FAA is trying to catch up and add the capacity necessary to meet the needs of the airlines .... [I]f the infrastructure providers were not able to keep pace with demand, the service providers would stagnate. They would be unable to add the flights that they needed.... [S]uch agility or responsiveness is critical.

Id. Though this analysis specifically applies to increasing capacity in more technologically efficient ways, because the ATC system is managed by a government agency, the constraints in the legal system do not permit policies to adapt as quickly as the technology.

13. *See infra* note 254 and accompanying text (discussing the three critical resources needed for air carriers to enter the airline industry at high-density airports).

14. For data and illustrations of worsening flight delays and air traffic congestion, see discussion *infra* Part II.B.2.

15. The federal grant program authorizes the Secretary of Transportation to grant funds to publicly-owned airports for projects in exchange for certain written assurances. 49 U.S.C. § 47104(a) (2006) ("To maintain a safe and efficient nationwide system of public-use airports that meets the present and future needs of civil aeronautics, the Secretary of Transportation may make project grants . . . from the Airport and Airway Trust Fund."). The main assurances require that the airport be "available for public use on reasonable conditions and without unjust discrimination," and the airport's revenues "will be expended for the capital or operating costs of the airport." § 47107(a)(1), (b). For the history of the grant program, see discussion *infra* note 51. For further discussion on the assurances involved, see discussion *infra* notes 244–247 and accompanying text.

requirement, airports are not allowed to use pricing as a method of allocating ground facilities, which, in turn, renders them unable to control access to the national airspace system.[16] Solely focusing on NextGen and expanding airspace capacity without corresponding corrections in these demand-management policies will only provide greater incentive for airlines to overschedule in order to fill in the marginal increases in capacity. To avoid this escalation of congestion, the socially efficient solution is for local governments to transfer these "high-density airports" to the private sector on the condition that private owners focus on eliminating congestion.[17] The societal gains from eliminating congestion would outweigh any societal costs incurred from potential airport discrimination against airlines.[18] As a result, airport privatization may be the proper catalyst for exploiting the full potential of NextGen.

This Comment explores the advantages of NextGen in expanding airspace capacity and the potential problems that may arise without a reform in FAA accountability. Recognizing NextGen as merely part of the solution, the Comment argues that airport privatization is a critical supplement to avoid the federal regulatory policies that dampen efforts to control airport resource demand. Part II breaks down the transformation of the air transportation system since its inception and constructs the landscape for existing air traffic congestion.[19] Part III examines Congress's attempts to expand capacity through NextGen, identifies and suggests solutions to the accountability obstacles, and argues that NextGen's efficient routing structures and added capacity are overrun by the inability to manage competition and congestion at the country's high-density airports.[20] Parts IV.A and IV.B criticize the current approach to regulation of the nation's airports by illustrating the damaging effects it has on efforts to manage demand for critical ground facilities.[21] Part IV.C demonstrates the problems mounting with the FAA's policies on regulating access to congested airports while IV.D provides critical

16. *See generally* discussion *infra* Part IV.A.

17. The FAA has classified five different airports as "high-density airports": LaGuardia Airport (LaGuardia), Newark Liberty International Airport (Newark), Chicago O'Hare International Airport (O'Hare), Ronald Reagan Washington National Airport (Washington National), and John F. Kennedy International Airport (JFK). *See* 14 C.F.R. § 93.123(a) (2008). As the structure of the airline industry shifts, it is expected that additional airports will reach the level of traffic the above five sustain. *See* discussion *infra* note 225 and accompanying text.

18. The social costs from congestion can be substantial. For instance, the costs of airport congestion at the three busiest airports located in the New York region have been estimated at $2.6 billion for the local economy in 2008 alone. PARTNERSHIP FOR NEW YORK CITY, GROUNDED: THE HIGH COST OF AIR TRAFFIC CONGESTION 4 (2009). The report also points out that "[i]f no action is taken, losses attributable to congestion will total a staggering $79 billion over the eighteen-year span from 2008 to 2025." *Id.*

19. *See infra* notes 24–80 and accompanying text.

20. *See infra* notes 81–232 and accompanying text.

21. *See infra* notes 233–290 and accompanying text.

insight to the future outlook under Secretary of Transportation, Ray LaHood.[22] Part V presents an argument that privatization of high-density airports may lead to a more socially efficient solution and provides suggestions for reforming current privatization laws.[23] Finally, Part VI concludes this Comment.

II. CREATION OF THE U.S. AIR TRANSPORTATION SYSTEM

A. Airmail and the Regulated Airline Market (1916–1978)

The invention of the aircraft spurred considerable interest in aviation in the early twentieth century, but the inherent dangers in flying limited its initial economic viability to airmail service.[24] The Postal Service would ultimately become responsible for the birth of the United States commercial air transportation system after President Woodrow Wilson allocated $50,000 in 1917 for the establishment of airmail routes.[25] After initial success, Congress enacted the Air Mail Act of 1925 (Kelly Act), transferring airmail service to the private sector.[26] The Postmaster General was authorized to establish pre-set airmail routes and allow bids on each, thereby increasing competition for specific routes and awarding them to the cheapest bidder.[27]

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22. *See infra* notes 291–337 and accompanying text.

23. *See infra* notes 338–414 and accompanying text.

24. The ability of the aircraft to provide substantial benefits depended on the development of legal doctrines in aviation law. Specifically, the major concern became whether landowners could assert common law trespass against pilots flying over their land. The common law stated that "the landowner owns up to but not including the caelum." Swetland v. Curtiss Airports Corp., 41 F.2d 929, 937 (N.D. Ohio 1930) (emphasis omitted). Landowners claimed they had exclusive property rights stretching indefinitely through the airspace. *Id.* at 936–37. In one of the first cases addressing this issue, *Commonwealth v. Nevin*, 2 Pa. D. & C. 241 (Jefferson County Ct. 1922), the court reasoned that an aircraft did not interfere or encroach on the owner's occupation of the land, and thus, it "[c]learly . . . cannot be said that the flight of an aeroplane over land was . . . such a thing as was, and always had been, a trespass upon land." *Id.* at 242. For a complete history on "aerial trespass," see STUART BANNER, WHO OWNS THE SKY?: THE STRUGGLE TO CONTROL AIRSPACE FROM THE WRIGHT BROTHERS ON (2008).

25. Daniel K. Bubb, *The Successes and Failures of Presidential Policy on Commercial Air Travel*, 71 J. AIR L. & COM. 653, 654 (2006). The first airmail flight took place on May 15, 1918, from Washington, D.C. to New York City. ROBERT M. KANE & ALLAN D. VOSE, AIR TRANSPORTATION 4-5 (7th ed. Kendall/Hunt Publ'g Co. 1979) (1967). Between 1917 and 1928, Congress "appropriated and authorized the expenditure of $1,088,620,005 for aviation purposes." JOS. H. WENNEMAN, MUNICIPAL AIRPORTS 25–27 (1931).

26. KANE & VOSE, *supra* note 25, at 5-2; Air Mail (Kelly) Act of 1925, ch. 128, 43 Stat. 805.

27. § 4, 43 Stat. at 805 ("Postmaster General is authorized to contract with any individual, firm, or corporation for the transportation of air mail by aircraft between such points as he may designate at a rate not to exceed four-fifths of the revenues derived from such air mail . . . ."); KANE & VOSE,

But while airmail seemed to be thriving, states began enacting their own laws for regulating aircraft activity in general, which threatened to harm the development of a national air transportation system.[28] The potential value of aviation to the U.S. economy and a need for nationally uniform laws eventually led Congress to enact the Air Commerce Act of 1926,[29] which explicitly gave the Secretary of Commerce the power to encourage development

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supra note 25, at 5-2. The first airlines to be awarded contracts were National Air Transport, Varney Lines, and Pacific Air Transport (all eventually merging into United Airlines), Colonial Air Lines (eventually a part of American Airlines), and Western Air Express (merging into TWA). Paul Stephen Dempsey, *The State of the Airline, Airport & Aviation Industries*, 21 TRANSP. L.J. 129, 134 (1992).

28. With a lack of congressional action during the 1910s and early 1920s, much of the states' attitude was conveyed by the California Legislature: "[U]ntil the Congress of the United States passes legislation to control and direct the operation of all aircraft over all the territory . . . of the United States . . . all aircraft operating within the geographical limits of the State of California shall be governed by the provisions hereof." CARL ZOLLMANN, LAW OF THE AIR 33–37 (1927) (quoting Act of June 3, 1921, ch. 783, § 13, 1921 Cal. Stat. 1421, 1424) (internal quotations omitted). The result was a slew of state statutes regulating its own airspace. *See, e.g.*, Act of June 3, 1921, ch. 783, 1921 Cal. Stat. 1421, *microformed on* Session Laws of Am. States & Territories, Cal., 1921–39, Fiche 17 (Xerox); Act of June 13, 1922, ch. 534, 1922 Mass. Acts 666, *microformed on* Session Laws of Am. States & Territories, Mass., 1920–39, Fiche 36 (Xerox). However, in 1922 the National Conference of Commissioners of Uniform State Laws approved the Uniform State Law for Aeronautics, bringing unity to the twenty-one states that adopted it. *See* Richard H. Jack, *Ultralight Aircraft: A Need for Better Regulation Than 14 C.F.R. § 103*, 51 J. AIR L. & COM. 415, 424–25 (1986); *see also* UNIFORM STATE LAW FOR AERONAUTICS §§ 1–14 (1922), *reprinted in* ZOLLMAN, *supra*, at 260–64. Even today, some states have retained relatively the same statutes adopted from the 1920s. *See, e.g.*, DEL. CODE ANN. tit. 2, §§ 301–10 (2008); NEV. REV. STAT. ANN. §§ 493.010–.120 (West 2008). The Supremacy Clause of the U.S. Constitution, however, will preempt any of these state statutes if they conflict with federal authority. *See* U.S. CONST. art. VI, § 2 ("This Constitution, and the Laws of the United States . . . shall be the supreme Law of the Land . . . .").

29. Air Commerce Act of 1926, ch. 344, 44 Stat. 568. There was initial debate as to what authority Congress had to regulate aircraft in the airspace system. *See, e.g.*, HENRY G. HOTCHKISS, AVIATION LAW 68 (1928) (discussing several groups, including the Law of Aviation of the American Bar Association, that believed the Congress did not have the authority to regulate air traffic and recommended a constitutional amendment). Among the sources of authority considered were the "war power, the maritime power, power to make treaties, and the power to regulate commerce among the various states and foreign countries." *Swetland*, 41 F.2d at 938; *see also* ZOLLMANN, *supra* note 28, at 39–42 (discussing each of these powers and its applicability to the federal government's constitutional basis for regulation). Ultimately, Congress relied upon the Commerce Clause of the U.S. Constitution, stating:

> In order to protect and prevent undue burdens upon interstate and foreign air commerce the air traffic rules are to apply whether the aircraft is engaged in commercial or noncommercial, or in foreign, interstate, or intrastate navigation in the United States, and whether or not the aircraft is registered or is navigating in a civil airway.

67 CONG. REC. 9390 (daily ed. May 13, 1926), *microformed on* Congressional Record, Vol. 67, Pt. 9 (Info. Handling Serv.); *see also* U.S. CONST. art. I, § 8, cl. 3 ("The Congress shall have power . . . To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes . . . ."); HOTCHKISS, *supra*, at 70–71 (reviewing the constitutionality of the Air Commerce Act). The states eventually recognized that using any other mechanism than federal regulation would be impractical. *See Swetland*, 41 F.2d at 940 ("[M]any of the regulatory measures and traffic rules promulgated under the Air Commerce Act of 1926 would be very difficult to enforce if the state were permitted to adopt different regulations and different traffic rules for intrastate commerce . . . .").

of airports, airways and navigational facilities, investigate airplane accidents, maintain and operate the airway system, and require airmen certificates and the registration of aircraft.[30]

The controversies surrounding the transportation of airmail, however, would overshadow many of the initial legal developments in the air transportation system. The early success of airmail routes deteriorated as the Post Office gained more control over "pattern[s] of service and route structures by awarding or withholding contracts," leading to an "informal and haphazard" system.[31] In 1930, Congress enacted a controversial amendment to the Air Mail Act[32] designating a formula for determining airmail payments based upon volume of mail transported[33] and allowing the Postmaster General, Walter Brown, to establish an airmail contract without competitive bidding.[34] Brown used this power to establish two main transcontinental airlines[35] and encouraged the airlines to engage in passenger operations over transporting junk mail during a series of controversial "spoils conferences."[36] This abuse of power, known as the Air Mail Scandal,[37] played a

30. §§ 2(a), (e), 3(a), (c), 5(b), 44 Stat. at 569. In carrying out these provisions, Congress gave the Secretary of Commerce the power to establish regulations governing air traffic. § 3(e), 44 Stat. at 569–70 ("The Secretary of Commerce shall by regulation . . . [e]stablish air traffic rules for the navigation, protection, and identification of aircraft . . . ."). The Department of Commerce subsequently established an aeronautics branch to regulate the emerging airline industry. *See* KANE & VOSE, *supra* note 25, at 5-5. Using this authority, the Secretary of Commerce published the *Air Commerce Regulations* on December 31, 1926. HOTCHKISS, *supra* note 29, at 88. For a copy of the original regulations, see AIR COMMERCE REGULATIONS §§ 1–83 (1926) (amended 1928), *reprinted in* HOTCHKISS app. D, *supra* note 29, at 205–57.

31. Michael E. Levine, *Is Regulation Necessary? California Air Transportation and National Regulatory Policy*, 74 YALE L.J. 1416, 1417 (1965).

32. Air Mail (McNary-Waters) Act of 1930, ch. 223, 46 Stat. 259.

33. § 4, 46 Stat. at 259.

34. § 6, 46 Stat. at 259–60 ("Postmaster General may, if in his judgment the public interest will be promoted . . . , issue . . . a route certificate . . . to any contractor . . . to carry air mail over the route set out in the certificate . . . at rates of compensation to be fixed from time to time . . . ."). The other controversial authority came in 1928, which authorized the Postmaster General to award "contracts to the bidders that he shall find to be the lowest responsible bidders that can satisfactorily perform the service required to the best advantage of the Government." Foreign Air Mail Act of 1928, ch. 149, 45 Stat. 248.

35. American Airlines and Transcontinental and Western Air (TWA) were the two transcontinental airlines formed to compete with United Aircraft and Transport Co. (the predecessor to United Airlines). *See* Levine, *supra* note 31, at 1417–18.

36. KANE & VOSE, *supra* note 25, at 5-7; Paul Stephen Dempsey, *Transportation: A Legal History*, 30 TRANSP. L.J. 235, 278 (2003). During the late 1920s, it was believed that airmail routes would operate similarly to the handling of mail by the railroads, where mail would be transported between several different cities before it reached its final destination. *See Investigation of Air Mail and Ocean Mail Contracts: Hearings Before a Spec. S. Comm. on Investigation of Air Mail and Ocean Mail Contracts*, 72d Cong. 2452 (1933), *microformed on* U.S. Cong. Hearings, v. 436, Card 2

large role in the development of commercial aviation because it was the first shift away from airlines solely carrying airmail.[38] After the conferences were exposed, all contracts were cancelled and the airmail contracts were assigned to the army on February 9, 1934,[39] leading to significant army pilot deaths and reform for transporting airmail through the Air Mail Act of 1934.[40]

After restoring competition for airmail routes,[41] Congress authorized the Interstate Commerce Commission to determine the "fair and reasonable rates" for transporting airmail,[42] and called for an independent commission to make recommendations for comprehensive policies in all phases of aviation.[43] Upon the issuance of a report by the commission,[44] the Civil Aero-

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of 14 [hereinafter *Hearings on Air Mail Contracts*] (statement of Sen. Hugo Black). Unlike railroads that have fairly predictable arrival times, a "plane [can] come[] in 2 hours late . . . and the operator who is to take the mail and passengers next has . . . to keep his people waiting." *Id.* at 2452 (statement of Walter F. Brown). Postmaster Brown soon recognized that "a short line could not pay the expense of maintaining a ground force and the supervisory force that would be necessary," which is why he "foresaw the time when there would be practically a nonstop operation from coast to coast . . . [that] could not be broken between lines midway or any place." *Id.* at 2451–52. With this perception in mind, Postmaster Brown encouraged the smaller airlines to merge together during these secret meetings in order to form two larger carriers that could begin coast-to-coast routes. *See* Levine, *supra* note 31, at 1417–18. Once the airlines eventually obliged, they were awarded the airmail routes pursuant to the Postmaster's authority to issue contracts without competitive bidding. *See id.* at 1418. After the three transcontinental carriers during that time ended up with ninety percent of all airmail contracts, Senator Hugo Black eventually exposed the system of cartels Brown had created. *Id.* While Brown's methods of achieving this ambitious vision are questionable, it is the eventual positive effects on the air transportation system that make him such a controversial figure. *See* KANE & VOSE, *supra* note 25, at 5-7.

37. For a complete discussion on the Air Mail Scandal, see *Hearings on Air Mail Contracts*, *supra* note 36; INVESTIGATION OF AIR MAIL AND OCEAN MAIL CONTRACTS, S. REP. NO. 73-254 (1934), *microformed on* CIS No. 9772, Fiche 6–7 (Cong. Info. Serv.); S. DOC. NO. 73-131 (1934), *microformed on* CIS No. 9800, Fiche 10 (Cong. Info. Serv.).

38. KANE & VOSE, *supra* note 25, at 5-12. In the late 1920s, Congress enacted other measures concurrently to ignite a growing air transportation system. *See* Radio Act of 1927, ch. 169, 44 Stat. 1162 (authorizing certain radio-band frequencies to be used for aviation purposes); Federal Public Airport Act of 1928, ch. 728, 45 Stat. 728 (allowing federal lands to be leased for airport facility purposes).

39. Transportation of Air Mail During Emergency Created by Annulment of Domestic Air Mail Contracts, Exec. Order No. 6591 (Feb. 9, 1934) ("It is . . . ordered . . . that the Secretary of War place at the disposal of the Postmaster General such airplanes, landing fields, pilots, and other employees and equipment of the Army of the United States needed or required for the transportation of mail, during the present emergency . . . .").

40. Air Mail (Black-McKellar) Act of 1934, ch. 466, 48 Stat. 933. The comprehensive reform also led to the investigation of Postmaster Brown's control. He was eventually cleared because it was never proven that he benefitted financially. *See* KANE & VOSE, *supra* note 25, at 5-12.

41. *See* KANE & VOSE, *supra* note 25, at 5-11.

42. § 6, 48 Stat. at 935.

43. § 20, 48 Stat. at 938 ("The President is hereby authorized to appoint a Commission . . . for the purpose of making an immediate study and survey, and to report to Congress . . . its recommendations of a broad policy covering all phases of aviation and the relation of the United States . . . ."). The creation of a commission was in reaction to the growing airline competition and the fact that

nautics Act of 1938[45] created the Civil Aeronautics Authority, eventually reorganized as the Civil Aeronautics Board (CAB).[46] The existing airlines were "grandfathered" in while the CAB began regulating commercial transportation in three main ways: controlling the entry and exit of airlines, determining rates to charge passengers, and granting immunity to airlines in

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revenue from passengers for the first time exceeded that from airmail. *See* KANE & VOSE, *supra* note 25, at 5-12 to -14.

44. The Federal Aviation Commission (FAC), created to study the growing airline industry, arguably laid the foundation for the air transportation system for the next forty years. *See generally* REPORT OF FEDERAL AVIATION COMMISSION, S. DOC. NO. 74-15 (1935), *microformed on* CIS No. 9898, Fiche 1–3 (Cong. Info. Serv.). The recommendations centered around the idea of a government-scrutinized air transportation system through regulation:

> Provision should be made to specify a minimum quality of service and a minimum of frequency of schedule on air lines. Rates of fare should be subject to governmental approval, and the financial structure of air lines should be supervised and their general conformity with the letter and spirit of the law watched over by appropriate governmental agencies.

Id. at 9. Through measures still in place, "[a]ll regular domestic scheduled transport operations should require a certificate of convenience and necessity," a procedure that would give the federal government significant control over what airlines could enter the market. *Id.*; *see infra* note 60. Overall, the idea of competition was nonexistent in order to "avoid[] uneconomical paralleling of routes or duplication of facilities." S. DOC. NO. 74-15, at 10. The end result of the FAC report would prove extremely influential for the Civil Aeronautics Act of 1938. *Cf.* discussion *infra* notes 45–49 and accompanying text.

45. Civil Aeronautics Act of 1938, ch. 601, 52 Stat. 973. Even twelve years after the Air Commerce Act, there was concern over whether Congress should amend the Constitution to give itself the power to regulate the national airspace system. *See* S. DOC. NO. 74-15, at 37 ("If the several states do not adopt substantially uniform aeronautical regulatory laws within a reasonably early time, a Federal constitutional amendment should be adopted which will give to the Federal government exclusive control of all phases of civil aeronautics within the United States."). However, the Commerce Clause once again would allow Congress to govern the national airspace system and repeal all previous legislation involving aviation. *See supra* note 29 (discussing Congress's authority to regulate the national airspace).

46. § 201, 52 Stat. at 980–81. The main purpose of the legislation was to unify the various bureaucrats involved in the aviation industry into one single independent agency. H.R. REP. NO. 75-2254, at 1 (1938), *microformed on* CIS No. 10234, Fiche 9 (Cong. Info. Serv.) ("The result of this divided jurisdiction over civil aeronautics has been a lack of coordination in the efforts of the Government to regulate, foster, and develop the air-transportation industry . . . ."); *see also* CREATION OF CIVIL AERONAUTICS AUTHORITY, H.R REP. NO. 75-2635 (1938), *microformed on* CIS No. 10235, Fiche 8–9 (Cong. Info. Serv.). The Civil Aeronautics Authority, at the time of its creation, acquired the assets of the Bureau of Air Commerce and the Bureau of Air Mail, parts of the Department of Commerce and Interstate Commerce Commission, respectively. § 203, 52 Stat. at 982; *see also* Dempsey, *supra* note 36, at 290. In 1940, the Civil Aeronautics Authority was consolidated and placed under the Civil Aeronautics Board (CAB). Reorganization Plan No. IV, § 7(b), 54 Stat. 1235 (1940) ("The functions of the Air Safety Board are consolidated with the functions of the Civil Aeronautics Authority, which shall hereafter be known as the Civil Aeronautics Board . . . ."). However, some minor functions of the Civil Aeronautics Authority were retained and transferred to the Department of Commerce. § 7(a), 54 Stat. at 1235.

certain situations from antitrust violations.[47] To expand safety throughout the system during the shift from mail services to air passenger transportation, the Air Safety Board was also created to investigate aircraft accidents and issue regulations governing the reporting of accidents.[48] While the technology did not make an air traffic control system particularly useful, the federal government also provided the Administrator the power to "establish, operate, and maintain . . . air navigation facilities" at any municipally-owned airport.[49]

After extensive developments in aircraft navigation and radar for traffic surveillance following World War II,[50] air transportation services prolife-

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47. *See* Dempsey, *supra* note 36, at 292–93; §§ 401–02, 404, 408, 52 Stat. at 987–1002; H.R. REP. NO. 75-2635, at 67–72 (1938). Aside from the need for a single agency to govern the air transportation system, Congress wanted to address the cutthroat competition existing between carriers, which was "shak[ing] the faith of the investing public in their financial stability and . . . prevent[ing] the flow of funds into the industry." H.R. REP. NO. 75-2254, at 2; S. REP. NO. 75-1661, at 2 (1938), *microformed on* CIS No. 10229, Fiche 10 (Cong. Info. Serv.) ("[I]ts immediate enactment [will] prevent the spread of bad practices and of destructive and wasteful tactics resulting from the intense competition now existing within the air-carrier industry."). As a result, Congress felt regulation was necessary to nurture and produce a viable air transportation system.

48. §§ 701, 702, 52 Stat. at 1012–13.

49. § 302(a)(3), 52 Stat. at 985; *see also* § 1(7), 52 Stat. at 977 ("Air navigation facility means any facility used in . . . aid of air navigation . . . and any other structure . . . having a similar purpose for guiding or controlling flight in the air or the landing and take-off of aircraft."). In 1939, there were approximately 2,700 airports throughout the United States, of which only 50 had full air traffic control systems attached. Meyers v. City of Hartford, 8 Conn. Supp. 528, 529 (Super. Ct. 1940). In the early 1940s, one court described air traffic control facilities, before the advent of radar surveillance, as follows:

> The functions of a control system . . . are to assist in directing and controlling incoming and departing traffic for the purpose of preventing or reducing, as far as possible, accidents from collision. Such a system may consist of radios, lights or other visible signals. Of course, the use of radios in such a system would be of no service except to planes likewise equipped.

Weadock v. Eagle Indemnity Co., 15 So. 2d 132, 136–37 (La. Ct. App. 1943). Although the federal government had assumed the function of control through the 1938 Act, the function of air traffic control was of little usefulness. *See id.* at 137 (finding visible signals merely confuse, rather than assist, aircraft in heavily congested areas). However, because of the relatively lax federal enforcement of this provision, local authorities were more vigilant in ensuring safety at their airports. *See* People v. Newhauser, 92 N.Y.S.2d 295–97 (N.Y. Magis. Ct. 1949). A variety of different forms of control existed at airports during this time: terminal airports with radio controlled traffic, privately-owned airports operated by the owners, emergency fields with no control, and others simply controlled by federal regulations. *Meyers*, 8 Conn. Supp. at 529–30. The fundamental rules of the road were promulgated in the Air Commerce Regulations, and pilots essentially governed themselves in most cases. *See id.*; *see also supra* note 30.

50. *See* INVESTIGATION OF THE DEVELOPMENT OF THE COMMON SYSTEM OF AIR NAVIGATION AND TRAFFIC CONTROL, H.R. REP. NO. 84-592, at 4 (1955), *microformed on* CIS No. 11822, Fiche 22 (Cong. Info. Serv.) ("Technological progress made under the stress of military necessity during the war was nothing short of spectacular. Feats of military aviation had made the American public air-minded. People who had not flown before suddenly realized the advantages of this form of transportation."). The most significant navigational device created up until this point was the very high frequency visual omnirange (VOR) device and the distance measuring equipment (DME). In November of 1948, the Air Navigation Development Board was set up to handle the difficult task of

rated in the early 1950s.[51] But a lack of coordination between military and civilian users of airspace led to an infamous mid-air collision, exposing both the safety problems and need for a uniform body to manage the national airspace system.[52] As a result, the Federal Aviation Act of 1958[53] largely expanded air safety by creating the Federal Aviation Agency[54] to develop and

implementing these ground-based systems. *Id.* at 5. At the end of 1955, it was projected that there would be 500 VOR ground stations implemented and radar traffic control facilities in most metropolitan areas. *Id.* at 7. These systems, both VOR-DME and radar facilities for traffic control, are still the dominant sources that move aircraft through the national airspace system today. For a discussion and description of how each function, see *supra* Part III.A.

51. One of the major catalysts for the increase in airline services was Congress's decision to grant local governments funds in order to construct airport infrastructure and increase the number of airports nationwide. *See* Federal Airport Act of 1946, ch. 251, § 4, 60 Stat. 170, 171–72 (repealed 1970); *see also infra* notes 244–247 and accompanying text (discussing the effects of this 1946 Act on the current airport environment). For instance, United Airlines and Transcontinental and Western Airlines (TWA) were the only two airlines operating out of San Francisco International Airport (formerly San Francisco Municipal Airport) between 1933 and 1943. City of S.F. v. W. Air Lines, Inc., 204 Cal. App. 2d 105, 109 (Ct. App. 1962). In contrast, between 1954 and 1957, there were forty-three to forty-four air carriers operating out of the same airport that included even international carriers, with sixteen of those being regularly scheduled airlines. *Id.* at 115 n.3. The federal grant program largely made this expansion possible. For further discussion on the origination and need for a federal grant program, see NATIONAL AIRPORT PLAN, H.R. DOC. NO. 78-807 (1944), *microformed on* CIS No. 10879, Fiche 15–17 (Cong. Info. Serv.).

52. In the 1940s, military and civilian users began disputing how the national airspace would be effectively allocated between each group. H.R. REP. NO. 85-2360 (1958), *reprinted in* 1958 U.S.C.C.A.N. 3741, 3743. In response, President Truman established the Air Coordinating Committee that resolved many of the deadlocks between the two groups. *See* Exec. Order No. 9781, Fed. Reg. 10,645 (Sept. 13, 1946). However, under the committee system, airspace was assigned on a "case-by-case basis," leading to delays and other conflicts in the system. H.R. REP. NO. 85-2360, at 3744. These problems led to devastating results:

> The magnitude and critical nature of the problem came first to general public notice . . . as a result of the midair collision of two airliners over Grand Canyon on June 30, 1956, when 128 lives were lost. Following this disaster were fatal air crashes between civil and military aircraft operating under separate flight rules established in the Civil Air Regulations.

Id. at 3742. These continuing miscommunications inevitably required an independent agency to govern the airspace system. For a further examination of the problems arising under the existence of separate flight rules, see AIRSPACE USE STUDY, H.R. REP. NO. 84-2972 (1957), *microformed on* CIS No. 11901, Fiche 25 (Cong. Info. Serv.); AIR TRANSPORTATION DEVELOPMENT AND AIRSPACE USE PROBLEMS, H.R. REP. NO. 85-1272 (1957), *microformed on* CIS No. 11987, Fiche 18 (Cong. Info. Serv.).

53. Federal Aviation Act of 1958, Pub. L. No. 85-726, 72 Stat. 731 (current version at 49 U.S.C. §§ 40101–19 (2006)).

54. § 301(a), 72 Stat. at 744; *see also* KANE & VOSE, *supra* note 25, at 6-1 to -2; Dempsey, *supra* note 36, at 312–13. The newly-created Federal Aviation Agency would only report to the White House and Congress. *See* KANE & VOSE, *supra* note 25, at 6-1. In addition, the Federal Aviation Agency assumed power of safety legislation originally delegated to the CAB. *See* § 601(a), 72 Stat. at 775. However, the CAB survived and retained most of its remaining duties for economic regulation. *See* § 201(a)(1), 72 Stat. at 741.

operate "a common system of air traffic control and navigation for *both military and civil aircraft.*"[55] Shortly thereafter, the Department of Transportation Act of 1966[56] made the Federal Aviation Agency, now the Federal Aviation Administration (FAA), an agency within the Department of Transportation (DOT).[57] The National Transportation Safety Board (NTSB) was concurrently established to govern safety regulation and aircraft accident investigations.[58] While Congress had finally addressed many of the safety concerns of the air transportation system, the transition to deregulation was on the horizon.

B. The Deregulation Act (1978–Present)

1. Impact of Competition

The major regulatory economic changes in the industry arrived through the Airline Deregulation Act of 1978 (ADA).[59] Initially, routes were fixed and assigned by the CAB, but the ADA called for the deregulation of domestic rates and entries of carriers[60] and the demise of the CAB.[61] The im-

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55. § 103(e), 72 Stat. at 740 (emphasis added). The main priority was to avoid military and civilian use conflicts and promote uniformity in the airspace system. *See* H.R. REP. NO. 85-2360, at 3747. However, the most contentious issue was determining the level of military involvement in the new agency. *See id.* at 3748. Congress ultimately realized the greater need for a civilian agency and the importance of air travel to governmental economy. *Id.* ("Witnesses . . . were in agreement that the new agency should be under the direction of a civilian administrator who must take into consideration the needs of military aviation."). Hence, the Federal Aviation Agency was organized to ensure military needs were met while largely focusing on developing a sound commercial transportation system. *See, e.g.*, § 302(c)(1), 72 Stat. at 745 ("[T]he Administrator shall provide for participation of military personnel in carrying out his functions relating to regulation and protection of air traffic . . . .").

56. Department of Transportation Act of 1966, Pub. L. No. 89-670, 80 Stat. 931 (codified at 49 U.S.C. § 103 (2006)).

57. *See* H.R. REP. NO. 89-1701 (1966), *reprinted in* 1966 U.S.C.C.A.N. 3362, 3363. The transfer was largely the result of increased need for coherent policy solutions across all sectors, due to rising population and transportation complexities. *Id.* at 3367. The FAA would now only answer to the DOT. KANE & VOSE, *supra* note 25, at 6-3.

58. *See* KANE & VOSE, *supra* note 25, at 6-3.

59. Airline Deregulation Act of 1978, Pub. L. No. 95-504, 92 Stat. 1705 (codified in scattered sections of 49 U.S.C.). For a thorough evaluation of the ADA, see generally JEFFREY R. MILLER, THE AIRLINE DEREGULATION HANDBOOK (1981).

60. *See* Dempsey, *supra* note 36, at 339. Entry would be, and still remains, partially regulated. Any airlines wishing to enter the market must still prove they can "conduct satisfactorily scheduled operations between each regular, provisional, and refueling airport over that route or route segment." 14 C.F.R. § 121.93 (2008).

61. The CAB's duties of consumer protection, antitrust airline regulation, and the requirement that an air carrier be "fit" before transporting passengers, were all transferred to the DOT. H.R. REP. NO. 98-793, *reprinted in* 1984 U.S.C.C.A.N. 2857, 2859–60. However, there was concern that there might be potential re-regulation because of the "de facto continuation" of CAB within the DOT, and possible political influences from executive appointments to the DOT. *Id.* at 2684. However, Con-

mediate effects of deregulation were generally positive, with newly-created, low-cost carriers arising, more routes and scheduled operations, and carriers enjoying increased profits.[62] After the CAB was phased out, the FAA and the NTSB became the sole governing bodies of the airline industry, prescribing its regulations through Title 14 of the Code of Federal Regulations.[63]

The effects of deregulation cannot be understated. The hub and spoke routes were the first structural changes to result from the ADA.[64] Under this system, passengers are carried from less congested cities' airports, the spokes, and taken to larger cities, the hubs.[65] Passengers either conclude their flight or continue onto their destination with individuals from other spokes.[66] However, over recent years, low-cost carriers such as Southwest Airlines have triggered growth of new point-to-point business models, where airlines cover only certain regions of the nation and avoid the congested hubs.[67] The increased levels of competition, while having enormous benefits, have inadvertently created an air traffic congestion problem.

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gress felt those arguments were overstated and believed the DOT would have the potential to insulate itself from any undue influences. *Id.* at 2865. The CAB was officially phased out by January 1, 1985. Dempsey, *supra* note 36, at 339–40.

62. Even six years after the 1978 deregulation, when several studies began to show the effects, Congress still believed it "generally benefitted both consumers and the industry and that there should be no change" to the deregulation of domestic routes and rates. H.R. REP. NO. 98-793, *reprinted in* 1984 U.S.C.C.A.N. 2857, 2859; *see* Robert M. Hardaway, *The FAA 'Buy-Sell' Slot Rule: Airline Deregulation at the Crossroads*, 52 J. AIR L. & COM. 1, 9–14 (1986) (discussing the effects of the ADA).

63. *See generally* 14 C.F.R. §§ 1–1399.

64. *See* John Sabel, *Airline—Airport Facilities Agreements: An Overview*, 69 J. AIR L. & COM. 769, 775–76 (2004).

65. *Id.*

66. *See id.*

67. *See generally* Eldad Ben-Yosef, *The Evolution of the US Airline Industry: Technology, Entry, and Market Structure—Three Revolutions*, 72 J. AIR L. & COM. 305 (2007). Ben-Yosef argues that three revolutions have sprung up since the rise of hub-and-spoke routing structure. The first two have already occurred: the rise of low-cost carriers undercutting traditional incumbent airlines such as American Airlines, and carriers focusing solely on certain areas of the country, like Hawaii or the South. *Id.* at 309–10. The third is his prediction. He argues that major airlines serving across the country will continue to be pushed into mergers and liquidation while smaller low-cost carriers will end up dominating the entire market, fueled by increasing competition between airlines suppliers. *Id.* at 341–44. His observations add to other projections that the dynamics of the aviation industry are changing. *See* discussion *infra* note 112. These changing structures in the air transportation system will be an important consideration for NextGen to address as it transforms the system—making the system flexible to accommodate these changes. *See generally* discussion *infra* Part III.B.

2. Congestion: How Bad is the Problem?

Flight problems, including cancellations, misconnections, and delays, were the number one complaint from consumers in 2007.[68] Twenty-four percent of all flights were delayed and two percent canceled[69]—the second worst year on record for airlines' on-time performance.[70] The current U.S. air transportation system currently has 50,000 flights in a twenty-four hour period, but by 2025, this number is projected to reach 100,000 to 150,000 flights each day.[71] The projected demand increases on the system make changes necessary and inevitable.

From 1998 to 2007, the average length of a flight delay has increased from 49 to 56 minutes,[72] while the average length of trip delays expected by passengers increased from 90 minutes to 114 minutes during 2007.[73] De-

68. U.S. DEP'T OF TRANSP., AIR TRAVEL CONSUMER REPORT 32 (2007), *available at* http://airconsumer.ost.dot.gov/reports/index.htm [hereinafter 2007 CONSUMER REPORT] (providing in a December 2007 report that of the 349 complaints pertaining to "flight problems," 116, 49, and 136 were cancellations, misconnections, and delays, respectively).

69. *Id.* at 5. Any domestic airliner, defined as a carrier accounting for at least one percent of domestic scheduled passenger revenues, must report on-time data—the percentage of scheduled operations of a flight that the carrier operates on-time—to the DOT. 14 C.F.R. §§ 234.1–.4 (2008). A flight is considered on-time if it arrives less than fifteen minutes after its published arrival time. § 234.2. In the 2007 report, eighteen "domestic airliners," as defined, reported data while two others voluntarily reported the information. 2007 CONSUMER REPORT, *supra* note 68 at 24. Thus, the data is limited to larger carriers.

70. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, DOT AND FAA ACTIONS WILL LIKELY HAVE A LIMITED EFFECT ON REDUCING DELAYS DURING SUMMER 2008 TRAVEL SEASON 8–9 (2008) [hereinafter REDUCING DELAYS FOR SUMMER] (comparing data on delays and cancellations from 1998 through 2007). Since 1998, the percentage of late arriving and cancelled flights has not dipped below seventeen percent of all scheduled flights nationwide. *Id.* at 9.

71. U.S. GOV'T ACCOUNTABILITY OFFICE, NEXT GENERATION AIR TRANSPORTATION SYSTEM: STATUS OF KEY ISSUES ASSOCIATED WITH THE TRANSITION TO NEXTGEN 1 (2008) [hereinafter TRANSITIONING TO NEXTGEN]. Many reasons for increasing air traffic are obvious, such as population growth, increases in smaller sized jets for business travel, and advances in technology. *See* Chad Key, Comment, *General Aviation in the New Millennium: Promising Rebirth—Or Imminent Extinction?*, 66 J. AIR L. & COM. 789, 815–17 (2001).

72. *See* REDUCING DELAYS FOR SUMMER, *supra* note 70, at 9. Despite this rather minimal fourteen percent increase over nine years, it is important to note that many flights delayed by at least 180 minutes have doubled over this same period, indicating that longer delays are increasing even if the total amount is decreasing. *Id.*

73. LANCE SHERRY & GEORGE DONAHUE, GEORGE MASON UNIVERSITY, U.S. PASSENGER TRIP DELAY REPORT 6 (2008), *available at* http://catsr.ite.gmu.edu/pubs/AirlinePaxTripDelayReport 2008.pdf (analyzing changes in the average amount of trip delay expected by passengers). There is an important distinction between average length of flight delay and average amount of trip delay expected by passengers. The latter figure incorporates four types of flights that may cause an average airline traveler to be delayed: delayed, cancelled, diverted, and oversold. *Id.* at 3. Throughout 2007, delayed and cancelled flights have increased trip delays by two and sixty minutes, respectively. *Id.* at 6. It has been suggested that the large delay increase from cancellations stems from increases in airline load factors, or the percentage of seats occupied on aircraft. *Id.* at 5. With decreases in empty seats on all flights, airlines have less room to accommodate for cancelled flights. *Id.* However, this analysis does not appear to be consistent with the data on oversold flights, the

spite the various debates and models to measure the effects of delays on passengers,[74] analysts have agreed the costs are significant, with one estimating the cost on the economy at approximately $40.7 billion.[75]

Despite the fact that the terms are often used synonymously, there is an important distinction between flight delays and airport congestion. Flight delays include delays, cancellations, oversold and diverted flights, and are attributable largely to congestion in the airspace system.[76] In comparison, airport congestion occurs when the volume of aircraft exceed the capacity constraints of any given airport.[77] Airport congestion is such a powerful cause of flight delays because of its impact on the nation. For instance, researchers estimate that forty percent of flight delays in the entire system "are from delays that originate in the New York metropolitan area."[78] The New

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situation where airlines overbook a scheduled flight and cannot accommodate certain passengers. *See id.* at 6. One overlooked distinction between oversold and cancelled flights is that airlines likely put victims of oversold flights in priority over victims of cancelled flights; thus, the delay from oversell is less likely to occur.

74. *See, e.g.*, LANCE SHERRY, GEORGE DONAHUE & DANYI WANG, GEORGE MASON UNIVERSITY, PASSENGER TRIP TIME METRIC FOR AIR TRANSPORTATION (2006), *available at* http://catsr.ite.gmu.edu/pubs/WangICRAT_v3.pdf.

75. JOINT ECON. COMM., YOUR FLIGHT HAS BEEN DELAYED AGAIN: FLIGHT DELAYS COST PASSENGERS, AIRLINES, AND THE U.S. ECONOMY BILLIONS (2008), *available at* http://jec.senate.gov/index.cfm?FuseAction=Reports.Reports (follow "Your Flight Has Been Delayed" hyperlink).

76. Weather, airlines' own mistakes, and security have relatively smaller effects on delays. *See* 2007 CONSUMER REPORT, *supra* note 68, at 21; *see also* U.S. GOV'T ACCOUNTABILITY OFFICE, COMMERCIAL AVIATION: IMPACT OF AIRLINE CREW SCHEDULING ON DELAYS AND CANCELLATIONS OF COMMERCIAL FLIGHTS 3 (2008) (finding that crew scheduling problems rarely are the cause of flight delays).

77. *See* 49 U.S.C. § 47175(2) (2006) (defining a "congested airport" as an "airport that accounted for at least 1 percent of all delayed aircraft operations . . ."). An airport's capacity is the "ability of a component of the airfield to accommodate aircraft movements," usually expressed as the number of operations per hour. Ofelia Betancor & Roberto Rendeiro, *Regulating Privatized Infrastructures and Airport Services* 6 (World Bank Policy Research, Working Paper No. 2180, 1999). Capacity may be broken down into two types, terminal and runway, with the latter consisting of practical and saturation capacity. *Id.* The "practical capacity" of an airport is the number of operations feasible at a certain runway and time without increasing the average level of delay, while the "saturation capacity" is the maximum number of operations possible under continuous demand. *Id.* The optimal policies, as later examined, strive to meet the practical capacity level of a certain runway, but constant pressure on the system from congestion pushes it towards the saturation point. *See generally* discussion *infra* Part V.A.

78. REDUCING DELAYS FOR SUMMER, *supra* note 70, at 10 (quoting a study done by the MITRE Corp. using 2007 data from the DOT). This is clearly attributable to the volume of traffic traveling through the New York region. For example, the FAA estimates that approximately "one-third of the nation's flights and one-sixth of the world's flights either start or pass through the airspace" of the New York region, making this area the central concern for alleviating air traffic congestion. H.R. REP. NO. 110-936 (2009), *available at* 2009 WL 45957.

York region alone had one-third of all its flights delayed or canceled in 2007.[79] Naturally, most policy efforts have been aimed at providing relief to this region and ensuring the most efficient use of those resources.[80]

III. THE NEXT GENERATION AIR TRANSPORTATION SYSTEM

To ensure the orderly flow of traffic at many of the nation's airports, the FAA establishes ATC facilities at desirable airport locations, chooses the types of services to offer, and determines the number of personnel needed for handling the air traffic demand for that particular airport.[81] The federal government's management at each ATC facility has commonly been criticized for its outdated, inefficient policies for handling traffic in the national airspace system.[82] For instance, the ground-based navigational aids currently in use for commercial flights were installed following World War II and throughout the 1950s.[83] As a result, the Air Traffic Organization (ATO) was formed, organized as a "performance-based organization" (PBO) and branch of the FAA, to increase government accountability in managing the airspace system.[84]

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79. REDUCING DELAYS FOR SUMMER, *supra* note 70, at 10.

80. Aside from the various policies to reduce congestion, there have been efforts to improve passengers' rights for handling the current level of delays. A recent bill introduced into the House of Representatives would impose civil penalties on airliners for not providing passengers certain rights in the event of a "tarmac delay." *See* Airline Passenger Bill of Rights Act of 2009, H.R. 624, 111th Cong. (2009). A "tarmac delay" is "the holding of an aircraft on the ground before taking off or after landing with no opportunity for its passengers to deplane." H.R. 624 § 2(a); *see also* DEPT. OF TRANSP., AIR TRAVEL CONSUMER REPORT 28 (2009) (listing 187 incidents of tarmac flight delays in December of 2008). While Congress has traditionally promoted airline self-regulation in these situations, the legislation would require airlines to remove passengers from the plane and provide them with essential services in the event of a "tarmac delay" greater than three hours. H.R. 624 § 2(d)(1), (d)(2)(B); *see also On the Federal Aviation Administration Reauthorization Act of 2009: Hearing Before the H. Comm. on Transportation and Infrastructure, Subcomm. on Aviation*, 111th Cong. (2009), 2009 WL 353503. While a relatively incidental result of the broader airspace congestion problem, the legislation represents a shift towards efficiently dealing with the ramifications of delays in order to supplement policies trying to eliminate them.

81. Janie Lynn Treanor, Comment, *Privatization v. Corporatization of the Federal Aviation Administration: Revamping Air Traffic Control*, 63 J. AIR L. & COM. 633, 635 (1998). Air traffic control facilities at those airports are managed and operated by the federal government through the FAA. *See supra* notes 49–50 (discussing the historical development of ATC functions).

82. *See, e.g.*, Treanor, *supra* note 81, at 635; Anthony C. Darienzo, *A Discussion of the Proposed Privatization of the Air Traffic Control System*, 9 AIR & SPACE LAW 9 (1995).

83. *See supra* note 50 and accompanying text (discussing the development of ground-based navigation aids for the emerging aviation industry).

84. President Clinton created the ATO by executive order just before the end of his term. Exec. Order No. 13,180, 65 Fed. Reg. 77,493 (Dec. 7, 2000) ("The Secretary of Transportation . . . shall . . . move to establish within the [FAA] a performance-based organization to be known as the 'Air Traffic Organization' (ATO)."). President Bush amended this in 2002. *See* Exec. Order No. 13,264, 67 Fed. Reg. 39,243 (June 4, 2002) ("This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it, create any right to administrative or

The ATO is currently responsible for managing the day-to-day operations of efficiently moving aircraft through the airspace and working in collaboration with the FAA on all airspace projects.[85] However, with air travel demand rising above pre-9/11 levels, Congress finally authorized the establishment of the Joint Planning and Development Office (JPDO) to collaborate with both the FAA and ATO in carrying out NextGen.[86] A thorough study of the changes begins with an examination of the current navigational facilities and ATC surveillance procedures in moving aircraft throughout the system.

A. The Current National Airspace System

An aircraft enters the national airspace system abiding by one of two types of air traffic rules: visual flight rules (VFR) or instrument flight rules (IFR).[87] General aviation pilots may fly under either system whereas sche-

judicial review, or any right, whether substantive or procedural, enforceable by any party against the United States . . . ."). The idea of creating PBOs arose during former Vice President Al Gore's term when he advocated for a more efficient governmental structure. *See generally* AL GORE, FROM RED TAPE TO RESULTS: CREATING A GOVERNMENT THAT WORKS BETTER & COSTS LESS (1993). Despite the overall goal of a PBO to increase productivity and provide more accountability in government, some are not convinced. *See, e.g.*, 145 CONG. REC. H2902 (daily ed. May 6, 1999) ("[T]here is no guarantee that reorganizing [ATC] into a PBO will provide the necessary catalyst to ensure greater accountability for performance within that organization."). One author also notes that simply granting a governmental agency more authority and exemptions from the law does not necessarily "motivate them to exercise that discretion." Steven L. Schooner, *Change, Change Leadership, and Acquisition Reform*, 26 PUB. CONT. L.J. 467, 470 (1997).

85. AIR TRAFFIC ORG., 2006 ANNUAL PERFORMANCE REPORT 3 (2006), *available at* http://www.faa.gov/library/reports/media/2006_ATO_Annual%20Report.pdf. The ATO is managed by an appointed Chief Operating Officer, who is responsible for implementing a strategic plan to carry out objectives and goals, overseeing day-to-day operations, and developing a budget for the ATC system. *See* 49 U.S.C. § 106(r)(1), (4) (2006); Exec. Order No. 13,180, *supra* note 84.

86. Vision 100—Century of Aviation Reauthorization Act, Pub. L. No. 108-176, §§ 709–10, 117 Stat. 2490, 2582–85 (2003). The JPDO is responsible for "creating and carrying out an operating plan" for NextGen, and shares oversight with the Senior Policy Committee, which consists of the heads of the FAA and NASA, Secretary of Defense, Secretary of Homeland Security, Secretary of Commerce, and the Director of the Office of Science and Technology Policy. §§ 709(a)(2)(A), 710(a)–(b), 117 Stat. at 2582, 2584–85.

87. *See generally* 14 C.F.R. § 91.155 (2008). For the average pilot taking off, the general rule for determining whether VFR or IFR applies largely depends on what class of airspace the pilot is operating in and the weather conditions existing in that airspace. *See generally* § 91.155(a). Under VFR, pilots can operate as long as they do not enter clouds and stay a minimum distance away from clouds. *See id.* (listing the distances of separation required). A pilot cannot takeoff or land under VFR if there is less than three statute miles of visibility and less than a 1,000 feet cloud layer (ceiling). *See* § 91.155(c)–(d).

duled commercial airlines are almost always required to fly under IFR.[88] For a carrier under IFR, the pilot needs to file a flight plan and obtain a "clearance" before taking off—a "contract" between ATC and the carrier stating the aircraft's destination, route, and expected altitudes.[89] In exchange, ATC agrees to "separate" that aircraft from other air traffic throughout the entire flight, including departure and arrival.[90]

The controller's role in the ATC system is surveillance—ensuring the aircraft follows its assigned clearance and separating the aircraft from other traffic in the system.[91] Each ATC facility separates the aircraft along its specified route by visualizing the aircraft on out-dated radar systems that update the aircraft's position every three to twelve seconds, but fail to provide a real-time surveillance feed.[92] Along with ancient weather instruments, the lack of advanced technology being implemented into these ATC facilities leads to increased separation distances between aircraft and, as a result, the inefficient use of existing airspace.[93] The types and roles of ATC

88. Darienzo, *supra* note 82, at 9. The reason commercial airlines nearly always fly under IFR is because airspace above 18,000 feet is Class A airspace, and only IFR operations are allowed at that level. *See* § 91.135 (operations in Class A airspace).

89. *See* § 91.173. Specifically, the flight plan allows air traffic controllers to efficiently control the flow of aircraft in the system. *See* FED. AVIATION ADMIN., INSTRUMENT PROCEDURES HANDBOOK 1-10 (2004) [hereinafter INSTRUMENT HANDBOOK]. When operating in VFR conditions, a flight plan is not required, but can be filed nonetheless as a precautionary measure. For a list of information required when filing a flight plan, see 14 C.F.R. § 91.153 (when flying in VFR); 14 C.F.R. § 91.169 (when flying in IFR).

90. Darienzo, *supra* note 82, at 9.

91. *Id.*

92. Robert W. Poole, Jr., *The Urgent Need to Reform the FAA's Air Traffic Control System*, BACKGROUNDER, Feb. 20, 2006, at 3. Understanding a radar's capabilities allows one to understand the setbacks of the technology. Both primary and secondary radars are used to detect aircraft movement. Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. 56,947, 56,950 (Oct. 5, 2007) (notice of proposed rulemaking). Primary radar measures bearing and range to identify a target. *Id.* The aircraft's bearing is read when the rotating radar antenna receives a response to its signal. *Id.* The range is measured by the time it takes to receive a response from its signal. *Id.* Unfortunately, to measure velocity the radar must receive several different responses from signals, which takes more than a few seconds. *Id.* Depending on the location of the aircraft, the response can take anywhere from three to twelve seconds. *Id.* at 56,951 n.7 (comparing this with updates of once per second using ADS-B technology). These time delays translate into a system where separation distances between aircraft are essentially a function of the relative distance between the radar's antenna and the aircraft. A Secondary Surveillance Radar (SSR) system of antennas and other transmitting devices help radar pick up additional and more reliable information about an aircraft, improving the knowledge one acquires from radar screens. *Id.* at 56,950 (discussing also the function of "transponders," devices "installed on the aircraft [that] 'listen[]' for the interrogation signal and send[] . . . a reply" with detailed aircraft information, such as altitude and airspeed).

93. The other significant factor that influences separation distances is the concept of wake turbulence. An aircraft is able to lift off the ground because high pressure air flows underneath a wing and lower pressure air flows above the wing. FED. AVIATION ADMIN., WAKE TURBULENCE TRAINING AID 2.8 (1995). The pressure differential allows lift for the aircraft to takeoff. *Id.* As it moves through the air, a pair of counter-rotating vortices is shed from the aircraft's wings, leaving

can best be illustrated by an example. The air traffic "control tower" located at the airport will release the aircraft into the system by clearing it for takeoff.[94] The control tower will transfer responsibility of separation for that aircraft to a Terminal Radar Approach Control (TRACON), commonly called Approach or Departure Control.[95] At that point, the aircraft is finally passed to an Air Route Traffic Control Center (ARTCC), referred to as the "Center," which manages the aircraft the remainder of the flight.[96] As the plane comes within the vicinity of its destination, Approach Control then separates each aircraft and lines one after the other for a particular "approach" into the destination airport.[97]

For the pilot's role in navigation, airlines use a variety of different navigation devices in their aircraft to construct situational awareness. The most common and reliable navigation facility is the "very high frequency omnidi-

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behind turbulence. *Id.* The strength of this airflow disruption, or turbulence, depends upon "the weight, wingspan and speed of the aircraft." *Id.* The closer one aircraft flies behind another's glide path on its way into an airport, the greater its chances of getting caught in "wake turbulence" and essentially being flipped upside down. *See id.* For an examination of wake turbulence and its barriers to increasing capacity, see generally COMM. TO CONDUCT AN INDEP. ASSESSMENT OF THE NATION'S WAKE TURBULENCE RESEARCH AND DEV. PROGRAM, WAKE TURBULENCE—AN OBSTACLE TO INCREASED AIR TRAFFIC CAPACITY (2008).

94. *See* INSTRUMENT HANDBOOK, *supra* note 89, at 1-10.

95. *See id.* A TRACON is a facility usually located in the vicinity of busy airports and the "radar controllers" there handle the aircraft within a fifty mile radius up to about 17,000 feet. *Id.*; *see also* Jack London, *When Air Traffic Is Out of Control*, 43 TRIAL 62, 62 (2007) ("Radar controllers . . . direct traffic flying to or from a major airport, by controlling planes approaching for a landing, departing from a takeoff, or overflying the terminal area."). The boundaries, coordination procedures, and responsibility of two adjacent TRACONs are outlined in "letters of agreement" between the two facilities. J. Scott Hamilton, *Allocation of Airspace as a Scarce National Resource*, 22 TRANSP. L.J. 251, 280 (1994).

96. *See* INSTRUMENT HANDBOOK, *supra* note 89, at 1-10. There are currently twenty-one different Centers in the contiguous United States, each covering a different zone of the country up to 100,000 square miles. *Id.* If the commercial flight is cross-country, the aircraft will be handed off between Centers until it reaches the destination. *See* R. Colin Keel & Kyle B. Levine, *U.S. Airlines on Course for Free Flight*, 62 J. AIR L. & COM. 675, 677 (1997).

97. Specifically, an "instrument approach procedure" (IAP) is a set navigational procedure for an aircraft to fly in reduced visibility in order to land at an airport. *See* INSTRUMENT HANDBOOK, *supra* note 89, at 5-1 to -67. There are two general categories of approaches: precision and non-precision. The difference is how low the procedure can bring the aircraft before visibility is needed to land. The various types include: several different GPS approaches, the Instrument Landing System (ILS), a Localizer (LOC), a VOR approach, and older types such as ADF and Loran-C. *See generally id.* at 5-1 to -68. The most common "approach" for major airports and airlines is the ILS, a precision approach capable of providing guidance to an aircraft directly approaching a runway to a height about 200 feet above the runway. *Id.* at 5-46. However, with NextGen and emerging GPS technology, GPS-type approaches will become increasingly more important. *See infra* note 139 and accompanying text.

rectional radio range" (VOR).[98] Using ground-based VOR stations dispersed throughout the country, the aircraft's VOR receiver will capture two different signals emitted by the station, thereby translating them into a bearing, or direction, for the aircraft to head.[99] The bearings essentially form an imaginary horizontal grid in the air for pilots to navigate within, but the major drawback is that aircraft are unable to fly the most direct route from point *A* to *B*.[100] The VOR system therefore sends pilots in directions that are indirect and waste fuel. Airlines supplement the VOR system with the Global Positioning System (GPS), which provides pilots with a visual map of their surroundings, extremely useful for improved situational awareness.[101] Many air carriers integrate both VORs and GPS into a system called Flight Management System (FMS), which simplifies navigation by compiling a large database of preprogrammed routes.[102] Although these devices lead to safe and reliable aircraft operation, the underlying basis for commercial flight navigation, the VOR grids, are terribly inefficient for utilizing limited airspace.

The DOT and FAA have both tried to reverse the decreasing airspace capacity with several different policies over the past decades, including the National Airspace System of 1982 (NAS), and the National Route Program (NRP), neither policy providing substantial benefits.[103] In recent attempts to

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98. *See supra* note 50 (discussing the development of VOR ground stations throughout the U.S. following World War II).

99. DEP'T OF DEFENSE & DEP'T OF TRANSP., 2001 FEDERAL RADIONAVIGATION SYSTEMS 3-25 (2001) [hereinafter RADIONAVIGATION SYSTEMS] (discussing in technical detail the VOR system, including reliability, errors, and other information). Using aeronautical charts, the pilot will use these stations as reference points to navigate to a destination. For a discussion on VOR systems, see also David T. Norton, *A Lawyer-Flight Instructor's Prognostications on the Implementation of Free Flight: How Will the Large-Scale Introduction of GPS into General Aviation Cockpits Affect the Liabilities That Face Pilots and the Flight Instructors Who Train Them?*, 62 J. AIR L. & COM. 725, 731–33 (1997). Some VOR ground stations contain Distance Measuring Equipment (DME) capabilities as well. *Id.* at 732. The VOR/DME station combination allows the aircraft to determine how far (in nautical miles) it is from the station on the ground. *See* RADIONAVIGATION SYSTEMS, *supra*, at 3-28 to -29.

100. *See* 14 C.F.R. § 91.181 (2008) (requiring the pilot to fly an assigned route under IFR regardless of whether it is indirect and inefficient).

101. The GPS is a navigational device measuring how long it takes to receive signals from several different satellites, providing an exact position of the receiver. George M. Moore & James D. Caven, *Free Flight Technology Requirements and Liability Issues That May Arise for Equipment Manufacturers*, 62 J. AIR L. & COM. 687, 693–94 (1997). For a technical discussion on GPS technology and its applications in aviation, see RADIONAVIGATION SYSTEMS, *supra* note 99, at 3-4.

102. INSTRUMENT HANDBOOK, *supra* note 89, at 1-12.

103. The NRP allowed airlines to fly any direct route during the course of its navigation at or above 29,000 feet when traveling between "city pairs." *Id.* at 3-36. Given the extent of time this program has been implemented, the measurable effects have been minimal. In the NAS Plan of 1982, the FAA tried to implement more advanced systems for ATC, "modernized flight service stations, and improvements in ground-to-air surveillance and communication." *Id.* at 1-2. For detailed information on the NAS of 1982, see OFFICE OF TECH. ASSESSMENT, REVIEW OF THE FAA 1982 NATIONAL AIRSPACE PLAN (1982) (discussing one of the first attempts to implement satellite-based

address problems in the New York region,[104] the FAA began implementing minimal reductions of excessive spacing between aircraft on the final approach.[105] In December of 2007, the FAA also began a controversial airspace redesign program for many of the East Coast regions.[106] The redesign allowed additional takeoffs at New York and Philadelphia airports by requiring aircraft to simultaneously turn in different directions immediately after takeoff, thereby increasing the separation distance between each aircraft.[107] These various measures to expand capacity, however, will not keep up with increasing demand, especially during peak hours at the nation's busiest airports.[108] Aside from these relatively small improvements, the FAA is depending on the large-scale program, NextGen, to deliver long-term solutions.

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technology after it became available in the 1970s). The handling of previous modernization projects has not faired well for the FAA. *See* S. REP. NO. 108-342, at 25 (2004) ("The [FAA] . . . projects expenditures of approximately [$43 billion] on the [ATC] modernization effort from 1981 through 2005. The estimate for the modernization of the system has continued to evolve and escalate since 1981."); H.R. REP. NO. 104-887, at 217 (1997) ("Although the FAA began efforts to modernize [ATC] in 1981, limited progress has been made despite 14 years of efforts and the expenditure of several billion dollars. . . . The FAA has historically been criticized for its bureaucratic, 'process over substance' culture and inability to timely field technically complex systems.").

104. REDUCING DELAYS FOR SUMMER, *supra* note 70, at 7. The DOT's creation of a special aviation rulemaking committee (N.Y. ARC) was in response to the flight delay increases following the summer of 2007. *Id.*

105. *See id.* at 18–19; *see also* AVIATION RULEMAKING COMM., NEW YORK AVIATION COMMITTEE REPORT (2007), *available at* http://www.faa.gov/library/reports.

106. U.S. GOV'T ACCOUNTABILITY OFFICE, FAA AIRSPACE REDESIGN: AN ANALYSIS OF THE NEW YORK/NEW JERSEY/PHILADELPHIA PROJECT 7 (2008) [hereinafter AIRSPACE REDESIGN]. The airports where developments would begin are at Philadelphia and Newark. *Id.*

107. *Id.* at 18. Originally, aircraft would take off one after another, following each other straight out of the runway. Under the redesign, the first aircraft would turn fifteen degrees to the left after takeoff. The next aircraft would takeoff straight, and the subsequent one would turn fifteen degrees to the right after takeoff. These new rules allowed for more takeoffs during the same amount of time, thereby increasing capacity. *Id.*; *see also* FED. AVIATION ADMIN., ORDER JO 7110.65S 5-8-3 (2008) [hereinafter ATC MANUAL].

108. In analyzing the effects of the airspace redesign, experts believed that "the capacity in airspace would increase, which could allow for additional operations . . . [but] any increase in system capacity resulting from the redesign would likely be relatively small . . . ." AIRSPACE REDESIGN, *supra* note 106, at 40. With the volume of flights expected to dramatically increase over the next decade or so, these relatively small adjustments are clearly not going to be enough. For further criticism on the airspace redesign, see 153 CONG. REC. H10,311–12 (daily ed. Sept. 7, 2007) (statement of Rep. Engel); Michael E. Levine, *Airport Congestion: When Theory Meets Reality*, 26 YALE J. ON REG. 37, 72 n.129 (2009).

B. *Overview of Proposed Changes*

The JPDO emphasized three main goals in restructuring the transportation system: improving and integrating security measures,[109] protecting the environment by lowering noise and emissions,[110] and increasing capacity, the latter being the only one within the scope of this Comment.[111] The NextGen design is based upon several projections regarding the structure of air transportation in 2025: the number of flights is expected to double or triple, seats per flight are reducing,[112] and direct point-to-point flights are increasing relative to the traditional two-part flights.[113] The specific opera-

109. Although still not fully developed, the broad concept behind reforming the security system under NextGen is flexibility. *See* JOINT PLANNING & DEV. OFFICE, CONCEPT OF OPERATIONS FOR THE NEXT GENERATION AIR TRANSPORTATION SYSTEM 6-1 (2007) [hereinafter CONOPS]. The current system is arguably too static and rather predictable, creating potential threats in the system. *Id.* at 6-3. For instance, the current metal detectors used at airports do not allow for any security beyond the initial entry point in the airport. However, under NextGen there will be "[s]ensor arrays deployable throughout terminal[s], enabling rapid movement of passengers through virtually invisible screening points . . . ." *Id.* at 6-4. The framers of NextGen essentially want increased control over dealing with threats as they are perceived rather than completely relying on the fixed avenues currently employed, such as metal detectors. This will involve ensuring the airport proprietors and other third-parties play a role in securing the nation's airports instead of fully relying on security provided by the Transportation Security Administration (TSA). *See id.* at 6-3.

110. The FAA projects aviation noise and emissions to increase by 140 to 200 percent by 2025. H.R. REP. NO. 110-936 (2009), *available at* 2009 WL 45957. The reduction of noise and mitigation of harmful environmental impacts will allow airports to develop their infrastructure while sustaining the industry's growth needed for the next several decades. INTEGRATED PLAN, *supra* note 8, at 30; *see also* H.R. REP. NO. 110-936, at 105 (2009) ("[I]mplementation of NextGen will have a dual impact of modernizing the aviation system while providing benefits to the environment, including reducing the number of people exposed to significant noise and emissions levels and aircraft fuel consumption rates."). The core body responsible for implementing these changes is the FAA's Continuous Lower Energy, Emissions, and Noise (CLEEN) environmental research and development program, which would "support the development, maturation, and certification of engine and airframe technologies for aircraft over the next 10 years to reduce aviation noise and emissions." U.S. GOV'T ACCOUNTABILITY OFFICE, RESPONSES TO QUESTIONS FOR THE RECORD; SEPT. 2008 HEARING ON THE NEXT GENERATION AIR TRANSP. SYS.: STATUS AND ISSUES 5 (2008) [hereinafter RESPONSES TO NEXTGEN HEARING]. The potential for reducing environmental impacts through NextGen is substantial. The FAA estimated satellite-based technology during en-route portions of flight will provide a total of 410 million gallons of fuel savings between 2017 and 2035—a decrease in carbon dioxide emissions of four million metric tons. Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. 56,947, 56,965 (Oct. 5, 2007). For a discussion on environmental management policies under NextGen, see generally CONOPS, *supra* note 109, at 7-1 to -12.

111. INTEGRATED PLAN, *supra* note 8, at 7.

112. Eclipse Aviation Corporation is an illustrative example of the dynamics of the aviation industry. The company is trying to implement a curb-to-curb jet-side service for professionals, with a target market of individuals making just over $100,000. Mary Schiavo, *Flying Right: What It Takes to Make Aviation Safer and More Secure After 2001*, 14 DEPAUL BUS. L.J. 279, 285 (2002). These steadily rising innovative business models will change the structure and composition of each flight in the airspace. The NextGen system needs to be capable of adapting to these changes.

113. INTEGRATED PLAN, *supra* note 8, at 4. This relates back to the rise of low-cost carriers and regional airlines such as Southwest Airlines taking advantage of untapped markets rather than at-

tional framework of NextGen to reconstruct the airspace system can be ascribed to a past phenomenon called "free flight,"[114] where pilots "have the freedom to select their path and speed in real time. Air traffic restrictions are only imposed to ensure separation [and] to preclude exceeding airport capacity . . . ."[115] Although nothing materialized from the idea of free flight, NextGen partially relies on this foundation in its two main functions: transforming the current air traffic *control* system into an air traffic *management* system, and the dissemination of information across all users within the system.[116]

1. Air Traffic Management of Pilot Trajectories

The implementation of Automatic Dependent Surveillance—Broadcast (ADS-B), a "satellite-based aircraft navigation system," is essential for NextGen success in two different aspects.[117] ADS-B Out obtains the aircraft's position from GPS signals and broadcasts the information to traffic control facilities and other aircraft, while ADS-B In allows the pilot to visualize the location of other aircraft within the system.[118] With these trans-

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tempting to enter the hub-and-spoke market structure. *See supra* Part II.B.1.

114. *See generally* Method and System for an Automated Tool for En Route Traffic Controllers, U.S. Patent No. 6,314,362 (filed Feb. 2, 2000) (issued Nov. 6, 2001).

115. FINAL REPORT OF RTCA TASK FORCE 3, FREE FLIGHT IMPLEMENTATION 23 (RTCA, Inc. ed., 1995). The Radio Technical Commission on Aeronautics (RTCA) was designated with creating a plan to implement more efficient routes that could be created through free flight. Bill Elder, Comment, *Free Flight: The Future of Air Transportation Entering the Twenty-First Century*, 62 J. AIR L. & COM. 871, 875 (1997). Under free flight, pilots can choose any desirable route through the use of GPS technology. INSTRUMENT HANDBOOK, *supra* note 89, at 3-36. Separation of each aircraft in the system is accomplished by establishing two airspace zones around each aircraft. *Id.* Each aircraft has a protected zone that never comes into conflict with another aircraft's respective zone. *Id.* An alert zone extends beyond the protected zone of the aircraft, and if any aircraft comes within that area, the controller will resolve any conflicts. *Id.* However, because of limitations in technology, one authority believed the maximum attainable benefits from such a system "may actually be a utopian ideal, unobtainable in its purest form." *See* Elder, *supra*, at 876.

116. The central system behind these two broad concepts is in the System-Wide Information Management (SWIM) program. *See* S. REP. NO. 110-418, at 57 (2008) ("The SWIM program is an essential part of moving toward network-enabled operations [NEO]. NEO will make it possible for the FAA, other Government agencies, and users of the [national airspace system] to share information efficiently and effectively."). Under this system, sharing data will become the critical aspect and foundation behind NextGen. *Id.*

117. RESPONSES TO NEXTGEN HEARING, *supra* note 110, at 11.

118. MICHAEL J. HARRISON, ADS-X THE NEXT GEN APPROACH FOR THE NEXT GENERATION AIR TRANSPORTATION SYSTEM 3C1-1 (2006). The FAA has proposed that ADS-B Out technology be a requirement for "all aircraft operations in Class A, B, and C airspace areas in the NAS, and Class E airspace areas at or above 10,000 feet [MSL]." Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed.

missions, all the users, including ground control and each aircraft, will see air traffic displayed in real time.[119] Using this data from each aircraft, traffic control can promulgate a network of users with each aircraft being a node in the system, creating a "network-centric air traffic management environment."[120]

Given the availability of this framework through ADS-B, called "air traffic *management*" (ATM),[121] NextGen's most significant change is in deriving clearances and the handling of each aircraft in the system. For in-

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Reg. 56,947, 56,951 (Oct. 5, 2007); *see also* Hamilton, *supra* note 95, at 272–79 (describing different classes of airspace); 14 C.F.R. § 91.215 (2008) (requiring aircraft transponders in nearly the same areas as where FAA proposes mandating ADS-B technology). The policy is appropriate in these areas because they are concentrated with commercial air traffic. However, the FAA did not address ADS-B implementation effects in areas such as Class D airspace, the smaller-sized airports where commercially viable corporate jets are largely mixed with general aviation pilots. Essentially, a commercial jet could fly from one Class D airport to another and avoid ADS-B implementation, a hurdle for achieving the maximum benefits of NextGen. However, the FAA rightfully recognizes that requiring ADS-B in Class D would impose a financial burden on recreational pilots intermixed in these areas. Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. at 56,958; *see also* David Pogue, *Toward Friendlier Skies*, N.Y. TIMES, Apr. 10, 2008, http://pogue.blogs.nytimes.com/2008/04/10/toward-friendlier-skies/?scp=1&sq=Next%20Generation%20Air%20Transportation%20System&st=cse (estimating the cost for small planes at $6,000 and $300,000 for commercial airliners); Kellner, *supra* note 10 (estimating the cost for general aviation users at $16,000). Given these considerations, the FAA should phase Class D ADS-B requirements in after a fixed amount of time has passed from the other areas, once the costs of ADS-B technology decline. Any avoidance of implementing ADS-B technology in this area would be inconsistent with NextGen's goal of using airports more effectively and spreading demand across currently underutilized airports. *See* INTEGRATED PLAN, *supra* note 8, at 8. For the full detailed proposed regulations for utilizing ADS-B Out technology, see Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. at 56,952. The FAA has not issued proposals for rules on ADS-B In as of yet because they have not determined it is absolutely necessary for increased efficiency. *See* Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. at 56,960. *But see Hearing on the Status of NextGen*, *supra* note 6, at 21 ("[T]he proposed rule garnered more than 300 comments, some centering on the fact that mandated equipment on board aircraft would provide only the ADS-B 'out' service . . . . [S]ome operators view the mandated equipage as providing them little or no benefit . . . .").

119. *The Future of Air Traffic Control Modernization: Hearing Before the Comm. on Transportation and Infrastructure, Subcomm. on Aviation*, 110th Cong. 4 (2007), *available at* 2007 WLNR 8848294 [hereinafter *ATC Modernization Testimony*] (statement of Robert A. Sturgell, Deputy Adm'r). The FAA also considered "multilateration" as an alternative to ADS-B technology before deciding it was too costly. Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. at 56,962–63. The process of multilateration is where an "aircraft's position is determined by measuring the time difference between the arrival of the aircraft's signal to multiple receivers on the ground." *Id.* However, it is important to note that ADS-B will not completely replace traditional radar activities or aircraft transponders. *Id.* at 56,951. Instead, they will function in cases of ADS-B failures. *Id.* at 56,951; *see also id.* at 56,959 (discussing the "Backup Surveillance Strategy").

120. *See* Harrison, *supra* note 118, at 3C1-2.

121. Poole, *supra* note 92, at 3 (emphasis added); *see also* CONOPS, *supra* note 109, at 2-1.

stance, when a pilot wants to enter the national airspace system,[122] the interaction between the pilot and ATM will be through data rather than voice communications.[123] The pilot will request a certain time, destination, and route, and the "NGATS Optimizer" will compare these preferences with other users, weather, and the available capacity in the airspace to produce a proposed contract for the pilot to either accept or request modification.[124] If accepted, the automation process will create a 4D trajectory flight path (4DT), a "precise description of an aircraft path in space and time: the 'centerline' of a path plus the position uncertainty, using waypoints to describe specific steps along the path."[125] The 4DTs will be tailored to the particular aircraft, accounting for its performance capabilities, and will precisely

122. The process for entering the national airspace system will vary, however, depending on the level of congestion in the particular area. For instance, all high-density airspace operations will be transformed into "trajectory-based operations" (TBO), where management of each aircraft's present and future positions will enable significant gains in airspace capacity. CONOPS, *supra* note 109, at 2-3. These areas will obviously include the major routes taken by airlines from some of the largest cities. For further discussion on high-density operations, see *infra* Part III.B.2. In contrast, areas where the airspace is not as crowded, such as near smaller airports and some oceanic airspace, will be considered classic airspace. CONOPS, *supra* note 109, at 2-4. The operations in this sector will be very similar to the current system only with minor satellite-based improvements. *Id.* For some of the areas with low demand and airports without control towers, "automated virtual towers" may be implemented to handle airport traffic because technology will allow controllers to monitor the airports without physically being there. *Id.* at 2-28. Despite the JPDO's ambitious plan to provide "control towers" to remote areas through its satellite-based technology, the FAA's proposal of ADS-B Out technology only being required in Class A, B, and C airspace operations (none of this airspace including remote areas) will severely limit "virtual towers" from being viable. *See* Automatic Dependent Surveillance—Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, 72 Fed. Reg. at 56,951, 56,958; *see also* discussion *supra* note 118.

123. *See ATC Modernization Testimony*, *supra* note 119, at 4–5. Providing clearances through data links has already been implemented to a slight degree with commercial airlines. For example, the Aircraft Communication Addressing and Reporting System (ACARS) transmits a clearance from air traffic controllers to pilots before the initiation of the flight. *United Airlines—Flight Paperwork via ACARS*, THE GLOBAL LINK, Oct. 2002, at 1, *available at* http://www.arinc.com/news/newsletters/gl_10_02.pdf. This allows the airline to save time prior to takeoff with fewer voice communications.

124. Harrison, *supra* note 118, at 3C1-3. Delivering clearances via data communications rather than voice is estimated to enable controllers to handle thirty percent more traffic. *ATC Modernization Testimony*, *supra* note 119, at 5.

125. CONOPS, *supra* note 109, at 2-19. The waypoints described are essentially imaginary "windows" the aircraft must pass through in order for the aircraft to be complying with its trajectory, a space that will likely be more precise for more advanced aircraft in order to effectively regulate the flow of traffic. *See id.* ("The required level of specificity of the 4DT depends on the flight operating environment."). Any in-flight adjustments will be negotiated through data communications to form a new contract, and if for some reason the aircraft does not comply, it will be diverted until there is room to accommodate it without a disruption to the trajectory system. *See* Harrison, *supra* note 118, at 3C1-3.

project the aircraft's time of arrival, thereby increasing predictability, safety, and capacity.[126] The automation process's ability to generate a more "personalized" and direct flight path for each pilot makes navigation easier and more direct, resulting in more effective use of airspace.[127]

The controller's role shifts from surveillance to management under NextGen's "trajectory-based operations" (TBOs).[128] The controller is responsible for managing the efficient flow of each pilot's 4DT in the system through "trajectory management" (TM)[129] and ensuring aircraft maintain separation from each other, referred to as the "separation management process" (SM).[130] Separating procedures for aircraft were originally done by each controller monitoring the aircraft on radar,[131] but now controllers will be responsible for predicting and resolving potential conflicts between each pilot's 4DT. For instance, in one scenario ATM will instruct certain aircraft to perform maneuvers like climbing, descending, or turning behind another aircraft—specifically through 4DT commands—while it separates the aircraft from other traffic.[132] In "self-separation airspace," the pilot will be fully responsible for complying with his contract, or 4DT, by taking both his trajectory and knowledge of other aircraft in the system into consideration to engage in self-separation procedures.[133] Overall, increasing the responsibili-

126. CONOPS, *supra* note 109, at 2-20. According to Hugues Subra de Salafa, Airbus' head of ATM engineering, the current margin of error for estimated times of arrival is around one to two minutes, a figure that needs to be reduced down to a few seconds in order for the most efficient spacing to take place between aircraft. David Learmount, *Show Report–Towards the Independent Aircraft*, FLIGHT INT'L, Nov. 3, 2008, http://www.flightglobal.com/articles/2008/03/11/222136/show-report-towards-the-independent-aircraft.html. The success of this progress will depend on better "algorithms and meteorological models" in the aircraft's FMS to react to updated information. *Id.* In the case constraints occur, the 4DT will be updated and disseminated to all other users. *Id.*

127. *Cf. supra* note 100 and accompanying text (discussing the VOR's system of indirect and inefficient routing structures).

128. *See* CONOPS, *supra* note 109, at 2-17 to -27; *see also id.* at 2-17 ("With TBO, less airspace is needed for these major flows, resulting in reduced impact and improved access for other flights.").

129. CONOPS, *supra* note 109, at 2-21; *see also* Harrison, *supra* note 118, at 3C1-2. TM is also referred to as "control by exception." TBOs allow pilots to select individually preferred flight paths rather than follow the current VOR system, which is like a "grid of interstate highways in the sky." *ATC Modernization Testimony*, *supra* note 119, at 6.

130. *See* CONOPS, *supra* note 109, at 2-21 to -22.

131. *See* discussion *supra* Part III.A.

132. CONOPS, *supra* note 109, at 2-22 to -23. These procedures are not likely to last very long and essentially allow ATM to focus on other duties by shifting responsibility for separation to pilots during several basic maneuvers. Similarly, the JPDO believes that with increased information being provided to the aircraft through cockpit displays, 4DTs will allow pilots to perform their own merging and spacing procedures even when under specific separation control by ATM. *Id.* at 2-23. This implies that instead of using radar vectors to guide aircraft to final approach course, for instance, 4DTs can be utilized for providing those instructions and pilots can accurately carry them out, rather than having the controller instruct the aircraft to turn a certain direction each time it is necessary. The process eliminates the confusion that occurs when controllers have to provide instructions to a dozen different pilots on the same radio frequency.

133. *Id.* at 2-21 to -23. Self-separation procedures delegate full authority to aircraft for using its

ty of pilots for separation procedures has two significant effects. First, controllers' productivity levels dramatically increase by allowing them to handle more aircraft, rather than specifically directing the separation of each aircraft through the system.[134] Second, the trajectories will allow separation distances between aircraft to be reduced. For instance, distances in terminal areas are reduced from five to three miles, and vertical separation minima will decrease from 1,000 to 500 feet,[135] leading to increased efficient use of the national airspace system.

2. Aircraft Operations Near High-Density Airports

The system of operations will be different and tailored for certain regions where airspace is increasingly congested. In designated high-density areas, TBOs will include certain 4DT procedures for arrivals and departures.[136] As an aircraft approaches the high-density area, each carrier will be assigned a "4DT arrival profile" that forms the most efficient line of aircraft to match the available airport capacity at that time.[137] At areas of extreme peak congestion such as Chicago and New York, "super-density arriv-

trajectory based information to separate themselves from all other aircraft and obstacles. *Id.* at 2-23. The "rules of the road" include requirements that aircraft not engage in any maneuvers that create "immediate conflicts" in the trajectory system. *Id.* The only time ATM interferes is during the aircraft's entry into or exit from self-separation airspace, in areas referred to as "transition airspace." *Id.* at 2-22. Although the JPDO does not explicitly state where it will occur, it can be fairly implied that this airspace will likely be confined to en route segments of flight.

134. One appropriate example where controller productivity increases from NextGen is through flow corridors. To optimize the flow of 4DTs in certain congested areas during en route portions of the flight, ATM will implement flow corridors—tunnels containing closely-paralleled trajectories traveling in the same direction—leading to better use of limited airspace for airliners. *See* CONOPS, *supra* note 109, at 2-23. By utilizing mechanisms such as these corridors to manage 4DTs, controllers are capable of handling additional aircraft, and thus, the expected double or triple in capacity by 2025.

135. ATC MANUAL, *supra* note 107, at 5-5-4 (listing longitudinal distance within forty miles of the radar site at three miles while outside of forty miles the distance is five miles); *id.* at 4-5-1; Harrison, *supra* note 118, at 3C1-5 (listing values based upon projections by the Aviation Management Associates). *Id.* at 3C1-4. The FAA recently implemented Domestic Reduced Vertical Separation Minimum (DRVSM), the order lowering vertical separation requirements between aircraft, from 2,000 to 1,000 feet when the aircraft is above 29,000 feet. FED. AVIATION ADMIN., FAA NOTICE 8700.36 (2005), *available at* http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/rvsm/documentation. NextGen will provide many advantages in en route and oceanic airspace as well. Because ADS-B is based on satellite-based technology rather than ground stations, the disparities between en route and oceanic airspace nearly disappear. *Id.*

136. *See* CONOPS, *supra* note 109, at 2-25.

137. *Id.* (discussing in detail the arrival and departure procedures pilots would experience in several different scenarios).

al/departure operations" will be useful in providing a thirty percent increase in capacity.[138] The advantage of these operations in dense areas derives from increased application of "required navigation performance" (RNP) and area navigation (RNAV) systems,[139] both of which limit pilot-ATM communications and provide the smallest technologically-feasible distances for separation by optimizing airport-approach procedures.

Once an aircraft is on the ground, airports will conduct surface-based operations for controllers to view every aircraft on the ground in real time, enabling more efficient taxiing instructions and traffic movement around the airport.[140] With these advancements, NextGen may eventually phase out

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138. CONOPS, *supra* note 109, at 2-26; Harrison, *supra* note 118, at 3C1–3. *But see* NATIONAL RESOURCE COUNCIL, TECHNOLOGICAL PATHWAYS: ASSESSING THE INTEGRATED PLAN FOR A NEXT GENERATION AIR TRANSPORTATION SYSTEM 45 (2008) ("It is uncertain whether the draft architecture will produce the targeted three times growth in capacity . . . ."). These operations would not be occurring around the clock at certain busy airports. Instead, these operations would only be implemented during certain peak congestion times during the day. CONOPS, *supra* note 109, at 2-26. For a complete description of this super-density system, see *id.*

139. *See* CONOPS, *supra* note 109, at 2-26. The RNAV system refers to the creation of imaginary routes through ground-, air-, and space-based sources in order to provide the most efficient route given the traffic and capacity constraints. *See* INSTRUMENT HANDBOOK, *supra* note 89, at 2-25 to -26. This route then essentially becomes the centerline within an imaginary tunnel that provides boundaries beyond which the aircraft cannot extend. Known as RNP, the aircraft must make a statement acknowledging the narrow margin for error and its capability for operation. *Id.* at D-12. Generally, the RNAV and RNP work concurrently in what is coined the "RNP environment." While it normally would seem unsafe, most commercial airlines are currently capable of operating in these environments if they existed. For example, all commercial airlines are required to have a Traffic Collision Avoidance System (TCAS), an oral and visual warning of traffic on the pilot's screen whenever the aircraft comes within a certain distance of another aircraft or terrain obstacle. 14 C.F.R. § 121.356 (2008); *see also* § 135.153–.154. These systems will be even more important in a NextGen environment. *See* AIRSPACE REDESIGN, *supra* note 106, at 41 ("FAA's own estimate reflects that about 80 percent of operations at the top 35 busiest airports in the National Airspace System are estimated to be RNAV capable.").

140. CONOPS, *supra* note 109, at 2-27 to -28. There are conflicting reports as to whether the surface operations will be managed by radar or satellite-based technology. First, the JPDO stated its plans for a "real-time" depiction of airport activity occurring on the ground using satellite-based technology. *See id.* at 2-28. However, Congress recently authorized thirty-two million dollars to the FAA for a similar project in 2009, "Airport Surface Detection Equipment-Model X" (ASDE-X), which "uses radars to survey airport surfaces." S. REP. NO. 110-418, at 58 (2008). It is well-recognized that the satellite-based technology provides a better feed than radar. *See supra* note 92. Congress even recognizes ASDE-X's limitations by using radar. S. REP. NO. 110-418, at 58 (2008) ("[ASDE-X] has significant limitations. First, ASDE-X still relies on air traffic controllers to convey urgent information to the flight crew of an aircraft . . . . [T]his indirect approach does not provide the maximum safety benefit. Second, ASDE-X uses radars to survey airport surfaces, and heavy precipitation degrades the accuracy of radar surveillance."). It is incomprehensible why Congress would appropriate money for a radar-based system when JPDO has plans for a system providing real-time feeds. Unfortunately, the ASDE-X may ultimately be the primary system used, with twelve airports in 2008 having its capabilities and more to come. *ASDE-X In Use at Washington Dulles*, AVIATIONNEWS.NET, Apr. 8, 2008, http://www.aviationnews.net/?do=headline&news_ID=153391. This miscommunication is one example of the larger problems that may accrue under NextGen implementation. S. REP. NO. 110-418, at 58 (2008) ("The Committee continues to be disappointed in the FAA's ability to manage the program. The FAA has repeatedly assured the Com-

physical controllers.[141] However, until this point is reached, technology is becoming fundamentally necessary for implementing such narrow separation standards and enhanced capacity in the national airspace system.[142]

C. Legal Implications on the FAA

The FAA has assumed the duty of ensuring the safe and efficient movement of aircraft.[143] FAA Order 7110.65S (Manual),[144] which lists a controller's duties to aircraft, states the ATC's purpose is to "prevent a collision between aircraft operating in the system and to organize and expedite the flow of traffic."[145] As the duties of controllers and pilots evolve under NextGen, the increasing role of technology in the air transportation system will have significant implications regarding safety. By identifying the problems under the current ATC system, solutions can be drawn to address the

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mittee that the ASDE-X program will be completed on time and on budget, but the agency appears disinterested in using generally accepting practices for program management."); *see also* discussion *infra* Part III.C.2.

141. The FAA intends to implement various other technologies in the underlying framework to increase capacity at all airports as well. The JPDO wants to consolidate all the different levels of air traffic control—control towers, TRACON, and ARTCC—because costs could be saved by eliminating physical control towers at the airport. This consolidation could potentially lead to "virtual towers" at airports. *See generally* CONOPS, *supra* note 109, at 2-28.

142. One relatively unknown but significant development for alleviating air traffic congestion lies in the Small Aircraft Transportation System (SATS). SATS represents a shift towards providing commercial air transportation between smaller, underutilized airports. Given the current 5,400 or so public-use airports and the fact that only five percent are currently used for commercial transportation, NASA is attempting to exploit the use of these underused airports and increase access to smaller communities. *See Hearing on NASA Budget*, *supra* note 9. Although a significant amount of money was invested in research in 2001, since the funding ran out there has been no indication of the program's status, nor has it been included in the Concept of Operations for NextGen. Unfortunately, this clever idea to spread demand across other airports may not be realized. For further information on SATS, see H.R. REP. NO. 106-988 (2000) (discussing the four operational capabilities SATS can provide).

143. *See* 49 U.S.C. § 40103(b)(1) (2006) ("The Administrator of the [FAA] shall develop plans and policy for the use of the navigable airspace and assign by regulation . . . the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace."); § 40103(b)(2)(D) ("The Administrator shall prescribe air traffic regulations on the flight of aircraft . . . for preventing collision between aircraft."); *see also* § 40103(a) ("The [U.S.] Government has exclusive sovereignty of airspace of the United States."). After the first air traffic controller appeared in 1929, local governments traditionally operated these functions before the federal government took full responsibility in 1938. Poole, *supra* note 92, at 2. For a discussion on the historical functions of air traffic control, see *supra* note 49.

144. *See* ATC MANUAL, *supra* note 107, at 2-1-1.

145. *Id.* The main priority of the ATC is given to "separating aircraft and issuing safety alerts." *Id.* at 2-1-2.

issue of FAA accountability and avoid potential conflicts that might arise with NextGen.

1. Apportionment of Duties Between the FAA & Pilots

a. ATC: Concurrent Responsibilities

Traditionally, a sovereign claimed immunity from any potential tort liability.[146] Under the Federal Tort Claims Act of 1946 (FTCA),[147] the government waived its immunity with regard to "negligent or wrongful" government conduct.[148] But there are numerous exceptions to the general rule, including the discretionary function exception.[149]

In *United States v. Gaubert*,[150] the Court set forth a two-part test to determine whether the discretionary function exception precludes waiver of government immunity.[151] First, the FAA's decision must "involv[e] an element of judgment or choice,"[152] and second, it must be one the exception was "designed to shield,"[153] such as decisions "grounded in social, economic, and political policy."[154]

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146. Kawananakoa v. Polybank, 205 U.S. 349, 353 (1907) ("A sovereign is exempt from suit . . . on the logical and practical ground that there can be no legal right as against the authority that makes the law on which the right depends."). Medieval kings of England did not allow for suits against them based upon the theory that "The King can do no wrong." DAN B. DOBBS, THE LAW OF TORTS § 260 (2000). Countries inherited this immunity from the monarch and applied it to all the federal government departments and agencies. *Id.* On the historical roots of sovereign immunity, see Edwin M. Borchard, *Government Liability in Tort*, 34 YALE L.J. 1, 129, 229 (1924); Edwin M. Borchard, *Governmental Responsibility in Tort, IV, V, VI*, 36 YALE L.J. 1, 757, 1039 (1926); Edwin M. Borchard, *Governmental Responsibility in Tort: VII, VIII*, 28 COLUM. L. REV. 577, 734 (1928).

147. Federal Tort Claims Act, ch. 753, 60 Stat. 842 (1946) (codified in scattered sections of 28 U.S.C.).

148. 28 U.S.C. § 1346(b)(1). No lawsuit in federal court may be brought until the party has provided the appropriate government agency with the claim. DOBBS, *supra* note 146, § 261. The plaintiff can only sue after six months or when the agency denies the claim, and no jury trials are permitted. *Id.* For detailed instructions on filing a tort claim against the FAA, see 14 C.F.R. §§ 15.1–.115 (2008).

149. The discretionary function exception to the waiver of immunity applies to "[a]ny claim . . . based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused." 28 U.S.C. § 2680(a). The discretionary function's purpose has been described as insulating the "[g]overnment from liability if the action challenged in the case involves the permissible exercise of policy judgment." Berkovitz v. United States, 486 U.S. 531, 537 (1988).

150. 499 U.S. 315 (1991).

151. *See id.* at 322–23.

152. *Id.* at 322 (quoting *Berkovitz*, 486 U.S. at 536).

153. *Id.* at 323.

154. *Id.* (quoting United States v. S.A. Empresa De Viacao Aerea Rio Grandense (*Varig Airlines*), 467 U.S. 797, 814 (1984)). Courts have frequently used this test to determine whether the discretionary function exception precludes a claimant from asserting that an FAA decision proximately caused the claimant's damages. *See, e.g.*, Stables v. United States, 366 F. Supp. 2d 559, 567 (S.D.

In one of the first cases of ATC negligence, courts rejected the government's argument that controller decisions were protected under this exception.[155] Indeed, it has since been established that air traffic controllers can be held liable for negligent acts in their duties under the FTCA.[156] But this liability is predicated on the scope of a controller's legally defined duty to aircraft in the airspace system. Air traffic controllers have generally been held to a "standard of ordinary care with respect to their duties."[157] This vague standard does nothing to create a practical and legally sufficient duty upon controllers because ATC functions are extremely complex. Unfortunately the question of ATC duties is a matter of law, and judges generally do not have detailed knowledge of the system's intricacies.[158] As a result, courts tend to rely on the Manual as a guide in weighing whether the controller had a duty in any given situation.[159] In light of this fact, debate has ensued over

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Ohio 2004). For a critical review of the *Gaubert* decision, see Mark C. Niles, *'Nothing But Mischief': The Federal Tort Claims Act and the Scope of Discretionary Immunity*, 54 ADMIN. L. REV. 1275 (2002) (arguing that the two-part test articulated in *Gaubert* creates a broader scope of immunity than what Congress had intended).

155. *See* Eastern Air Lines v. Union Trust Co., 221 F.2d 62, 75 (D.C. Cir. 1955). Under the FTCA, plaintiffs had to prove that the air traffic controllers acted within the scope of their employment, their conduct was of the nature such that a private person acting in their position would be liable for the conduct, and the discretionary function exception did not apply. *See* 28 U.S.C. §§ 1346(b)(1), 2680 (2006). Under *Eastern Air Lines*, the court found that private citizens could provide ATC duties, something they commonly did before the federal government stepped in, and thus, these government employees could be held liable. *Eastern Air Lines*, 221 F.2d at 74; *see also* Kevin N. Courtois, Comment, *"Standards and Practices": The Judiciary's Role in Promoting Safety in the Air Traffic Control System*, 55 J. AIR L. & COM. 1117, 1121–24 (1990).

156. Under the FTCA, the state where the negligent act occurs is the state law that applies. 28 U.S.C. § 1346(b)(1) ("[T]he district courts . . . shall have exclusive jurisdiction of civil actions on claims against the United States . . . in accordance *with the law of the place where the act or omission occurred.*" (emphasis added)). In order to assert a negligence claim against the FAA for ATC negligence, one must assert the controller had a duty, and the breach of this duty proximately caused the injured party legally cognizable damages. *See, e.g.*, Hayes v. United States, 899 F.2d 438, 443 (5th Cir. 1990).

157. Sexton v. United States, 132 F. Supp. 2d 967, 977 (M.D. Fla. 2000); *see also* Spaulding v. United States, 455 F.2d 222, 228 (9th Cir. 1972) ("In such a[] . . . situation [ATC] was required to exercise only ordinary care to avoid injury to the pilot and his passengers."); Mgmt. Activities, Inc. v. United States, 21 F. Supp. 2d 1157, 1176 (C.D. Cal. 1998) ("Air traffic controllers are held to a standard of ordinary care with respect to their responsibilities."); Baker v. United States, 417 F. Supp. 471, 486 (W.D. Wash. 1975) ("Even in an emergency the duty of care is only that of ordinary care.").

158. *See, e.g.*, First of Am. Bank-Cent. v. United States, 639 F. Supp. 446, 455 (W.D. Mich. 1986) ("The nature and extent of an air traffic controller's duty of due care to pilots is a question of law.").

159. *See, e.g.*, *Spaulding*, 455 F.2d at 226 ("The air traffic controller is required to give all information and warnings specified in his manuals, and in certain situations he must give warnings beyond the manuals." (footnotes omitted)). The other "certain situations" are dangers "reasonably apparent" to the controller. Mallen v. United States, 506 F. Supp. 728, 736 (N.D. Ga. 1979). The

whether strict compliance with the Manual should defeat a negligence claim.[160] But whether compliance should lead to prima facie negligence or negligence per se does not resolve the problem of judges relying on the Manual in one form or another in order to determine the controllers' duties.[161] Also, while the FAA has immunity for procedures it prescribes in the Manual through the discretionary function exception, the judges' reliance naturally gives the FAA significant control over its own liability.[162] These conflicting incentives are likely to cause problems under the NextGen system.[163]

FARs require controllers to comply with the Manual: "An [ATC] tower operator shall perform his duties in accordance with the limitations on his certificate and the procedures and practices prescribed in air traffic control manuals of the FAA, to provide for the safe, orderly, and expeditious flow of air traffic." 14 C.F.R. § 65.45(a) (2008).

160. Courtois, *supra* note 155, at 1127. The author criticizes courts that hold strict compliance with the Manual ultimately defeats a negligence claim, because this does not promote the proper incentives in ensuring the skies are safe. *Id.* at 1154. This belief is commonly held by many authors. Regarding whether compliance with a standard of safety should be a defense to negligence, Richard Posner states:

> If so, only firms that lag behind the average firm in their industry in adopting safety precautions will be held liable. This is a satisfactory result if there is reason to expect the average firm to take all cost-justified precautions without the coercion of law. But a firm will have no incentive to take precautions against accidents dangerous only to people with whom the firm does not, and because of high transaction costs cannot, deal.

RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 171–72 (7th ed. Aspen 2007) (1973). The analysis is only applied to the private sector and not necessarily government employees such as air traffic controllers. However, the incentives to take cost-justified precautions are even weaker with a public agency only answering to the threat of political elections. The natural tendency is to impose liability on the FAA for negligent ATC policies if doing so properly incentivizes the government to respond more effectively. *See* discussion *infra* Part III.C.1.b (arguing possible solutions to the lack of incentives the FAA has in adopting advanced technology).

161. There is a split of authority regarding the consequences of violating a standard of care created by an administrative or regulatory manual. Some states find that not complying with the duty prescribed in the regulations automatically makes them negligent, subject to causation, foreseeability, and damages. *See, e.g.*, Springer v. United States, 641 F. Supp. 913 (D.S.C. 1986) (holding a controller negligent for failing to report strong winds to a pilot as required by the Manual). Other states find that if the negligence per se doctrine applies, then a violation of this due care is only prima facie evidence of negligence. Thus, in these states the controller will have room to show that it acted appropriately under the given circumstances despite the violation of a particular procedure. *See, e.g.*, Hamilton v. United States, 497 F.2d 370 (9th Cir. 1974).

162. *See also* Courtois, *supra* note 155, at 1151 ("As to air traffic control services . . . the FAA is both establishing the standard and being judged by it."). Although the general rule is for the controllers' duties to be defined by the Manual, which the FAA prescribes, the main exception is the "Good Samaritan Rule," which states:

> One who undertakes, gratuitously or for consideration, to render services to another which he should recognize as necessary for protection of the other's person or things, is subject to liability to the other for physical harm resulting from his failure to exercise reasonable care to perform his undertaking, if (a) his failure to exercise such care increases the risk of such harm, or (b) the harm is suffered because of the other's reliance upon the undertaking.

RESTATEMENT (SECOND) OF TORTS § 323 (1965). Under this, one can certainly argue that if a controller provides information to the pilot not required by its Manual, it cannot render these services negligently.

163. *See infra* notes 172–181 and accompanying text (discussing the conflicting incentives issue

Despite concerns over the extent of controllers' liability, they are not solely responsible for safety in the system. The pilot's standard duty of care is concurrent with that of the air traffic controller.[164] For any given flight, the pilot-in-command (PIC) has "final authority and responsibility for the operation and safety of the flight."[165] Before a flight, the pilot is responsible for being knowledgeable of numerous materials, including projected weather, all applicable regulations found in the FARs, obstructions and wake turbulence hazards, choice and lengths of runways, and emergency procedures.[166] With pilots subjected to a plethora of information already, NextGen will increase the specialized knowledge required even more.

b. ATM: Shifting Control to Pilots & Technology

One of the most fundamental NextGen concepts affecting the relationship between ATM and pilots is the increased dissemination of various forms of information. With pilots now capable of visualizing other aircraft

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in the context of duties to maintain ATM systems and equipment).

164. *Spaulding*, 455 F.2d at 226. A few courts hold that the pilot is responsible for everything, even if the ATC makes a mistake. *See* Kathleen McChesney Goodman & Scott Davis, *Free Flight and the Pilot-In-Command Concept—A Recipe for Disaster?*, 62 J. AIR L. & COM. 653, 663 (1996). It is important to note that this usually will only apply in VFR situations where the pilot has visual control over its flight and the times on an IFR flight plan where the pilot is not obstructed. *See, e.g.*, Mgmt. Activities, Inc. v. United States, 21 F. Supp. 2d 1157, 1174 (C.D. Cal. 1998) (applying California law, the court held pilots are ultimately responsible for safe operations under VFR conditions). This is not the case where planes are separated by controllers, such as under IFR conditions, which airlines nearly always fly under. *See supra* note 87 and accompanying text.

165. 14 C.F.R. § 1.1 (2008). The PIC's authority also includes the ability to deviate from any regulation in cases of emergencies. § 91.3. On commercial flight operations with more than one pilot, the regulations require that one pilot be designated as PIC and the second pilot "second-in-command." *See* §§ 121.385, 135.109(b). However, on non-commercial flight operations, determining PIC with more than one certified pilot can be a difficult issue. For a thorough discussion on the rules of determining PIC, see generally Raymond C. Speciale & Brett D. Venhuizen, *The Pilot-In-Command and the FARs: The Buck Stops Here (Almost Always)*, 83 N.D. L. REV. 817 (2007); Barbara D. Bleisch, *Proof of Pilot Identity in Matters Arising from the Crash of Dual Control Aircraft*, 63 J. AIR L. & COM. 681 (1998); Loyal Robert Hibbs & John W. Sweet, *Aircraft with Dual Controls: Who Is Flying the Plane?*, 1 NEV. LAW. 16 (1993).

166. *See, e.g.*, Abrisch v. United States, 359 F. Supp. 2d 1214, 1226 (M.D. Fla. 2004) ("[A] pilot must be aware of those facts which are material to the proper operation of the aircraft and is charged with that which he should have known in the exercise of the highest degree of care." (internal quotation marks omitted)). In addition, the FARs require that "[e]ach [PIC] shall, before beginning a flight, become familiar with all available information concerning that flight." 14 C.F.R. § 91.103. For all flights, this includes runway lengths at airports of "intended use," takeoff and landing distances, and other expected things such as aircraft gross weight, winds, and temperatures. § 91.103(b), (b)(2). For IFR flights, pilots must be knowledgeable of weather reports and forecasts, fuel requirements, alternative airports available, and known traffic delays. § 91.103(a).

in the system through ADS-B In, along with continuous weather feeds and 4DT updates from ATM, the set of knowledge required of each pilot will undoubtedly increase.[167] As authors have noted, when "technology provides one . . . with greater information, the balance of responsibility should shift toward the party with more information."[168] This transfer of duty will significantly decrease the number of those cases, for instance, where controllers are found negligent for failing to provide mandated weather updates to pilots.[169] To address the increased probability of pilot negligence, the FAA will have to increase the requisite level of training and education needed for pilots, which could further decrease the volume of private pilots in an already depleting general aviation industry.[170] These increased responsibilities

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167. For instance, the NextGen Network Enabled Weather (NNEW) will upload a "virtual common weather picture" through datalink directly to pilots, eliminating the interim-human controller and providing increased error margins. CONOPS, *supra* note 109, at 5-4. Additionally, in TBO designated areas, each aircraft's 4DT will be adjusted as more information regarding the flight becomes available to controllers, who subsequently adjust the aircraft's flight plan in the system. CONOPS, *supra* note 109, at 2-14. This compares to the current system where human controllers are responsible for remembering to update pilots amongst the dozen of other duties. The new system compiles all existing weather sources and forecasts to provide one single forecast disseminated to any requesting user. *Id.*; *see also supra* note 116 (discussing the SWIM system and its effects on each user in the system).

168. Goodman & Davis, *supra* note 164, at 668. This reasoning is consistent with policies requiring a controller, who has more knowledge than a pilot, to inform the pilot of any harms. *Id.* at 667.

169. *See, e.g.*, Am. Airlines, Inc. v. United States, 418 F.2d 180, 193 (5th Cir. 1969) ("The air traffic controller must give the warnings specified by the manuals. . . . The air traffic controller, whether or not required by the manuals, must warn of dangers reasonably apparent to him but not apparent, in the exercise of due care, to the pilot."); *see also* Frederick P. Alimonti, *Death by Misinformation? Governmental Liability for Faulty FAA Weather Information*, 60 J. AIR L. & COM. 961 (1995) (discussing the apportionment of liability between ATC and pilots when weather information is incorrectly given to pilots).

170. *See, e.g.*, Matthew L. Wald, *Up, Up and . . . Never Mind*, N.Y. TIMES, Apr. 26, 2007, at G1, *available at* http://www.nytimes.com/2007/04/26/fashion/26pilot.html?ex=1335240000&en=9937adab8d7c78ca&ei=5088&partner=rssnyt&emc=rss ("The number of student pilots is down by about a third since 1990, from 129,000 to 88,000. The number of private pilots is down from 299,000 to 236,000 . . . ."). One might argue that under NextGen, "pilots will choose and alter their flight paths and altitudes with few constraints," thus increasing pilot freedom with regard to accessibility of some already constrained areas. Goodman & Davis, *supra* note 164, at 654. As a result of increased freedom though comes more required training and costs to maintain pilot certificates and ratings from an increasingly complex system, which will undoubtedly decrease the number of potential pilots. The Aircraft Owners and Pilot's Association (AOPA), representing the general aviation industry, has also voiced complaints over the new system. *See NGATS: Joint Agency Vision of ATC Future Doesn't Include GA*, AOPA, Sept. 14, 2006, http://www.aopa.org/whatsnew/newsitems/2006/060914ngats.html. As AOPA states: "[I]n this nightmare of the future, [general aviation] would lose access to airspace, experience increased security requirements, and operate from fewer airports . . . *even if* we equipped with all the expensive technologies envisioned." *Id.* (emphasis in original). The AOPA has traditionally been a powerful lobbying group, and it would be no surprise if they were able to alter the current NextGen framework to advance their interests. *See Robinson—Senior VP of IAOPA*, AOPA, Jan. 26, 2009, http://www.aopa.co.uk/scripts/news.php?id=MTE0 (noting that AOPA has "400,000 members whose subscriptions and lobbying power make AOPA a major player in Washington").

will not only increase capital costs for advanced technology, but will likely raise insurance costs for airlines.[171]

While the responsibilities of pilots will clearly increase, the traditional role of controllers, who for decades have been the main provider of viable information to pilots, will largely change with advanced technology that disseminates necessary information to pilots directly.[172] The decreased controller-pilot contact translates into increased technology-pilot interaction, which could arguably create different forms of FAA liability. The FTCA presently covers only negligent acts of government employees,[173] not necessarily a technological equipment failure. For instance, the FAA will certainly be liable if a managing controller negligently forgets to resolve a conflict between two 4DTs.[174] However, in the case of a technological malfunction, the government will argue that its decision to implement that piece of equipment was a policy decision protected by the discretionary function exception of the FTCA.[175] Aside from a potential strict liability claim against the manufacturer of the equipment,[176] the victimized plaintiff could only recover against the FAA if an employee acted negligently in maintaining a particular

171. It is certainly arguable that the effect on commercial airlines will be overestimated from the transition from an ATC to a network-centric system (ATM). For instance, the TCAS equipment currently required alerts the pilots to surrounding obstacles and other aircraft in its radius, and commercial airlines currently have sophisticated ways of receiving weather as well. *See supra* note 139 and accompanying text.

172. *See supra* note 167 and accompanying text (discussing several of the general avenues in which pilots are fed information under NextGen).

173. *See* 28 U.S.C. § 1346(b)(1) (2006) ("[I]njury . . . caused by the negligent or wrongful act or omission of *any employee* of the Government while acting within the scope of his . . . employment." (emphasis added)).

174. *See supra* note 159 and accompanying text (discussing the scope of ATC's current duties).

175. *See* Courtois, *supra* note 155, at 1123 ("The general rule . . . is that government employee conduct which involves the execution of established policies can form the basis of a tort claim against the government but conduct involving the formulation of those policies is immune from judicial review."); *see also* Rulli v. United States, 581 F. Supp. 1502, 1506 (W.D. Pa. 1984) ("[W]here the tortious conduct involves policy considerations or judgment regarding the nature and scope of a regulatory scheme, the conduct is immunized from judicial review by virtue of the discretionary function exception.").

176. Even if the FAA was capable of escaping liability for a technological equipment failure under the discretionary function exception, the plaintiff would have a products liability claim against the manufacturer assuming the FAA properly maintained it. For instance, there are likely three different claims a plaintiff could succeed on against a products manufacturer in this scenario: negligence, breach of warranty, and strict products liability. On claims regarding express warranties and warranties implied by law, see U.C.C. §§ 2-313, 2-314 (2009). On claims regarding strict products liability, see RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY §§ 1–21 (1998). For a discussion of manufacturers' products liability within the context of the aviation industry, see generally Moore & Caven, *supra* note 101.

technological system.[177] The clear issue under these circumstances is determining FAA employees' duty of care.

Currently, the ATO is responsible for writing its own procedures on how to maintain various ATC technological systems.[178] Under a NextGen scenario where these ATO-made procedures proximately cause a crash, a plaintiff would argue that the FAA-ATO was negligent for not enacting more stringent safety procedures for handling ATM systems and equipment. Based upon *Miller v. United States*,[179] the government is likely to claim these instructions are analogous to the Manual, the guide dictating the standard of care for controllers, and thus are a discretionary function not subject to liability.[180] If this argument prevails, the ATO will essentially promulgate its own employees' duty of care it owes to the air transportation system.[181] Under NextGen's technological-based system, this liability framework does not provide the proper incentive for maximizing safety.

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177. *See supra* note 162 and accompanying text (discussing how plaintiffs cannot challenge FAA decision making, only the negligent acts of employees in carrying out those policies).

178. U.S. GOV'T ACCOUNTABILITY OFFICE, FAA'S PROPOSED PLAN FOR IMPLEMENTING A RELIABILITY CENTERED MAINTENANCE PROCESS FOR AIR TRAFFIC CONTROL EQUIPMENT 4 (2006). The Technical Operation Services unit of the ATO presently handles the maintenance of approximately 40,000 pieces of ATC equipment. *Id.* The unit currently uses instructions and procedures from the equipment manufacturers to write its own handbooks on how to maintain certain pieces of equipment. *Id.* The ATO has recently tried experimenting with providing a more business-like approach to maintaining the equipment used in the national airspace system, such as the corporate maintenance philosophy (CWP) and reliability centered maintenance (RCM). *See id.* at 1, 7. However, none have been successfully implemented due to their poor performances. *See id.* at 9–10. The important observation though is that a large percentage of the future claims in the transportation system are likely to shift from against controllers to against the engineers and staffs maintaining the ATM equipment. In furtherance of safety under NextGen, the ATO should continue striving for a more periodic and business-like approach to maintaining equipment in order to maximize safety and minimize its liability.

179. 522 F.2d 386 (6th Cir. 1975) (per curiam).

180. In *Miller*, a suit against the FAA arose following a crash of a commercial airliner when the plaintiff claimed the FAA was negligent in failing to impose stricter ATC procedures. *Id.* at 387. The court in *Miller* stated:

> [T]he United States should not be subjected to liability in this case because air safety regulations should have been more strict at the Cincinnati airport. The discretionary function exception to the Federal Tort Claims Act precludes the imposition of tort liability on the claimed failure to impose a more strict set of air safety regulations.

Id.

181. The only credible argument the plaintiff may have is that the Manual is prepared more formally and is strictly followed by the FAA, while ATO's engineers simply wrote its own handbooks for daily maintenance procedures. These handbooks could arguably not be a policy decision immune from liability. *See supra* note 154 and accompanying text (discussing the *Gaubert* two-part test). However, supposing this claim was successful, the ATO would merely promulgate more formal procedures in handling its ATM systems in order to bring those procedures under the discretionary function shield. *See* discussion *supra* notes 157–163 and accompanying text (discussing how simply complying with the procedures set forth in a manual or other safety custom will likely allow the government to escape liability).

One suggestion is to eliminate the discretionary function exception regarding the FAA-ATO decisions on maintaining its equipment.[182] However, this exception also leads to another significant deficiency in the system that has remained unaddressed, namely, the FAA's inability to implement advanced ATC systems as they become available. Examining the self-separation airspace, which relies on the most technology of all the proposed changes, illustrates the effects of the discretionary function exception on safety in the system and provides insight for corrective solutions.

2. Self-Separation Airspace—Inventive or Problematic?[183]

The JPDO posed the following policy issue: "Can automation ever be 'responsible' for separation assurance, or is a human (flight operator or [ATM] personnel) always required to assume responsibility?"[184] With the premise that maximizing safety in the airspace system is the ultimate goal, the answer will depend on whether the current scope of FAA liability previously described remains the same. To this end, suppose an airline proximately causes an accident in the self-separation airspace environment where no human controllers have assumed responsibility for separation. The estates of passengers will likely sue the airline and the FAA, claiming the latter was negligent for reducing the separation distances and allowing for self-separation airspace even if the airline pilot was the sole cause of the accident.[185] Under a nondelegable duty of care theory, the FAA assumed the du-

182. There may also be concerns regarding the level of pilot responsibility under NextGen that need to be addressed in order to avoid catastrophe in the system. During the discussions of free flight, Goodman and Davis proposed decreased responsibility on pilots was needed, arguing that ATC needs to be more accountable to pilots who cannot be held liable for absolutely everything. *See* Goodman & Davis, *supra* note 164, at 666–69; *see also supra* note 115 (discussing the free flight concept). However, this argument was based upon the traditional rule that the pilot is absolutely liable for any accidents in the system, making it inapplicable now because courts have abandoned this rule for concurrent responsibilities. *See, e.g.*, Andrew J. Dilk, *Aviation Tort Litigation Against the United States—Judicial Inroads on the Pilot-In-Command Concept*, 52 J. AIR L. & COM. 797 (1987) (discussing the dilution of the "pilot-in-command" traditional rule by courts increasingly placing responsibility for the safety of the flight on air traffic controllers). Nonetheless, the concern for commercial pilots having too much responsibility is likely overstated as the FARs will increase the necessary training and air carriers will likely have the funds to provide this education. *See supra* note 171. *But see supra* note 170 (discussing the effects NextGen may have on general aviation pilots forced to have more training to adjust to the new system).

183. For the discussion on self-separation airspace, see *supra* note 133 and accompanying text.

184. CONOPS, *supra* note 109, at D-1 (Appendix D: Policy Issues).

185. There are numerous lawsuits filed against the FAA trying to impose liability on them by asserting ATC should have done more to control the actions of pilots. *See, e.g.*, Spurgin-Dienst v. United States, 359 F.3d 451 (7th Cir. 2004) (holding that ATC had no duty to prevent an aircraft

ty of managing the safe and orderly flow of traffic, and thus should be vicariously liable for the negligence of its independent contractors—the pilots and airlines—who have been delegated with separation responsibilities.[186] However, courts have held that the discretionary function exception will lead to the dismissal of actions challenging the substance of a FAA "policy decision."[187] This implies that the FAA would not be negligent in implementing satellite-based surveillance systems or self-separation airspace. While the immunity for these policy decisions appears fair, situations will arise where advanced technology, if implemented, could have prevented a crash. But the decision whether to install that new piece of technology is considered a policy decision, which is not subject to liability.[188] Thus, these policies need to be reexamined to determine the most effective system for promoting flexibility within the NextGen.

Although the current ATC system has been modestly managed given the conflicting FAA interests, the discretionary function exception undermines the threat of tort liability, thereby providing little incentive for the FAA to implement advanced technologies, which could further improve safety.[189] For example, in *Ellen v. United States*,[190] a woman whose daughter was killed in a plane crash claimed that the FAA was negligent for not installing an Emergency Obstruction Video Map (EOVM).[191] Under the two-part

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from taking off into known icy conditions after correctly informing him of the weather hazards). The foreseeability of similar claims under a NextGen is very feasible.

186. Section 427 of the Restatement reads:

> One who employs an independent contractor to do work involving a special danger to others which the employer knows or has reason to know to be inherent in or normal to the work, or which he contemplates or has reason to contemplate when making the contract, is subject to liability for physical harm caused to such others by the contractor's failure to take reasonable precautions against such danger.

RESTATEMENT (SECOND) OF TORTS § 427 (1965). The separation of aircraft throughout the airspace is clearly an inherently dangerous duty that the FAA assumed. By putting in place technology that allows aircraft to separate themselves, the FAA has in effect contracted its responsibility to airlines. However, in a related case, *Alinsky v. United States*, 415 F.3d 639 (7th Cir. 2005), a claim arose from a collision of two aircraft under the supervision of air traffic controllers, or private contractors, that were hired by the FAA. *Id.* at 641. The court rejected the plaintiffs' argument that the FAA did not have authority to hire private contractors for controlling the flow of air traffic under the nondelegable duty to perform those services. *Id.* at 642–45; *see also* DOBBS, *supra* note 146, § 337 (discussing nondelegable duties and the scope of the original contractor's liability).

187. In *Miller v. United States*, 522 F.2d 386 (6th Cir. 1975), the court held that the FAA cannot be held negligent for not enacting more stringent safety standards because "air safety regulations" are protected by the discretionary function exception. *Id.* at 387; *see also supra* note 180.

188. *See infra* note 192 and accompanying text.

189. Izhak Englard, *The System Builders: A Critical Appraisal of Modern American Tort Theory*, 9 J. LEGAL STUD. 27, 51 (1980) (discussing Richard Posner's belief that the "main function of liability is to regulate safety").

190. 32 F. App'x 270 (9th Cir. 2002).

191. *Id.* at 272; *see also* FED. AVIATION ADMIN., ORDER JO 7210.3V 3-9-4(a) (2008) ("An EOVM shall be established at all terminal radar facilities that have radar coverage in designated mountainous areas. . . . This map is intended to facilitate advisory service to an aircraft in an emer-

Gaubert test, the court reasoned that the decision whether to implement advanced technology, the EOVM, fell under the discretionary function exception, because "[s]afety is a quintessential policy issue."[192] This exception prevented the judiciary from applying the Hand Formula[193] for determining whether there was a breach of duty:

> The decision whether to install an EOVM required the FAA to balance the safety benefits of the information provided by the EOVM against both the safety and practical costs of eliminating another map or creating combined maps that could be cluttered and difficult to read. This is precisely the type of decision over which Congress intended to prevent judicial second guessing.[194]

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gency situation where[] an appropriate terrain/obstacle clearance minimum altitude cannot be maintained.").

192. *Ellen*, 32 F. App'x at 273. In a nearly identical case, *Collins v. United States*, No. 03 C 2958, 2007 U.S. Dist. LEXIS 73310 (N.D. Ill. Sept. 28, 2007), the FAA was found to be negligent for not installing a Terminal Automated Radar Display and Information Systems (TARDIS) at an airport. *Id.* at *55–56. If the FAA had followed its own specified criteria for when an airport qualified for installation of a TARDIS, the radar would have picked up a certain aircraft that eventually collided with another aircraft. *Id.* at *56. However, the discretionary function exception barred any tort liability on the FAA because the decision whether to install a piece of equipment was a public policy consideration. *Id.* at *79. Despite formal procedures in place to determine whether a TARDIS should be installed—FAA Order 7031.2C—the Vice-President of ATO testified that the decision to install the radar at some airports and not others was of "primarily congressional interest." Collins v. United States, No. 03 C 2958, 2005 U.S. Dist. LEXIS 7470, at *9 (N.D. Ill. Apr. 19, 2005). Another former deputy of the FAA also testified that "whether an airport tower received TARDIS depended on, in part, 'how badly do they want it.'" *Id.* With nearly identical facts as *Ellen*, both these cases seriously question the FAA's ability to keep up with technological advancements under the current legal framework. This could have devastating consequences in both the transition to NextGen and maintaining the system.

193. Judge Learned Hand first derived the "Hand Formula," also referred to as the Carroll Towing Doctrine, in *United States v. Carroll Towing Co.*, 159 F.2d 169 (2d Cir. 1947). In weighing the risks of not having a bargee on board at all times, Judge Hand identified three variables to determine whether a duty existed. *Id.* at 173. "[I]f the probability be called P; the injury, L; and the burden, B; liability depends upon whether B is less than L multiplied by P: i.e., whether B less than PL." *Id.* Essentially, the inquiry in *Carroll Towing* turned on whether the burden of the precaution, the bargee, was less than the expected value of loss. Suppose the cost of a bargee is $10,000, and if the probability an accident could occur is ten percent while the cost of the accident if it did happen is $150,000. In this example, the owner who did not have the bargee would be negligent because the cost of the precaution is less than the expected value of the loss.

194. *Ellen*, 32 F. App'x at 273. Another author, Niles, believes the *Gaubert* two-part test in determining whether a discretionary function exception applies should be abandoned for the following version: "[W]hether any of the theories of liability asserted by the plaintiffs would require it to second-guess governmental policy decisions, or whether adjudicating the claims would impair the normal policymaking approach of an official with discretionary authority." Niles, *supra* note 154, at 1348. Even under this approach, the test does not help address the scope of the term "policy deci-

Assuming one of the goals from tort law is to promote the regulation of safety, precluding analysis of FAA's safety policy decisions under a Hand Formula type analysis does not provide the incentive for ensuring safety under NextGen.[195] This preclusion has arguably led to the FAA's current idleness in implementing advanced equipment technology.[196] Under the current "positive control" regime and the FTCA, the ATO is not forced to weigh the costs of prevention with the expected value of additional safety benefits.[197] The result of these failed policies is a prolonged and urgent need for NextGen-based technologies to accommodate unprecedented demand.

On the other hand, one may argue that if the FAA was potentially liable in tort for every policy decision it made, the end result would be a shift in policy-making authority from the governmental agency to a series of jurors.[198] Whether this transfer should occur naturally depends upon whether it increases the level of accountability on these crucial safety decisions.[199]

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sion," which ultimately determines the scope of immunity. In *Ellen*, the issue is whether the decision to install an EOVM is a policy choice. These FAA and ATO decisions are arguably where the court needs to narrow its readings in order to subject these agencies to more accountability.

195. *Ellen* and *The T.J. Hooper v. Northern Barge Corp.*, 60 F.2d 737 (2d Cir. 1932) are analogous. In *T.J. Hooper*, the court found certain tugboats unseaworthy because they were not equipped with radios despite the custom in the industry to not require radios. *Id.* at 740. The court found that the standard in the industry may be one of reasonable care, and not simply the general custom in the industry. *Id.* By relying on manuals and customary industry standards, the general safety of the public suffers because the legal system—through tort liability—does not inflict incentives for certain industries, in this case the FAA, to implement advanced technologies.

196. *See supra* note 11 and accompanying text (describing the FAA's problems with effectively implementing new technologies).

197. *Id.*

198. Under a Hand Formula analysis, the jury would ultimately be responsible for determining whether there was a breach of a duty in the particular scenario. As one author summarizes:

> [T]he presumptive balancer of the costs and benefits of safety is the civil jury. As the usual trier of fact, the jury is assigned the duty of determining whether or not the conduct of the parties constitutes reasonable care. Juries listen to evidence presented about safety steps both taken and not taken. They usually hear defendants argue that the costs of doing any more would be prohibitive and the likelihood of preventing harm very remote. They usually hear plaintiffs argue that defendants could have significantly reduced the chance of serious mishap without much effort.

NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 156 (1996). With technology naturally becoming much more complex, to avoid this discussion on the FAA's policies is arguably unjust. Traditional forms of accountability on FAA decision-making, e.g., the democratic process, may no longer be the most effective solution to handling such a complex and evolving system.

199. The critical issue is whether the threat of litigation will incentivize the FAA to act more efficiently in implementing new technologies. One author answers in the affirmative:

> There can be no doubt that whenever decision makers can be sued, both for action or inaction, they are given an incentive that can lead to more efficient decisions. . . . [P]ublic agencies are likely to be induced to consider seriously whether action or inaction is likely to result in litigation. Though considering these issues will require resources, these costs under certain circumstances are likely to be small compared to the benefits that result from more careful decision making.

WERNER Z. HIRSCH, LAW AND ECONOMICS: AN INTRODUCTORY ANALYSIS 181 (1st ed. 1979). The

The traditional conception is that governmental accountability is instituted by democratic elections and the threat of removal.[200] Examining the effects of the democratic process in instituting government accountability within the FAA illustrates the utter technological decay of systems currently being utilized in the air transportation system.[201] For instance, in a relatively recent GAO report,[202] the testimony points out that the "FAA's approval process for [ATC] systems is too lengthy . . . , contributes to cost growth, schedule delays, and performance problems that have plagued many of the systems that FAA has been trying to develop for years," raising concerns as to whether the process "has kept pace with changes in technology."[203] Al-

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author then notes that one of the social costs commonly cited is the reduced caliber of government officials willing to accept a certain position because "of fear that their agency might be sued and their own reputations tarnished by adverse publicity." *Id.* at 183. Although this may be true for certain governmental positions, these costs may be overstated in the FAA-ATO context. The ATO currently is managed by a chief operating officer (COO) who is appointed by the FAA Administrator. 49 U.S.C. § 106(r)(1)(A) (2006). To encourage the Administrator to accept the position under a "no immunity" liability system, they can be given the ability to hire or fire a COO based upon performance. *Cf.* § 106(r)(1)(C) ("The Chief Operating Officer shall be appointed for a term of 5 years."). This essentially gives the Administrator the ability to defend himself in the face of a detrimental COO decision facing liability.

200. Joseph Schumpeter first described the idea of a "competition for political leadership": "[T]he democratic method is that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a *competitive struggle* for the people's vote." JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY 269 (1976) (emphasis added). The theory illustrates how the democratic process presses accountability onto the nation's leaders to act in accordance with the good of the people. Alternatively, Richard Posner analogizes this political struggle to an "economic competition" where "buyer[s] do[] not design the product; [they] choose[] from a menu presented to [them] by the sellers." POSNER, *supra* note 160, at 573. The theories of accountability through political or economic competition may very well be appropriate for most government positions, but not in the context of the FAA and ATO. If the FAA is to assume the duty of ensuring the safety in the ATM system, where rapid changes in technology continuously alter the environment, the people deserve more efficient accountability than simply a menu of sellers to choose from every several years. By the time a change occurs between FAA Administrators or a Secretary of Transportation to institute new policies, the problems accrued under the prior regime have already compounded to the point where it becomes even more difficult to resolve those costs. A policy to increase accountability on each individual FAA and ATO decision is needed to avoid the current inefficient mechanism of political competition.

201. *See supra* Part III.A (discussing the current inefficiencies that have accrued under the current air transportation system).

202. *See generally* U.S. GOV'T ACCOUNTABILITY OFFICE, AIR TRAFFIC CONTROL: FAA NEEDS TO ENSURE BETTER COORDINATION WHEN APPROVING AIR TRAFFIC CONTROL SYSTEMS (2004), *available at* http://www.gao.gov/new.items/d0511.pdf.

203. *Id.* at 1. In 1998, the RTCA also found many challenges for the FAA in certifying specific ground systems and aircraft equipment being utilized in the airspace system. *Id.* at 22. The certification processes simply "took too long and cost too much," and since then, the FAA has responded with only minimal corrections. *Id.*; *see also id.* at 26 ("[The GAO] found that 3 of the 5 ATC systems we reviewed experienced cost growth and schedule delays, in part, because FAA did not al-

though losing its immunity to liability, the FAA would still retain its authority over technological implementation and safety policies in such self-separation airspace. But the added threat of a negligence action increases the level of accountability or oversight currently imposed on the FAA.[204] In the end, however, this added accountability could shift the costs of safety measures and increased FAA liability upon the general public via taxes, but this expense might be worth the increased level of safety needed in such an undertaking as NextGen.[205]

Given the advanced technology available, self-separation airspace could be successful in the initial stages of implementation, but a potential setback lies in the FAA's inability to maximize safety by keeping pace with technology.[206] With fifteen to twenty-two billion dollars of investments in the new

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ways involve all necessary stakeholders, such as controllers and technical experts, throughout the approval process."). But most importantly, with many of the "super-density operations" and other terminal area approaches highly dependent on GPS approach technology, the GAO points out a six-year delay and $1.5 billion increase in development costs for the implementation of Wide Area Augmentation System (WAAS) and similar problems for Local Area Augmentation System (LAAS). *Id.* at 21; *id.* at 22 ("FAA originally planned to deploy LAAS in 2002 but has since moved it to fiscal year 2009 . . . ."); *see also supra* note 139 (discussing the importance of satellite-based approaches into airports for NextGen's benefits). These two systems are of particular importance for the future air transportation system, and continued delays in other similar systems down the line may result in significant setbacks for achieving the aspirations of NextGen.

204. From another perspective, this can be illustrated by transitioning from the current FAA environment of "no liability" to a "negligence liability" system. But as this transition occurs, the effectiveness of the shift will depend also on the institutional choice, or the standards in which the FAA should be held to. One author points out that although increasing safety in a particular environment is clearly a desirable goal, the best means of achieving that goal could lie in a variety of different "institutional choices." KOMESAR, *supra* note 198, at 155. For example, in determining whether an entity is negligent for not utilizing a piece of technology that could have prevented an accident, the "issue is institutional choice—the choice between custom in the [air traffic management environment] and the jury as the determiner of safety—the analysis must be comparative institutional." *Id.* at 159. Thus, one cannot expect a sudden negligence liability system to have the same effects under either of those institutional choices. In the interest of maintaining a transportation system that is agile, the most desirable institutional choice would be a jury determination under the Hand Formula-type analysis because it emphasizes cost-benefits of implementing advanced technology as it becomes available. Suppose the FAA fails to install a new system, and it reasonably should have known that the expected safety benefits would exceed the costs of the technology. With the interests of public safety and lives depending heavily on technology for which the FAA is responsible, there is no excuse for holding it not liable and subsequently decreasing accountability.

205. Law and economic analysis has consistently found the connection between negligence law and not only accident prevention, but efficient resource allocation as well:

> In [Richard Posner's] view, the logic of negligence law could be found in balancing the benefits and costs of prevention and, in turn, in creating the incentives for cost-justified prevention of mishaps. . . . [H]e argued that the logic of negligence law could be found in resource allocation efficiency and economic analysis.

KOMESAR, *supra* note 198, at 155. By forcing individuals or entities to measure the costs of using a certain resource against its benefits, negligence law incentivizes the most efficient use of those resources. This would be another added benefit from removing the immunity that the FAA's decision making currently enjoys.

206. Regarding self-separation airspace and safety as the primary concern, use of GPS signals by

ATM environment,[207] the effects of limited government accountability on FAA safety policies might be felt long after NextGen has been fully implemented.

There are three options available to help self-separation airspace be as safe as possible, all of which are consistent with the fundamental goals of tort liability—accident aversion and loss spreading.[208] First, Congress can prevent the ATO from asserting its discretionary function defense when charged with negligent maintenance or implementation of advanced technologies. Because the ATO is already a PBO, extending potential liability to its functions would only increase Congress's goal of promoting accountability in its agencies.[209] Alternatively, courts could interpret the term "policy decision" more narrowly under the *Gaubert* test to subject FAA-ATO decisions to tort liability.[210] Finally, the FAA could outsource its ATM opera-

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all users in the airspace is another central issue. If there is potential for serious disruptions in the system, the liability may be significant and confidence in U.S. air transportation may be undermined. Although outside the scope of this Comment, there are several comprehensive past and recent articles exploring world-wide satellite signals and the potential liability for contributing parties. *See* Brandon Eric Ehrhart, *A Technological Dream Turned Legal Nightmare: Potential Liability of the United States Under the Federal Tort Claims Act for Operating the Global Positioning System*, 33 VAND. J. TRANSNAT'L L. 371 (2000); Sang Wook Daniel Han, *Global Administrative Law: Global Governance of the Global Positioning System and Galileo*, 14 ILSA J. INT'L & COMP. L. 571 (2008) (discussing potential liability with the recent implementation of Europe's Galileo); Jonathan M. Epstein, *Global Positioning System (GPS): Defining the Legal Issues of Its Expanding Civil Use*, 61 J. AIR L. & COM. 243 (1995); Elder, *supra* note 115; *see also* Norton, *supra* note 99 (discussing the human factors involved with pilot performance under the new GPS systems).

207. TRANSITIONING TO NEXTGEN, *supra* note 71, at 3.

208. The theory of loss spreading can best be described as spreading the expected costs of future injuries across many individuals in order to prevent one person from bearing the bulk of a loss. *See* DOBBS, *supra* note 146, § 10. As noted by Niles, the "government's unique ability to socialize losses . . . through taxes and other potentially equitable means . . . make it the *model* tort defendant." *See* Niles, *supra* note 154, at 1296. *But see* Daryl J. Levinson, *Making Government Pay: Markets, Politics, and the Allocation of Constitutional Costs*, 67 U. CHI. L. REV. 345, 347 (2000) ("If government does *not* respond to costs and benefits in the same way as a private firm, however, then none of these predictions about the instrumental effects of constitutional cost remedies on government behavior is likely to be accurate." (emphasis in original)).

209. One of the main reasons for allowing the air traffic control system to transition to a PBO was to increase accountability on the FAA. *See* 145 CONG. REC. H2902 (daily ed. May 6, 1999) ("FAA's statement . . . suggests . . . the proposed PBO will make [ATC] more accountable for good performance. Accountability for performance was also a main tenet of personnel reform and part of the impetus behind exempting the agency from most Federal personnel rules . . . .").

210. Although both recommendations increase accountability, this specific one might work better because it would avoid judicial reasoning like that in *Ellen* and *Collins v. United States*, No. 03 C 2958, 2007 U.S. Dist. LEXIS 73310 (N.D. Ill. Sept. 28, 2007). In *Collins*, the court ultimately found the FAA immune to its own negligence for failing to install a particular piece of radar. *Id.* at *79; *see also supra* note 192 and accompanying text. In interpreting the second prong of the two-part *Gaubert* test, the court stated that "policy decision" could either be read narrowly or broadly. *Col-*

tions to private contractors, essentially circumventing the FTCA tort liability concern altogether.[211] Undoubtedly, this contentious issue will reignite the debate as to whether Congress should alter the current organizational ATO structure to more effectively manage its evolving ATC system.

3. Reigniting the ATC Commercialization Debate[212]

The evolving purpose and expected goals of ATC in a NextGen environment form the context in which privatization proposals should be evaluated. The purposes of a modern ATM are to maximize the potential capacity within the national airspace system by implementing advanced technologies upon immediate availability and to increase controller productivity with the utmost consideration of safety. As one author noted, ATC privatization differs from all other industries because "the FAA has to retain a powerful supervisory role in the name of public safety and security."[213] While many have suggested emulating international ATC privatization models,[214] the success has been relatively mixed.[215]

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lins, 2007 U.S. Dist. LEXIS 73310, at *60. Arguing that other circuits have interpreted it broadly, the court essentially joined the majority by widening government immunity to tort claims, adding to the potential accountability problems with the FAA. For an argument that courts have diverted from legislative intent and broadened governmental immunity, see generally Niles, *supra* note 154. A clarification or more narrow reading in the context of technology and safety should be pursued to reverse this growing trend.

211. The FTCA does not include private contractors hired by the FAA under the definition of "employee of the government." *See* 28 U.S.C. § 2671 (2006); *see also* Alinsky v. United States, 415 F.3d 639 (7th Cir. 2005) (holding that the FAA cannot be liable for an "independent contractor" when it contracted ATC services out to a private company that negligently caused the deceased's crash). The main priority with avoiding the FTCA's discretionary function exception is ensuring someone is incentivized to implement advanced technology when it becomes available.

212. The 1990s witnessed a proliferation of literature and recommendations that the ATC system be modernized through privatization or commercialization, but discussion of the topic remained relatively quiet after the attacks on September 11th. *See, e.g.*, Treanor, *supra* note 81, at 644; Fed. Bar Ass'n, *Making the Air Transportation System More Efficient and Technologically Superior*, 40 FED. B. NEWS & J. 629 (1993). The reports advocating some variant of commercialization included: *Aviation Safety Commission* (1998), *National Commission to Ensure a Strong Competitive Airline Industry* (1993), *National Performance Review* (1993), *Secretary of Transportation's Executive Oversight Group* (1994), and *National Civil Aviation Review Commission (Mineta Commission)* (1997). Poole, *supra* note 92, at 6. With the increasing complexity of instituting a successful NextGen program, debate is inevitable given the barriers existing in government bureaucracy.

213. ELLIOT SCLAR, PITFALLS OF AIR TRAFFIC CONTROL PRIVATIZATION 12 (2003); *see also* Betancor & Rendeiro, *supra* note 77, at 10 ("Most ATC systems . . . have not been privatized because of a fear that safety standards could be compromised by commercial pressures. [However, t]his was also the same fear expressed by opponents of airline deregulation.").

214. *See, e.g.*, Poole, *supra* note 92, at 10–13. More than forty countries are reported to have undergone ATC transformations, ranging in a variety of different organizations, including: government corporations, not-for-profit corporations, a government department or agency, public companies, and even a public-private partnership. *Id.* at 7. The Reason Foundation, through Poole, Jr., has long advocated for a "user-fee" system where ATC essentially runs itself, most similar to the self-regulating organization in Canada, NAV Canada. *See id.* at 7, 13. The proposal is for a completely

Any organizational structure designed to accomplish the future purpose of ATM must consider three primary goals: avoiding the current funding debate with diversified sources of capital for investing in NextGen,[216] safety and security of the airspace system, and the ability to easily adapt to changing technology that may one day make NextGen-based systems obsolete.[217] The relatively recent ATO formation was a modest move towards more alie-

separate organization from the FAA funded by user fees from passengers and cargo airlines with a board of directors hiring a chief executive officer. *Id.* at 13. Similarly, New Zealand commercialized its ATC system, with the Airways Corporation assuming full-time management of operations. Betancor & Rendeiro, *supra* note 77, at 12. It is important to note, though, that the market plays an important role in this model because if safety begins to be compromised, citizens of New Zealand simply can use other forms of transportation. *See id.* For a general overview of international efforts at ATC privatization and the user-fee proposal, see Poole, *supra* note 92, at 13.

215. One significant difference between the United States and the other countries that have undergone the transition is security. They do not face the high-level of terror threat that the United States does. One author attributes safety as the biggest hindrance to potential commercialization. SCLAR, *supra* note 213, at 4–5. Nevertheless, he continues to argue that the international models that have switched over have experienced increased inefficiencies, citing to a variety of crashes under their control. *See id.* at 9–10. However, Poole points to the NAV Canada model and argues that financial discipline leads to increased efficiency because it does not have to rely on budgetary discipline from the government like the ATO does on Congress. Poole, *supra* note 92, at 11; *see also* 49 U.S.C. § 106(r)(5)(C) (2006) (authorizing the FAA Administrator to delegate the development of budget requests to the Chief Operating Officer of the ATO). Although the results of international models depend on who is discussing it, the implications may have some helpful insight into the U.S. ATC debate. However, commercialization proposals should be analyzed more on the basis of the current problems and future needs, rather than the success, or lack thereof, of international models.

216. The FAA and ATO receive funding from the excise taxes placed on the tickets of passengers, which are placed in a trust fund that was created through the Airport and Airway Revenue Act of 1970. U.S. GOV'T ACCOUNTABILITY OFFICE, OBSERVATIONS ON THE CURRENT FAA FUNDING STRUCTURE'S SUPPORT FOR AVIATION ACTIVITIES, ISSUES AFFECTING FUTURE COSTS, AND PROPOSED FUNDING CHANGES 4 (2007) (statement of Gerald L. Dillingham) (questioning whether the trust fund has enough money to cover the expenses for NextGen); *see also* Airport and Airway Revenue Act of 1970, Pub. L. No. 91-258, § 208(a), 84 Stat. 236, 250 (codified at 26 U.S.C. § 9502(a)) (creating the Airport and Airway Trust Fund in the U.S. Treasury). A bill was recently introduced into the House of Representatives that would authorize seventy billion dollars to the FAA from 2009 through 2012 without any increases in user fees. *See Aviation Industry Unites for FAA Funding Bill*, AOPA ONLINE, Feb. 10, 2009, http://www.aopa.org/advocacy/articles/2009/090210faa_reauthorization.html; *see also* Federal Aviation Administration Reauthorization Act of 2009, H.R. 915, 111th Cong. (2009).

217. A GAO report concluded that the two biggest issues facing transition to NextGen, aside from funding, are based upon institutional problems: a lack of communications and transparency to the private sector, and the urgent need for human capital to handle the increasingly complex ATM system. TRANSITIONING TO NEXTGEN, *supra* note 71, at 8, 18. Many of the administrative issues dealing with training employees would arguably be improved under a more accountable system. However, ATC is evolving from a labor-intensive service to a capital-intensive one, and although important, these concerns may be overstated. The importance of changing the ATO organizational structure lies in ensuring a reliable transition and maintaining the system once it has been implemented.

nability,[218] but given the evolving roles under NextGen, a government incorporated ATO would compliment these changes more effectively. In 1994, the Executive Oversight Committee's report proposed a "United States Air Traffic Services Corporation" (USATSC), capable of many functions, including: managing operations of the ATC system, purchasing advanced technology, hiring and firing employees free of civil service regulations, borrowing funds both from the treasury and commercial markets, and most importantly, being sued in tort for its operations.[219] Although the political reaction was unfavorable at the time, this forgotten proposal could resolve many of the ongoing administrative debacles.[220]

Though the mixed private-public corporation bears similarities to the current ATO, the main differences are precisely what the ATM system needs for successful implementation of NextGen. In a USATSC, the FAA would retain protection over ATM security functions and raise alternative forms of financing for NextGen, operating as much like a "business-run enterprise" as possible.[221] Although theoretical observations could arguably overestimate the benefits of increased efficiency for implementing new technologies, the above stated benefits certainly outweigh the current system, which is funded by passengers and a trust fund with limited accountability from its users. But along with nearly any policy recommendation, the biggest obstacle for ATC commercialization is Congress.[222] Indeed, the public tends to disfavor privatization efforts when there has been a backlash in the private sector, especially one as remarkable as the recent economic recession.

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218. *See supra* note 84 (discussing the formation of the ATO as a PBO and the doubts as to whether it could increase accountability).

219. Darienzo, *supra* note 82, at 10. An eleven-member board of directors would select a chief executive officer to run the corporation, similar to the chief operating officer that currently manages the ATO. *Id.*; *see* 49 U.S.C. § 106(r)(1), (4); TRANSITIONING TO NEXTGEN, *supra* note 71, at 15 (providing a layout of the ATO's organizational structure). The existing legislation is also already in place for the development of a USATSC. *See* Government Corporation Control Act of 1945, Pub. L. No. 79-248, 59 Stat. 597 (codified at 31 U.S.C. pt. 901). For the full report from the 1994 Committee, see generally DEP'T OF TRANSP., AIR TRAFFIC CONTROL CORPORATION STUDY (1994).

220. A GAO report reviewing the proposal argued that the proposal missed the mark regarding addressing the accountability problem under the original organizational structure. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, AIR TRAFFIC CONTROL: OBSERVATIONS ON PROPOSED CORPORATION 3 (1994) ("One factor [affecting a lack of technological expediency] is the FAA's underestimation of the technical complexity of developing ATC systems . . . ."). On the effectiveness of government corporations, see generally A. Michael Froomkin, *Reinventing the Government Corporation*, 1995 U. ILL. L. REV. 543 (1995).

221. More efficient management of the air traffic control system was the initial reason for the transition to ATO. *See* Exec. Order No. 13,180, 65 Fed. Reg. 77,493–94 (Dec. 7, 2000) ("The ATO shall optimize use of existing management flexibilities . . . , develop methods to accelerate air traffic control modernization . . . , [and] establish strong incentives to managers for achieving results . . . ."). Transitioning into an ATO Corporation would take this one step further to achieve better results without compromising safety and security.

222. *See, e.g.*, 149 CONG. REC. H5209 (daily ed. July 11, 2003) (statement of Rep. Hayes) ("Keeping air traffic control from being privatized is very important.").

D. Unresolved Demand-Management Policies

With or without an ATC commercialization debate, the airlines and the new Secretary of Transportation, Ray LaHood, strongly believe that NextGen is the key to solving congestion.[223] One author even argues that "airside capacity shortages and suboptimal usage/management of airspace" is the underlying cause of air traffic congestion.[224] While these concerns undoubtedly need to be addressed through NextGen, there is a severe problem when airspace capacity increases but corresponding airport resources and infrastructure do not. This will be the case in high-density areas where any room for expansion is nearly impossible.[225] Even the JPDO is skeptical that NextGen is a "cure-for-all," stating that where "airport infrastructure [development] cannot be accomplished using existing resources," the airports will have to implement "market-based mechanisms such as peak period pricing to ease congestion" in times of high demand.[226]

Merely increasing the availability of landing and takeoffs at a high-density airport may not have the desired cure-for-all effect that industry participants might expect. For example, in 2004 American and United Airlines agreed with the FAA to voluntarily reduce the number of scheduled flights out of Chicago O'Hare by 12.5% in order to help fight congestion.[227] In effect, this increased the number of potential flights out of that airport during the agreed upon times through its voluntary reduction, just as NextGen

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223. Bill Hensel, Jr., *Airlines See an Ally in Transportation Secretary*, HOUSTON CHRON., Jan. 23, 2009, http://www.chron.com/CDA/archives/archive.mpl?id=2009_4693584 ("Continental [Airlines] . . . sa[ys] . . . a modernized air traffic control system is the key to solving congestion."); Brett Snyder, *LaHood Is Confirmed; Opposes New York Slot Auctions, Supports Controllers*, BNET, Jan. 24, 2009, http://industry.bnet.com/travel/1000523/lahood-is-confirmed-opposes-new-york-slot-auctions-supports-controllers/ ("[T]he next priority in the FAA is obviously NextGen."). For further discussion on the upcoming DOT policies, see *infra* Part IV.C.

224. Neil J. King & Bruce H. Rabinovitz, *Congestion Pricing and Capacity-Related Delay at U.S. Airports*, 22 AIR & SPACE LAW. 1, 24 (2008).

225. A MITRE Corporation study identified several airports, such as LaGuardia, that have no room for any more expansion, including runways. *See* FED. AVIATION ADMIN., CAPACITY NEEDS IN THE NATIONAL AIRSPACE SYSTEM: 2007–2025 22 (2007) ("In these cases, demand management, regulatory or economic solutions, and other market mechanisms may need to be investigated."). In addition, several other metropolitan areas, including the San Francisco Bay Area, will face the same capacity restraint issue within the next ten years. *Id.*

226. INTEGRATED PLAN, *supra* note 8, at 12. Even during the major discussions of implementing free flight in the 1990s, this issue was noticed by David Hinson, the former Administrator of the FAA. *See* Elder, *supra* note 112, at 874 n.6. Hinson pointed out that "the biggest constraint to efficient aircraft movement through our national airspace may ultimately be the capacity of our airports." *Id.*

227. Erin Shea, *Analysis of the Proposed Hub Carrier "Slot" Preference at Chicago O'Hare*, 73 J. AIR L. & COM. 611, 625–27 (2008).

would do. However, the opening up of more space simply resulted in other airlines adding "flights while the hub carriers cut their schedules," providing no relief to the airport congestion problem.[228] NextGen essentially creates this increased capacity without any supplemental FAA policies to address how this extra space in the system will be allocated to air carriers that are continuously demanding more flights than the system can handle.[229] To prevent air traffic congestion from resulting after the implementation of NextGen, like it had in Chicago, effective demand-management policies are therefore critically in need. Given the historical struggles,[230] this may be difficult to accomplish.

NextGen is not the sole answer for air traffic congestion at the increasing number of high-density airports. When airports cannot develop infrastructure, or when demand exceeds the marginal increases in capacity, the FAA needs allocation policies to arrange the airports' limited ground facilities and take-off and landing slots.[231] Commentators tend to analyze airport

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228. *Id.* at 626.

229. A near perfect historical analogy illustrates the fundamentals of this problem. In 2001, the city of Chicago announced the O'Hare Modernization Program to increase capacity at Chicago's O'Hare Airport. *Id.* at 629. The plan consisted of building additional runways that would accommodate 50,000 additional forecasted operations by 2008, and 1.12 million annual operations by 2013. *Id.* at 630. The cost of the plan would amount to $6.6 billion, funded by Passenger Facility Charges (PFC), revenue bonds, Federal Airport Improvement Program Funds, and United and American Airlines, who committed to pay $2.9 billion of the project. *Id.* at 629. However, with the increased space available now at one of the most lucrative airports in the nation, intensive debate began over which airlines should obtain preference to the additional slots available for taking off and landing. Congress's response was less than optimal:

> [A]s new capacity becomes available at O'Hare International Airport, preference should be given to hub carriers, given that they temporarily agreed to a 12.5 percent reduction in their peak-hour schedules to reduce congestion in 2004, and little has been done to restore or redistribute capacity to accommodate for that voluntary reduction.

H.R. REP. NO. 110-331, at 87 (2007); *see also supra* text accompanying notes 227–228. As one author notes, this language accompanying the FAA Reauthorization Act of 2007 could be influential in which airlines get preference to the slots. Shea, *supra* note 94, at 630–31. Two important aspects can be inferred from the O'Hare Modernization Program that are applicable for NextGen. First, Congress must avoid allowing airlines to pay a portion of the bill for NextGen if the distribution of that extra capacity ultimately goes to those carriers that paid for the infrastructural developments. Allowing political power to dictate the allocation of capacity would be detrimental for competition. Second, because competition is not promoted, an effective policy to distribute this extra space is needed for passenger fares to ultimately be lowered. *See* discussion *infra* Part V.A (arguing the most efficient environment for allocating airport resources).

230. *See* discussion *infra* Parts IV.B and IV.C.

231. This critical need is true despite the potential mismanagement or failure of NextGen, which some commentators are thinking is a possibility. As one commentator, Mike Boyd, states: "Everybody is worshipping NextGen; when you look at it, NextGen is OldGen. It's not going to fix the problem; it's the wrong direction to go. It's just computerizing old technology." John F. Infanger, *One on One: Mike Boyd*, AIRPORT BUS., Mar. 2009, http://www.airportbusiness.com/publication/index.jsp?issueId=107. Even through the small minority of individuals with a negative perception of NextGen's capabilities, the main constant is that many airports will face situations where demand continuously exceeds supply, and there must be effective policies to manage this disconnect regard-

demand-management solutions by only looking at either the FAA or the publicly-owned airport's perspective.[232] A straight-forward and thorough analysis must examine functions of both actors in order to propose effective solutions.

IV. GOVERNMENT-REGULATED EFFORTS TO REDUCE CONGESTION

A. The Current Airport Environment

In the seventeenth century, Lord Hale argued that seaports, because of their relative obscurity, should have their prices and operations regulated, and anyone willing and able to pay should not be refused service.[233] He reasoned that seaport markets for services were of such importance to the nation they were "affected with the public interest."[234] Centuries later these relatively common sense principles are still debated within the context of airports.

In perfectly competitive markets, firms have no ability to set the prices they charge, settling with the resulting market price.[235] In contrast, monopolies, for a variety of different reasons, are present when "a specific individual or enterprise has sufficient control over a particular . . . service to determine significantly the terms on which other individuals shall have access to it."[236] Airports have commonly been referred to as monopolies because, by

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less whether NextGen delivers its promises.

232. *See, e.g.*, Daniel R. Polsby, *Airport Pricing of Aircraft Takeoff and Landing Slots: An Economic Critique of Federal Regulatory Policy*, 89 CAL. L. REV. 779 (2001); Andrew B. Steinberg & James W. Tegtmeier, *Dealing with Airport Congestion: The Regulatory Challenge of Demand Management*, 19 AIR & SPACE LAW. 1 (2005).

233. Herbert Hovenkamp, *Technology, Politics, and Regulated Monopoly: An American Historical Perspective*, 62 TEX. L. REV. 1263, 1282–83 (1984).

234. *Id.* at 1283. Hale's main concern, in which Lord Blackstone concurred, was that entrepreneurs would take advantage of the ability to control prices, abuse their power, and harm the nation. *Id.*

235. The perfectly competitive market is based upon the assumption of free entry and exit of firms into a particular market. *See generally* RICHARD A. IPPOLITO, ECONOMICS FOR LAWYERS 95–104 (2005). When a firm enters into a market where no other firms exist, it retains the ability to earn profits, the differential between the price it charges and its marginal costs—essentially the cost of producing one additional good. *See id.* at 90. But excess profits act as a signal to the market that the particular industry is profitable, which forces entrants into the market, resulting in both lower costs for consumers and the eradication of profits for the first firm. *Id.* at 98. Because the assumption of free entry and exit clearly does not apply in the airport context, the opportunity for perfect competition does not result.

236. MILTON FRIEDMAN, CAPITAL AND FREEDOM 120 (40th anniversary ed. 2002) (1962). One might more specifically refer to an airport as a "natural monopoly," a situation where one firm "has

their very nature, they control the terms on which airlines have access to their services.[237] The airport's ability to set its own prices has led to the fear that airport proprietors will exploit the airlines seeking its services by charging a price above what it costs for them to provide the service. This differential, as economists refer to it, is called "monopoly profits" or "economic rents."[238]

Milton Friedman suggested dealing with monopolies is a "choice among three evils: private unregulated monopoly, private monopoly regulated by the state, and government operation."[239] The United States has chosen to pursue a strategy Lord Hale recognized centuries ago: using government operations to prevent the abuse of airlines and provide non-discriminatory access.[240] In the current government-managed airport environment, examining the effectiveness of FAA and airport policies to control demand at airports and reduce congestion begins by analyzing the airport's present ability to allocate its own resources.

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lower costs than any other firm . . . in producing a . . . service at the full level of market demand, then the industry . . . will become a monopoly because the one firm can always profitably underprice entrants and drive them out of business." Peter Z. Grossman, *Is Anything Naturally a Monopoly?*, *in* THE END OF A NATURAL MONOPOLY: DEREGULATION AND COMPETITION IN THE ELECTRIC POWER INDUSTRY 11–12 (Peter Z. Grossman & Daniel H. Cole eds., 2003) (discussing whether any firm is truly a "natural monopoly"); *see* POSNER, *supra* note 160, at 367–69 (discussing the regulation of natural monopolies). However, one author suggests natural monopolies only exist when there is an "entry deterring price." WILLIAM W. SHARKEY, THE THEORY OF NATURAL MONOPOLY 9 (1982). Under this definition, it may be arguable that no price exists in the airport context because a relatively close municipality could construct an airport and drive down its prices. Nonetheless, the general monopoly structure must be addressed.

237. *See, e.g.*, Robert Hardaway, *Economics of Airport Regulation*, 20 TRANSP. L.J. 47, 56 (1991) ("[M]ost regional airports meet the economist's definition of a 'natural monopoly' . . . ."). The best scenario, competition between airports, cannot reasonably exist because the limited space and effect they have on surrounding neighborhoods make competition costs extremely high.

238. Similar to perfectly competitive firms, monopolists maximize profit by obtaining the largest amount of economic rents they can. *See* IPPOLITO, *supra* note 235, 154–56. The ability to collect large profits stems from the lack of entry into the market, or scarcity of airports in many regions. The economic rents extracted from consumers and the market come at the expense of producing less of the good or service the monopolist is selling. *Id.* at 161–62. However, there have been many arguments set forth as to why monopolists may not do that. According to Richard Posner, if the business organization of the monopolist is a publicly-held corporation, the original stockowners will be the only ones to benefit from reaping the monopoly profits. Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 STAN. L. REV. 548, 573 (1969). Consequently, because the stock price will reflect those future economic rents immediately, any subsequent purchasers of the stock will not benefit at all—leaving plenty of incentive for current owners "to improve the firm's earnings as the owners of a competitive firm." *Id.* This will become more relevant as the discussion transitions to airport privatization and the effective regulation of monopolistic abuse. *See* discussion *infra* Part V.B.

239. *See* FRIEDMAN, *supra* note 236, at 128.

240. *See supra* note 233 and accompanying text.

1. Regulating Airport Monopolies

Presently, all major commercial airports throughout the United States are operated by state or local government agencies.[241] Under the Anti-Head Tax, state agencies do not have the power to levy any taxes or fees on "an individual traveling in air commerce," or on anyone transporting individuals by air commerce,[242] unless the fees are reasonable rental charges, landing fees, or "other service charges from aircraft operators for using airport facilities."[243]

The federal government has historically provided funding to local governments for infrastructure improvements in exchange for certain guarantees, a grant program still used today.[244] To receive federal grants under the

241. 49 U.S.C. § 49101(5) (2006). The only exception to this is two federally-owned airports, both located in the District of Columbia. § 49101(1). However, the ownership structure may vary for any given region. For instance, the "Big Three" airports in the New York Region—Newark, LaGuardia, and John F. Kennedy International Airport—are run by the Port Authority of New York and New Jersey while the two federally-owned airports in D.C. are managed by the Metropolitan Washington Airport Authority.

242. § 40116(b)(1)–(2).

243. § 40116(e)(2). The Anti-Head Tax Act applies a three-factor Commerce Clause test to determine reasonableness: the fee is based upon a fair approximation of use, is neither discriminatory against interstate commerce nor excessive in comparison with the governmental benefit conferred, and reflects a "uniform, fair and practical standard." Evansville-Vanderburgh Airport Auth. Dist. v. Delta Airlines, Inc., 405 U.S. 707, 716–17 (1972), *superseded by statute*, Airport Development Acceleration Act of 1973, Pub. L. No. 93-44, 87 Stat. 90, *as recognized in* Aloha Airlines v. Dir. of Taxation, 464 U.S. 7 (1983).

244. In 1946, the federal government authorized the Administrator of Civil Aeronautics to carry out a federal aid program. Federal Airport Act, ch. 251, § 4, 60 Stat. 170 (1946) (repealed 1970). The Administrator was appropriated $500 million over a seven-year period to provide grants to publicly-owned airports that would aid in the development of infrastructure and projects. §§ 4, 5(b), 60 Stat. at 171–72. Because of the need to develop airport infrastructure quickly, the grants to local airports were conditioned on certain assurances, such as:

> As a condition precedent to his approval of a project . . . the Administrator shall receive assurances in writing . . . that . . . the airport to which the project relates will be available for public use on fair and reasonable terms and without unjust discrimination; . . . [and] such airport and all facilities . . . will be suitably operated . . . .

§ 11, 60 Stat. at 176. However, in recognizing the only purpose of this condition was to develop airport infrastructure, courts did not recognize an airline's private remedy if they in fact were discriminated against. City of S.F. v. W. Air Lines, Inc., 204 Cal. App. 2d 105, 119 n.10 (Ct. App. 1962) ("Nothing . . . manifests an intent, either express or implied, to provide users of the airports receiving aid with a private remedy for alleged discrimination."). The court in *Western Air Lines* stated the purpose of the Airport Act was to "promote a nationwide system of public airports and not to regulate airport operations." *Id.* at 119. However, what appeared to be a short-term solution for airport growth in the air transportation system turned into a federally devised mechanism for controlling the access to locally-owned airports. *See also* NATIONAL AIRPORT PLAN, H.R. DOC. NO. 78-807, at 1 (1944), *microformed on* CIS No. 10879, Fiche 15–17 (Cong. Info. Serv.) ("[The federal grant program] could be spread over a 5- to 10-year period for completion . . . ."); *see also supra* note 51 (dis-

Airports and Airways Improvement Act (AAIA),[245] airport proprietors are required to give the DOT written assurances that the "revenues generated by a public airport will be expended for the capital or operating costs of . . . the airport"[246] and the airport will be "available for public use on reasonable conditions and without unjust discrimination."[247] The DOT has published standards for determining "reasonable terms" and "discrimination" under the Policy Regarding Airport Rates and Charges (Rates and Charges).[248] Under this policy, the DOT established two principal provisions aimed at preventing an airport from discriminating between two airlines. First, the airport proprietor must apply a "consistent methodology in establishing fees for comparable [airlines using] the airport."[249] Second, any airport revenues

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cussing the effect of the program in promoting growth during the 1940s).

245. The FAA has prescribed regulations for the Federal-aid program. *See generally* 14 C.F.R. §§ 151–53 (2008) (procedural and substantive requirements for an airport qualifying for federal grants and the exhaustive list of requirements to be met); *see also* FED. AVIATION ADMIN., ORDER 5190.6A: AIRPORTS COMPLIANCE HANDBOOK (1989) (describing the policies and procedures for complying under the Federal-aid program); David A. Basil, *Introduction into the Legal Aspects of General Aviation Law*, 36 URB. LAW. 813 (2004) (describing the general provisions of the federal grant program for airports).

246. 49 U.S.C. § 47107(b)(1)(A). Congress also allows revenues generated from the airport to be expended for the capital or operating costs of "the local airport system" or "other local facilities owned or operated by the airport owner or operator and directly and substantially related to the air transportation of passengers or property." § 47107(b)(1)(B)–(C). The FAA has recently attempted to use these two provisions as a mechanism for increasing an airport's cost base, which will subsequently allow for an airport to increase its fees on airlines. These fees have come in the form of "congestion pricing" meant to alleviate congestion at certain airports. *See* discussion *infra* Part IV.A.2.b.

247. § 47107(a)(1). The Airport and Airway Improvement Act of 1982, Pub. L. No. 97-248, §§ 501–32, 96 Stat. 671, 671–702 (1982), adopted this language from the Airport and Airway Development Act of 1970, Pub. L. No. 91-258, 84 Stat. 219 (1970), which had previously been used by the first Federal-aid program in 1946. *See* discussion *supra* note 244. These two are the only contentious written assurances under the Federal-aid program. For the exhaustive list of written airport assurances required, see 14 C.F.R. pt. 152 app. D. A recurring theme in public enterprise regulation is the requirement that users not be discriminated against—charges against each user must be "fair" and "just." Gerald R. Faulhaber, *A Public Enterprise Pricing Primer*, *in* PUBLIC SECTOR ECONOMICS 22 (Jörg Finsinger ed., 1983). This idea of fairness has been arguably derived from the concept of "economic justice," where access to certain goods or services provided by the government become an individual's social right. *Id.* On the idea of economic justice, see generally E.E. Zajac, *Is Telephone Service an Economic Right?*, *in* ENERGY AND COMMUNICATIONS IN TRANSITION (1981). *But see* Posner, *supra* note 238, at 594 ("[T]he case for placing legal limits on monopoly profits, whether on grounds of social justice or of economic efficiency, is not compelling.").

248. Policy Regarding Airport Rates and Charges, 61 Fed. Reg. 31,994 (June 21, 1996); *see also* Air Transp. Ass'n of Am. v. DOT, 119 F.3d 38, 40, 45 (D.C. Cir. 1997) (invalidating ¶ 2.6 of Rates and Charges). Rates and Charges arose after Congress required the Secretary of Transportation to develop guidelines for federally-assisted airports to ensure their rates were "reasonable." *See* Federal Aviation Administration Authorization Act of 1994, Pub. L. No. 103-305, § 113, 108 Stat. 1569, 1577 (1994).

249. Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,021. The airports' ability to charge two different carriers different prices for facilities lies in a distinction between signatory and non-signatory carriers. *Id.*; *see infra* Part V (criticizing the limited discretion airports have to dis-

from fees on users may not exceed the costs of the airport's assets and providing those services.[250] Though airlines may also be subjected to further, relatively minor restrictions,[251] an airline's challenge to any of these written assurances on the federal-aid program must be in the form of a written complaint to the Secretary of Transportation, who has the sole power to enforce these conditions.[252]

Congress's policies of airport regulation have generally attempted to promote competition at airports by leveling the playing field for all air carriers and preventing any private parties from exploiting users of the airport.[253]

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criminate against carriers). In addition, an airport can discriminate against carriers utilizing terminal or gate facilities that are located in different areas of the airport. *Id.*

250. Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,019 ("Revenues from fees imposed for use of the airfield . . . may not exceed the costs to the airport proprietor of providing airfield services and airfield assets currently in aeronautical use . . . .").

251. There are two other relevant regulations on airports. First, a state agency or political subdivision running an airport may not "enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of an air carrier," unless the airport is carrying out its proprietary rights. 49 U.S.C. § 41713(b)(3)–(4)(A); *see also* Roy Goldberg, *Airline Challenges to Airport Abuses of Economic Power*, 72 J. AIR L. & COM. 351, 355–56 (2007) (discussing this "preemption clause" of the ADA). Second, the international Model Open Skies Agreement, emulates other regulations on publicly-owned airport charges to protect international carriers, stating:

> User charges that may be imposed by the competent charging authorities . . . of each Party on the airlines of the other Party shall be just, reasonable, not unjustly discriminatory, and equitably apportioned among categories of users. . . . [A]ny such user charges shall be assessed on the airlines of the other Party on terms not less favorable than the most favorable terms available to any other airline at the time the charges are assessed.

MODEL OPEN SKIES AGREEMENT art. 10, § 1 (2008), *available at* http://www.state.gov/documents/organization/114970.pdf.

252. Courts have not recognized a private cause of action against a government-run airport that violates the written assurances it provides to the FAA. *See, e.g.*, Arrow Airways, Inc. v. Dade County, 749 F.2d 1489, 1491 (11th Cir. 1985) ("Based upon the . . . lack of any evidence in the 1982 Act of an intent to create a private right of action, we conclude that . . . [airlines] ha[ve] no express or implied cause of action under 49 U.S.C. § [47107]."). Instead, if a carrier wants to challenge a certain federally-assisted airport policy, it first must file a complaint with the FAA and subsequently have the burden of proving the fee or policy violates the written assurances. *See* 14 C.F.R. §§ 16.1, 16.229 (2008). For detailed procedures on filing a claim against a federally-assisted airport, see §§ 16.1–.307. The Secretary of Transportation has sole authority to enforce the agreement between the federal government and the airport. *See* 49 U.S.C. § 47129(a) ("The Secretary of Transportation shall issue a determination as to whether a fee imposed upon one or more air carriers . . . by the owner or operator of an airport is reasonable . . . .").

253. *See* Peter Forsyth, *Privatisation and Regulation of Australian and New Zealand Airports*, 8 J. AIR TRANSP. MGMT. 19, 21 (2002). The general philosophy rationalizes Congress's intention to prevent one airline from gaining an exclusive right to use a publicly-owned airline. § 40103(e) ("A person does not have an exclusive right to use an air navigation facility on which Government money has been expended. However, providing services at an airport by only one fixed-based operator is not an exclusive right if . . . it is unreasonably costly, burdensome, or impractical for more than one

Although this may be effective at non-congested airports where the supply and demand equilibrium is more aligned, these policies lead to an airport environment that cannot effectively manage excess demand while promoting competition.

2. Ground Facilities & Leases

The regulatory controls over an airport's ability to manage its resources are reflected in the character of its operations. At high-density airports, airlines require two things to enter a market for air travel:[254] ground facilities, which include terminal space, gates, and baggage areas for their passengers, and slots for departures and arrivals. The FAA's regulation of slots will be discussed later,[255] but first it is important to understand the initial barrier to entry: acquiring ground facilities at airports.

Facilities agreements between airlines and airports are either exclusive or non-exclusive. Exclusive agreements allow an airline to have exclusive use of certain ground facilities for a specified period of time, sometimes extending several decades.[256] These agreements provide predictable levels of

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fixed-based operator to provide the services . . . ."); *see also* City of Pompano Beach v. FAA, 774 F.2d 1529 (11th Cir. 1985) (finding an exclusive right was granted when a significant burden was placed on one carrier and not another). Some states also have their own statutes that forbid a municipality from granting one airline the exclusive right of using the airport. *See, e.g.*, CAL. PUB. UTIL. CODE § 21690.8 (Deering 2008) ("The governing bodies of publicly owned or operated airports shall grant exclusive or limited agreements to displace business competition . . . [after] consideration of the factors set forth in § 21690.9 . . . ."); § 21690.9 (listing factors such as public safety, public convenience, quality of service, conservation of space, avoidance of duplicative service, impact on the environment).

254. Although outside the scope of this Comment, the effects of a third requirement on entry into the airline markets cannot be understated. The FAA requires that any airline intending to operate as a commercial carrier for hire must have an operating certificate. *See generally* 14 C.F.R. § 119.1. The estimated time for obtaining a Part 121 air carrier operating certificate would range from six to thirty-six months. *See* Fed. Aviation Admin., 14 CFR Part 121 Air Carrier Certification, http://www.faa.gov/about/initiatives/atos/air_carrier/ (last visited Oct. 12, 2009) (describing the Part 121 Air Carrier Certification process). Obviously, the intensive restrictions on obtaining an operating certificate can have devastating effects on competition and are a factor to consider when determining the length of leases for gate-terminal facilities and other regulatory measures. For a description on the background and processes, see FED. AVIATION ADMIN., CERTIFICATION OF AIR CARRIERS (1988). *See also* Kent S. Jackson & Lori N. Edwards, *The Changing Face of Passenger Air Transportation: The Blurry Line Between Part 121 and 135 Operators*, 69 J. AIR L. & COM. 319 (2004).

255. *See infra* Part IV.C.

256. *See* Sabel, *supra* note 64, at 785–87. This type of lease agreement is still how the majority of airports manage their facilities. *See infra* note 261. However, in looking at the historical context of lease agreements, it is easy to see why this form is most commonly used. Take the example of the San Francisco International Airport. In 1946, only two airlines operated out of the city of San Francisco, and the concern over competition was unnecessary. *See* City of S.F. v. W. Air Lines, Inc., 204 Cal. App. 2d 105, 111 (Ct. App. 1962). The result was to grant decades-long lease agreements without regard to their effects on managing demand. *See id.*

income for airports that are usually hesitant about taking certain financial risks.[257] In addition, exclusive agreements usually contain majority-in-interest clauses[258]—provisions requiring the airline's approval of significant financial transactions entered into by the airport.[259] These clauses allow incumbent airlines to prevent the construction of infrastructure that would effectively allow competitors in, which creates a substantial barrier for attracting new entrants.[260] Non-exclusive agreements, on the other hand, allow airports to re-lease ground facilities to different airlines if they are not used a specified percentage of the time.[261] Although this approach allocates facili-

257. The long-term leases enable publicly-owned airports to obtain a steady revenue stream that becomes more attractive as airports search for new ways to finance projects through municipal bonds. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, AIRPORT PRIVATIZATION: ISSUES RELATED TO THE SALE OR LEASE OF U.S. COMMERCIAL AIRPORTS 17 (1996) [hereinafter AIRPORT PRIVATIZATION] ("[F]uture airport revenue is typically used to secure outstanding airport debt.").

258. The growth of majority-in-interest clauses can arguably be attributed to the federal airport grant program. *See supra* notes 244–247 and accompanying text (discussing the federal grant program). In 1976, Congress amended the program with the following provision:

> In making a decision to undertake any project . . . , any sponsor of an air carrier airport shall consult with air carriers using the airport at which such airport development project is proposed and any sponsor of a general aviation airport shall consult with fixed-base operators using the airport at which such airport development project is proposed.

Airport and Airway Development Act Amendments of 1976, Pub. L. No. 94-353, § 10(b), 90 Stat. 871, 878 (emphasis added); *see also* H.R. REP. NO. 94-594 (1975), *reprinted in* 1976 U.S.C.C.A.N. 1600, 1614 ("This new provision recognizes the *legitimate interest* of air carriers and fixed-base operators in development at airports." (emphasis added)). While in the past it was arguably more legitimate for air carriers to have a say in airport development, this "consultation" is no longer necessary, and even detrimental for competition.

259. For example, section 8.01 of a lease agreement between incumbent carriers and the Indianapolis Airport Authority states: "[T]he proposed Capital Improvement shall be deemed concurred in unless, within 30 days after such . . . meeting, concurrence is specifically withheld in writing, by two thirds (2/3) of the . . . [a]irlines." Nw. Airlines, Inc. v. Indianapolis Airport Auth., FAA Docket 16-07-04, 2008 WL 3976461 (Aug. 19, 2008). The airlines qualified to give a written rejection are only those signatory airlines.

260. In *Indianapolis Airport Authority*, the incumbent airlines argued that the airport required their majority-in-interest approval to construct a $162 million facility intended to be used exclusively by FedEx. *Id.* at 16, 45. The airport claimed that FedEx was shouldering all of the costs, and thus the facility fell under the "Special Use Facility" exception of the majority-in-interest clause. *Id.* at 44 ("Under the . . . Lease Agreement, approval is not required for a Special Use Facility where the sole cost is at the expense of the aeronautical tenant that will use the facility."). Though the airlines' approval was ultimately not required, this lease agreement illustrates the purpose of these clauses: to prevent an airport from spreading the cost of infrastructure improvements to airlines not using the constructed facilities. This rationale, however, makes the use of these clauses more impractical for promoting competition. If these clauses did not exist and costs could be spread, then airports could construct more facilities, assuming they had space, which would bring in more competition, and subsequently lower fares for passengers. The anomaly of raising prices on airlines for facilities to promote competition is a recurring theme discussed later as well. *See* discussion *infra* Part V.A.1.

261. Sabel, *supra* note 64, at 789–90. Non-exclusive agreements include both preferential-use

ties more effectively than exclusive agreements, it is relatively underutilized at the nation's airports.[262] But most importantly, contrary to the goal of using limited airport space most effectively, neither of these lease agreements permit pricing of facilities to entrants based on their willingness to pay.[263] Such price discrimination would provide resources to those airlines that use it most profitably.[264]

Critics will argue that airports do have some discretion to price discriminate,[265] namely between signatory and non-signatory airlines.[266] Howev-

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and common-use gate assignments. In preferential-use situations, the airport authority may reassign gates to another carrier during non-use, but these situations are not very common and come at unhelpful hours of the day. Steven A. Morrison & Clifford Winston, *Delayed! U.S. Aviation Infrastructure Policy at a Crossroads*, *in* AVIATION INFRASTRUCTURE PERFORMANCE: A STUDY IN COMPARATIVE POLITICAL ECONOMY 7, 20–21 (Clifford Winston & Ginés de Rus eds., 2008). For common-use gates, the airport assigns all gates to carriers. *Id.* at 21. The different types of gates are distributed as follows:

> In a 1998 survey of forty-one major airports, the Air Transport Association found that 56 percent of the gates were exclusive use, 25 percent were preferential use, and 18 percent were common use, resulting in 25 percent of the gates' being available for use by new entrants . . . . In a few cases, airports have actually bought back and terminated long-term leases on their own gates.

Id. Unfortunately, the locations where these long-term leases have been partially removed, such as Los Angeles International Airport and Baltimore-Washington, are not the most problematic and will have little effect on airport congestion. *Id.* This is largely because removing long-term leases is not the only problem.

262. *See supra* note 261 (listing the number of airports using non-exclusive agreements at only forty-three percent).

263. The uniform pricing for each gate to comparable users and provisions to provide reasonable access do not effectively allow for pricing to regulate high demand for facilities. *See infra* Part V.A.1.

264. *See infra* Part V.A.1 (discussing the rationale behind price discrimination and how it more effectively allocates an airport's resources). The ineffectiveness of exclusive lease agreements cannot be overstated. From one study, authors "found that fares are $4.4 billion (2005 dollars) higher annually because of the limited availability of gates at many major and mid-size airports." Morrison & Winston, *supra* note 261, at 22. Considering that this is a nationwide study of the gate-terminal leasing arrangements, the effects at high-density airports are likely to be even more dramatic.

265. 49 U.S.C. § 47107(a)(2)(B)(ii) (2006) ("[A]ir carriers making similar use of the airport [must] be subject to substantially comparable charges . . . except for differences based on reasonable classifications, such as between . . . signatory and nonsignatory carriers . . . ."); *see also* Policy Regarding Airport Rates and Charges, 61 Fed. Reg. 31,994, 32,021 (June 21, 1996) ("The prohibition on unjust discrimination does not prevent an airport proprietor from making reasonable distinctions among aeronautical users (such as signatory and non-signatory carriers) and assessing higher fees on certain categories of aeronautical users based on those distinctions (such as higher fees for non-signatory carriers, as compared to signatory carriers).").

266. A signatory airline usually has both an operating agreement and terminal building lease with identical expiration dates, while a non-signatory airline usually pays a twenty-percent premium for facilities—higher than what is charged to signatory airlines—because the airline has not committed itself to a long-term lease. Trans World Airlines, Inc. v. City of Denver, No. OST-95-221-17, 1995 WL 17055874, at *4 (July 21, 1995) ("Non-signatory airlines pay rates that are 20 percent higher than the rates charged to signatory airlines . . . ."); *see also* Sabel, *supra* note 64, at 790 ("Such a 20% premium exists for non-signatory carriers operating at Pittsburgh International Airport . . . as well, and is the generally accepted industry standard.").

er, the signatory/non-signatory distinction arguably places an airport's financial risk onto the carriers and hedges against unprofitable airlines by promoting long-term leases. But not all profitable airlines will be willing to enter into these leases, nor should policy encourage them to do so.[267] Airports ultimately harm themselves by not capturing the significant portion of profitable airlines that would have entered the market but for the twenty percent premium.[268] In addition, because short-term entrants pay a premium above the average rate in order to enter the market, this inadvertently protects long-term incumbents at certain airports by providing them with an advantage over their competitors.[269] This protection certainly harms their overall incentive to increase productivity and thus lower passenger fares. By incentivizing all new entrants to engage in long-term leases, the current leasing policies are contrary to the goals of demand management under NextGen: constructing a more competitive, agile and flexible air transportation system.[270]

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267. Public policy should certainly not promote a transportation system where the only profitable business models include long-term arrangements with airports. This is inconsistent with the goals of NextGen. *See supra* notes 8–9 and accompanying text (discussing the goal of NextGen to create an "agile air traffic system"). There are undoubtedly ways airlines could streamline and adapt to a market where its facilities are not guaranteed for several decades. For example, avoiding the signatory/non-signatory distinction could promote airlines' operation at critical airports, such as New York, for only half of a year, or some other very short-term arrangement. Allowing the air carriers to adapt to demand at certain times of the year promotes the agility and flexibility needed in the rapidly changing transportation system. While the non-signatory premium continues to deter entry, however, these potential models cannot succeed, thus resulting in the loss of potentially lower prices for passengers.

268. Imposing the form of a "tax" on short-term carriers when it does not reflect the carrier's expected profitability is not economically efficient. If prices are to be used as a mechanism for distinguishing carriers, they should reflect the economic value that the carriers place on the particular airport facility. *See* discussion *infra* Part V.A.1.

269. States do not provide incentives for short-term leases either by permitting such long-term arrangements between airports and airlines. *See, e.g.*, CAL. PUB. UTIL. CODE § 21637 (Deering 2008) ("In operating an airport . . . owned or controlled by the state, the department may enter into . . . leases . . . *for a term not exceeding 20 years* . . . ." (emphasis added)); DEL. CODE ANN. tit. 2, § 705(b) (2008) ("The Department may lease . . . *for a term not exceeding 10 years* . . . space, area, improvements or equipment on [] airports." (emphasis added)); 70 ILL. COMP. STAT. 5/15.2 (2008) ("[A] lease shall not be effective for a longer term than is reasonably required to enable such funding to occur, and *in no event shall the term thereof exceed thirty years*." (emphasis added)); 16 PA. STAT. ANN. § 5404 (West 2001) ("The county . . . may enter into agreements in the form of a lease . . . *for terms of less than fifty (50) years* . . . ." (emphasis added)); S.C. CODE ANN. § 55-9-190 (2007) ("[P]olitical subdivisions . . . which have established airports . . . may . . . assign *for a term not exceeding twenty-five years* . . . ." (emphasis added)). Encouraging state lawmakers to significantly reduce the minimal requirements for multi-decade-long leases could initialize a progressive shift towards more agile airport-airline relations.

270. *See, e.g.*, *Agile Transportation System*, *supra* note 12; *see also supra* note 9 (discussing the

Given the requirement that airports' revenue cannot exceed their operating costs, two different types of inefficient fee structures between airports and airlines have evolved[271]: compensatory and residual methods.[272] The residual method is where the airlines guarantee the airport's costs, effectively assuming the financial risk of its contract.[273] Once the airport's revenues are set off against its costs, the "residual" amount is reallocated to the airline.[274]

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need for flexibility in the future transportation system and the effects of not reaching this goal).

271. The analysis of these fee structures strictly applies to relationships between airports and airlines, or the aeronautical users. However, it is important to understand the airport and non-aeronautical user relationships as well. Non-aeronautical users are largely "concessionaries, including car rental agencies, parking lots, restaurants, gift shops, and other small vendors." Air Transp. Ass'n of Am. v. DOT, 119 F.3d 38, 39 n.1 (D.C. Cir. 1997). The FAA allows an airport to charge "fees . . . to nonaeronautical users [that] exceed the costs of service to those users . . . ." Policy Regarding Airport Rates and Charges, 61 Fed. Reg. 31,994, 32,021 (June 21, 1996). The only limitation is that the "surplus funds accumulated from those fees" must be disseminated back into the airport. *Id.*; *see also* 49 U.S.C. § 47107(b) (2006). This surplus may also be shared between the airport and airlines to offset many of the costs incurred by these airlines. *See* Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,019 ("[Airlines] may receive a cross-credit of nonaeronautical revenues only if the airport proprietor agrees. . . . An airport proprietor may cross-credit nonaeronautical revenues to [airlines] even in the absence of such an agreement, but an airport proprietor may not require [airlines] to cover losses generated by nonaeronautical facilities except by agreement."). These regulations have substantial effects on the fee structures between all users in the system. For instance, one arrangement between the Newark Airport and its airlines demonstrates this effect:

> [T]he selection of concessionaires is a joint decision requiring approval of both the Port Authority and the airline[s] . . . . Under the terms of the lease, concessionaires have an exclusive or semi-exclusive right to sell various merchandise . . . in a particular terminal. For this right, the concessionaires pay a fixed base rent plus approximately 17 1/2 percent of their gross sales. These lease payments from the concessionaires are shared between the Port Authority and the airline[s] . . . .

Gannett Satellite Info. Network, Inc. v. Berger, 716 F. Supp. 140, 143 (D.N.J. 1989). In essence, crediting the airlines for the surplus—obtained by the airports from concessionaires—is a subsidy from one party to another. The subsidy arguably should result in lower passenger fares because airlines will have smaller facility expenditures, but on the other hand, this means increased prices for terminal concessions as well. While the effects of the subsidy may be debated, the airlines' control even over concessionaire operations is significant, and needs revision in the process of moving towards an increasingly alienable and agile system.

272. Although these may be the two most common methods, the FAA does not prevent other methods from being used. *See* Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,019 ("Federal law does not require a single approach to airport rate-setting. Fees may be set according to a residual or compensatory rate-setting methodology, or any combination of the two . . . as long as the methodology used is applied consistently to similarly situated aeronautical users . . . ." (internal quotation marks omitted)).

273. Hardaway, *supra* note 237, at 54. The "residual method" has largely been the main form of arrangements between airports and airlines because of the steady revenue stream that allows the airports to obtain comfortable financing through the bond markets. In guaranteeing this debt, "US airports used to keep long term *residual agreements* with the airlines that committed themselves to covering airport operating costs and debt service." Betancor & Rendeiro, *supra* note 77, at 16; *see also supra* note 257 and accompanying text (discussing how "exclusive lease agreements" have the same advantages for airports). However, the latest trend has been moving toward the compensatory method. *Id.*

274. Sabel, *supra* note 64, at 793. Under these systems, the airport revenues from every source,

Under the second type, the compensatory method, airports negotiate a fixed rate with airlines, which is based upon the airlines' status as a signatory or non-signatory.[275] Any surplus or deficit based upon the airport's budget will be incurred by the airport.[276] Besides the minimal financial risk under the compensatory method, airports do not share the risks of airline operations under these agreements, and neither is there an incentive to because the airport cannot divert any of its revenue for non-airport purposes.[277]

The rigidity of airline-airport facilities contracts protects already-established airlines, deters entry into particular markets considerably, and detracts from achieving an agile transportation system. The inflexibility and lack of competition promoted by these arrangements not only leads to higher passenger fares, but dampens the effectiveness of the following airport and FAA congestion policies: landing fees and slots.

B. Airport Proprietors: Landing Fees

When airlines and airports contract for facility, terminal, and gate use, the agreements also include specifications on how the airport will collect landing fees from certain airlines.[278] The generic formula used at nearly every airport is a "flat rate system," traditionally calculated by multiplying a given rate by the weight of the aircraft.[279] Academic economists have consistently criticized this approach.[280] As they explain, using a flat-rate fee for

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including its individual concessions, are "put into a single till and applied to the total cost of running the airport . . . ." Levine, *supra* note 108, at 46 n.27. These types of fee structures are also referred to as "single-till, residual fee" pricing structures. *Id.* at 48; *see also* Tae Hoon Oum et al., *Alternative Forms of Economic Regulation and Their Efficiency Implications for Airports*, 38 J. TRANSP. ECON. & POL'Y 217 (2004) (suggesting alternatives to the "single-till" system).

275. Sabel, *supra* note 64, at 794; *see also supra* note 266 (discussing the signatory/non-signatory distinction).

276. *See* Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,019 ("[A]n airport proprietor assumes all liability for airport costs and retains all airport revenues for its own use in accordance with Federal requirements. This approach to airport rate-setting is generally referred to as the compensatory approach."); *see also* Sabel, *supra* note 64, at 794. According to some authors, there has been a transition towards this method with the intention of shifting the majority of operational control to airports from the airlines. *See* Betancor & Rendeiro, *supra* note 77, at 17–18.

277. *See* Policy Regarding Airport Rates and Charges, 61 Fed. Reg. at 32,019 ("Revenues from fees imposed for use of the airfield . . . may not exceed the costs to the airport proprietor of providing airfield services and airfield assets currently in aeronautical use . . . .").

278. Sabel, *supra* note 64, at 785.

279. *See id.* at 796. For example, the 2003 rate for non-signatory airlines at one particular airport was $2.09 per one thousand pounds. *Id.* at 797. For a Boeing 737-400 airliner that weighs 121,000 pounds, the resulting landing fee for the airline is $252.89. *Id.*

280. *See, e.g.*, Levine, *supra* note 108; Polsby, *supra* note 232.

landing does nothing to allocate the congested airport's runway capacity efficiently, because a private pilot flying a low-weight airplane has little incentive not to fly during peak hours.[281]

The FAA finally addressed this criticism by recently amending the Rates and Charges Policy[282] (Amendment) to allow a "congested airport" to levy a two-part landing fee that includes both weight and per-operation charges.[283] In doing so, airport proprietors may increase their cost base by including expenses from: secondary airports they control, preventing delays at the airport, and any airfield projects in progress.[284] However, there are two underlying limitations: the landing fee must "reasonably allocate[] costs to users on a rational and economically justified basis," and the airport's total revenues must not exceed the allowable costs of operation for the airfield.[285]

Given the DOT's limited authority to establish policies that allow airport proprietors to efficiently allocate resources, its Amendment is a rather

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281. One of the first cases to challenge an airport's implementation of landing fees was *Aircraft Owners & Pilots Association v. Port Authority of New York*, 305 F. Supp. 93 (E.D.N.Y. 1969). In *Aircraft Owners*, the airport began charging pilots a fee of twenty-five dollars per takeoff or landing during peak traffic hours only if the aircraft had twenty-five or fewer passengers. *Id.* at 96. Upon granting summary judgment to the airport, the court reasoned that the fees were essentially necessary given the limited space:

> One aircraft approach may represent the right of over 150 passengers to have access to the navigable airways and landing areas. The next plane may represent the right of one or of two persons to have access to the airways and landing areas. To treat them alike in allocating scarce landing and take-off time and space is to ignore and not to recognize the basic right of equal access to airways and landing areas.

Id. at 106. During this same time in the New York region, the FAA recognized the need to control congestion as well, instituting caps at five high density traffic airports. *See* discussion *supra* Part IV.B. Both the federal and local governments' reaction to air congestion has led to the existing bifurcation of governmental regulatory methods and the subsequent questionability of its effectiveness.

282. *See generally* Policy Regarding Airport Rates and Charges, 73 Fed. Reg. 40,430 (July 14, 2008).

283. *Id.* at 40,434. A congested airport is "[a]n airport at which the number of operating delays is one per cent or more of the total operating delays at the 55 airports with the highest number of operating delays . . . ." *Id.* at 40,445. The DOT cited three reasons for permitting the two-part landing fee. First, the higher fees during periods of peak congestion will provide incentive for the airlines to "reschedule their flights . . . or to use secondary airports." *Id.* at 40,432. Second, by using a per-operation charge, the incentive is for air carriers to use larger size aircraft during peak congestion hours, which in turn uses the runway spaces more efficiently. *Id.* Third, the overall increased efficiency of the airport benefits all users in the system where other forms of expansion are not feasible. *Id.*

284. *See* Policy Regarding Airport Rates and Charges, 73 Fed. Reg. at 40,445; *see also supra* note 246 and accompanying text (discussing the concept of airfield revenues equating with the airport's cost base).

285. Policy Regarding Airport Rates and Charges, 73 Fed. Reg. at 40,444–45 ("An airport proprietor may impose a two-part landing fee consisting of a combination of a per-operation charge and a weight-based charge [if] . . . the two-part fee reasonably allocates costs to users on a rational and economically justified basis; and . . . total revenues from the two-part landing fee do not exceed the allowable costs of the airfield.").

clever attempt to establish a market-based mechanism for runway pricing.[286] The core of the Amendment allows proprietors to include more projects and expenses in their cost-base. With the requirement that airfield revenues equate with its actual costs, this provides room to increase revenues through additional fees on air carriers. The DOT believes airport proprietors will then use this power to raise its landing fees during peak hours, subsequently providing airlines the incentive to reschedule their flights to different times.[287] However, even the DOT is not fully convinced it will be a long-term measure.[288] Its negativity is derived from the fact that airports cannot institute "true congestion pricing," because congestion does not qualify as a "cost" that can be included in a proprietor's cost base.[289] Thus, the level of allowable fees during peak times still remains constrained without the ability to charge airlines for their full contribution to traffic congestion, making it doubtful that air carriers will adjust their schedules to non-peak hours.[290]

C. FAA: Slots and More Slots

In understanding the FAA's methodology, the distinction between caps and slots is important. Caps are essentially regulatory limits on the number of scheduled flights that may take place, usually within a given hour.[291] To avoid the "first-come, first-served" rule that would result for access to these flights, the FAA has created slots for each flight. However, the FAA has

286. However, the DOT ensures that the two-part landing fee is not "true congestion pricing" because the policy does not permit airport proprietors to charge fees during peak hours "without regard to allowable costs of airfield facilities and services." *Id.* at 40,432. In other words, because congestion is not a cost that can be recovered, the airport proprietor cannot factor congestion into its cost-base to justify the increased level of revenue from landing fees.

287. *See id.* at 40,432 ("[B]y charging higher landing fees during periods of peak congestion, the airport proprietor gives aircraft operators the incentive to reschedule their flights to less congested periods or to use secondary airports.").

288. *See id.* at 40,437 ("If an increase in fees adversely affected the cost-effectiveness *of even a few of these operations*, there would be a positive effect on congestion and a reduction in delays during peak hours." (emphasis added)).

289. *See supra* note 286; Policy Regarding Airport Rates and Charges, 73 Fed. Reg. at 40,432 ("[T]he fees utilized are cost-based, and therefore are not congestion pricing.").

290. For further discussion on the recent amendments to the Policy Regarding Airport Rates and Charges, see Monica Hargrove Kemp, *Mechanisms for Addressing Capacity-Related Delays at U.S. Airports*, 22 AIR & SPACE LAW. 1 (2009).

291. Slots are defined as "the operational authority to conduct one [instrument flight rules (IFR)] landing or takeoff operation each day during a specific hour or 30 minute period at one of the High Density Traffic Airports . . . ." 14 C.F.R. § 93.213(a)(2) (2008). Slots have been named many different things. In the past, they were called reservations, then slots, and are now referred to as "operating authorizations."

struggled for decades to find a method for allocating slots efficiently to both increase competition and minimize congestion.[292]

1. Historical Context

The default system for ordering and scheduling commercial flights at airports had long been first-come, first-served.[293] Because this simplistic organizational procedure did not solve congestion issues arising during peak hours,[294] the FAA established the High-Density Rule[295] (HDR) in 1968 at "high density traffic airports."[296] At the five qualifying airports, the HDR "capped the number of hourly arrivals and departures" and required carriers to secure reservations for scheduled operations.[297] Scheduling committees, made up of representatives of airlines using the airport, allocated reservations rather simply because there was no possibility of entrants.[298] After deregulation in 1978, the increased amount of carriers created competition for these reservations, severely limiting the amount of new entrants and increasing congestion and delays at major airports.[299]

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292. The Airline Deregulation Act made it clear that policies should be aimed foremost at "placing maximum reliance on competitive market forces and on actual and potential competition . . . ." 49 U.S.C. § 40101(a)(6) (2006). Any policies solely alleviating congestion would be contrary to deregulation.

293. *See* Hardaway, *supra* note 62, at 61 (discussing the inefficiency of the first-come, first-served policy). This approach continues to be used at many commercial airports. Aircraft will file a flight plan with ATC and the system will accommodate each aircraft as they prepare to take off. Levine, *supra* note 108, at 51.

294. Hardaway, *supra* note 62, at 61.

295. High Density Traffic Airports, 33 Fed. Reg. 17,896 (Dec. 3, 1968); 14 C.F.R. §§ 93.121–.129 (1969); *see also* Nw. Airlines, Inc. v. Goldschmidt, 645 F.2d 1309 (8th Cir. 1981) (upholding the validity of the HDR). The FAA (at that time the Federal Aviation Agency) used the statutory authority given to it by Congress in 1958. *See* Federal Aviation Act of 1958, Pub. L. No. 85-726, § 307(a), (c), 72 Stat. 731, 749–50 (authorizing the Administrator of the FAA to "assign by rule, regulation, or order the use of the navigable airspace . . . in order to insure . . . the efficient utilization of such airspace" and "prescribe air traffic rules and regulations . . . for the efficient utilization of the navigable airspace") (current version at 49 U.S.C. § 40103(b)(1)–(2).

296. The qualifying high density traffic airports were LaGuardia, JFK, Newark, Washington National, and O'Hare. High Density Traffic Airports, 33 Fed. Reg. at 17,896.

297. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, AUTHORITY TO AUCTION AIRPORT ARRIVAL AND DEPARTURE SLOTS AND TO RETAIN AND USE AUCTION PROCEEDS 3 (2008) [hereinafter AUTHORITY TO AUCTION].

298. *See* Hardaway, *supra* note 62, at 61. This was because each airline was CAB-protected during regulation. *Id.*; *see also infra* note 315 (discussing the international slot allocation methods and the role of scheduling committees and independent coordinators).

299. *See infra* note 307; AUTHORITY TO AUCTION, *supra* note 297, at 4. The classic example to illustrate this effect is New York Air (NYA). In 1980 after deregulation, NYA attempted to get twenty slots from a scheduling committee at Washington National in order to be competitive, but its request put the committee into a deadlock. The FAA ended up granting eighteen slots to the NYA by taking slots from incumbent carriers, who had previously agreed to give up slots in the case of an incomplete agreement. However, the FAA's actions soon threatened the future of scheduling committees by making them reluctant to engage in such exercises. *See* Eileen M. Gleimer, *Slot Regula-*

In December 1985, the FAA amended the HDR to accommodate the demand by creating the "buy-sell rule."[300] Air carriers were allowed to sell, lease, or dispose of slots for any value.[301] Reservations were assigned to carriers already holding reservations under previous scheduling committee agreements.[302] To encourage competition, the FAA implemented a one-time, five percent withdrawal of incumbent carriers' slots that would be distributed through a lottery to new entrants.[303] Despite the FAA's attempts to promote a secondary market for slots, entrants still faced barriers because incumbents were still generally favored under the new policy.[304] Because airport facilities were so difficult to attain, the carriers with a large market share and access to terminal space would keep the slots, even if they did not intend to use them, as a way of preventing competitors from entering the market.[305]

In 2001, Congress eventually decided to phase out the HDR at three airports—JFK, LaGuardia, and O'Hare—in several different ways.[306] The

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tion at High Density Airports: How Did We Get Here and Where Are We Going?, 61 J. AIR L. & COM. 877, 883 n.25 (1996).

300. High Density Traffic Airports; Slot Allocation and Transfer Methods, 50 Fed. Reg. 52,180, 52,180 (Dec. 20, 1985) (codified as amended at 14 C.F.R. pt. 93, subpt. S).

301. *Id.*

302. The FAA hoped this "grandfather clause" would make the transition to the new system easier. *See* Gleimer, *supra* note 299, at 887. However, it failed to provide incentives for air carriers to trade their positions or create a secondary market for slots because they did not want to give up their market share to new entrants. The amendments ended up favoring incumbents and did not reduce congestion or increase competition at all. *See* AUTHORITY TO AUCTION, *supra* note 297, at 5.

303. High Density Traffic Airports; Slot Allocation and Transfer Methods, 50 Fed. Reg. at 52,184; *see* Gleimer, *supra* note 299, at 888–91. The terms of the withdrawal and subsequent lottery were as follows: it only applied to LaGuardia, O'Hare, and Washington National; incumbents could choose which of its slots to relinquish; and the FAA required that a certain number of slots be placed in a pool each hour to ensure there was room for entrants. *See* Gleimer, *supra* note 299, at 890–91. In addition, the FAA, under the "use-or-lose" provision, retained slots not used a specified amount of time and distributed them through a lottery. *See* AUTHORITY TO AUCTION, *supra* note 297, at 4.

304. *See* AUTHORITY TO AUCTION, *supra* note 297, at 5.

305. *See* Hardaway, *supra* note 62, at 14–17, 25–30; *see also* Gleimer, *supra* note 299, at 907–08. However, it is important to recognize that the rule has failed only at the largest congested airports in the U.S.—LaGuardia, JFK, Newark, and O'Hare. The effects could be different at other airports. For example, the HDR remains in effect at Washington National, and in 2008 the arrivals and departures were on time 88.9% and 91.1% of the time, respectively. *See* DEP'T OF TRANSP., AIR TRAVEL CONSUMER REPORT 19 (2008), *available at* http://airconsumer.ost.dot.gov/reports/index.htm. Still, these positive results are likely influenced by the use of the "perimeter rule," which is in effect at Washington National, but is not used anywhere else. *See* 14 C.F.R. § 93.253 (2008) ("No person may operate an aircraft nonstop in air transportation between . . . Washington National . . . and another airport that is more than 1,250 miles away from . . . Washington National . . . .").

306. *See* Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21), Pub. L. No. 106-181, § 231, 114 Stat. 61, 108 (2000) (codified at 49 U.S.C. § 41715–18 (2006)).

HDR would no longer apply to carriers considered "new entrants" or "limited incumbents,"[307] or carriers flying to smaller cities.[308] And the HDR would be phased out after July 1, 2002, at O'Hare, and after January 1, 2007, at LaGuardia and JFK.[309]

As airlines waited for the demise of the HDR, the effects of the withdrawal at O'Hare were felt immediately by passengers. By late 2003, O'Hare was dead last in on-time performance among the nation's largest airports.[310] The FAA eventually was compelled to reinstitute caps at O'Hare.[311] As the expiration dates for the HDR at JFK and LaGuardia approached, the FAA proposed continuing caps at these New York airports to prevent the disastrous delays O'Hare experienced.[312] The FAA's proposal to continue hourly caps included the assignment of the majority of slots to incumbent carriers.[313] But the expiration of the HDR came before the proposal was complete, and the summer of 2007 brought "near-record delays" to the New York airports, resulting in the reinstitution of "capping orders."[314]

The HDR at Washington National still remains in effect. § 93.123. In 1970, the FAA indefinitely suspended restrictions on reservations at Newark. High Density Traffic Airports, 35 Fed. Reg. 16,591, 16,592 (Oct. 24, 1970).

307. *See* 49 U.S.C. §§ 41716(b), 41717(c). A "new entrant carrier" refers to "a commuter operator or air carrier which does not hold a slot at a particular airport and has never sold or given up a slot at that airport after December 16, 1985." 14 C.F.R. § 93.213(a)(1). A "limited incumbent carrier" includes those air carriers that "hold[] or operate[] fewer than 12 air carrier or commuter slots . . . ." § 93.213(a)(5).

308. *See* 49 U.S.C. §§ 41716(a), 41717(b).

309. § 41715(a). Congress's planned phase-out included both the HDR and the subsequent amendments made in 1985. *Id.*

310. Shea, *supra* note 227, at 625. Congress attempted to negotiate its way out of congestion at O'Hare by pleading with air carriers to reduce their scheduling. *See* § 41722 (authorizing the Secretary of Transportation to "request that air carriers meet with the Administrator of the [FAA] to discuss flight reductions at severely congested airports to reduce over-scheduling and flight delays during hours of peak operation . . . ."). American and United Airlines subsequently agreed to 12.5% reductions, but with each cut another carrier would take its place. *See* Shea, *supra* note 227, at 625–27; *see also supra* notes 227–228 and accompanying text.

311. Congestion and Delay Reduction at Chicago O'Hare International Airport, 71 Fed. Reg. 51,382, 51,383 (Aug. 29, 2006). Even though Congress in 2000 phased out the HDR, the FAA relied on its statutory authority to reinstitute them. *See supra* note 295.

312. Congestion Management Rule for LaGuardia Airport, 71 Fed. Reg. 51,360 (Aug. 29, 2006) (notice of proposed rulemaking). This also included the first proposal for a market-based mechanism for allocating slots. *See id.* at 51,361–62.

313. *Id.* at 51,365.

314. REDUCING DELAYS FOR SUMMER, *supra* note 70, at 6–7. LaGuardia had temporary caps issued before January 1, 2007, while the caps for JFK and Newark were not issued until after the summer delays of 2007. *See* Operating Limitations at New York LaGuardia Airport, 71 Fed. Reg. 77,854 (Dec. 27, 2006) (notice of order for LaGuardia); Operating Limitations at John F. Kennedy International Airport, 73 Fed. Reg. 3,510 (Jan. 18, 2008); Operating Limitations at Newark Liberty International Airport, 73 Fed. Reg. 29,550 (May 21, 2008); *see also* Operating Limitations at John F. Kennedy International Airport, 73 Fed. Reg. 8,737 (Feb. 14, 2008) (amending the caps at JFK by correcting technical errors); Operating Limitations at Newark Liberty International Airport, 73 Fed. Reg. 29,550 (May 21, 2008) (final order for Newark caps).

Despite a multi-decade struggle to find an effective slot allocation method, the FAA continuously reverts to the same ineffective policy: cap the flights and distribute the slots to the majority.[315] Based on this history, it appears that caps and slots have become a necessary evil as the FAA continues to search for different allocation methods, including, most recently, the market-based theory.

2. Are Market-Distributive Mechanisms Effective?

In the midst of a deadlock with demand-management strategies at high-density airports, the FAA proposed a market-based mechanism in order to allocate slots to carriers efficiently. The proposed policy would retrieve a certain percentage of its slots from current carriers at JFK, LaGuardia, and Newark, and auction them off to the highest bidder.[316] In response, the Air Transportation Association (ATA) filed a lawsuit against the DOT to pre-

315. In comparison, most other countries distribute slots administratively through scheduling committees consisting of representatives of each airline. Levine, *supra* note 108, at 54; *see also supra* note 299 (discussing the United States' experience with scheduling committees). Under the European Union (EU) system of allocation, each airport appoints an independent coordinator fully responsible for allocating slots "in a neutral, non-discriminatory and transparent way." Council Regulation 95/93, Common Rules for the Allocation of Slots at Community Airports, art. 4, 1993 O.J. (L 14) (EEC) 1–3. The coordinator is assisted in a "consultative capacity" by a "coordination committee" consisting of members from air carriers regularly using the airport and other authorities such as air traffic control. *Id.* at art. 5, 1. An air carrier that is cleared for a landing slot is entitled to that slot in the next regularly scheduled period as well if the air carrier uses the slot 80% of the time for that particular period, *id.* at art. 8, 1(a), art. 10, 3, commonly called the "use-it-or-lose-it" provision. *See* Helen Nugent, *Planes 'Fly Empty' to Keep Slots at Heathrow*, TIMES ONLINE, July 16, 2008, http://www.timesonline.co.uk/tol/travel/news/article4340518.ece. The EU approach suffers from the problem of using resources efficiently as well. In times where demand for air travel contracts, air carriers end up flying their planes on "ghost flights" with no passengers to ensure they meet the 80% threshold. *See* Nugent, *supra* ("Britain's third-largest airline, bmi, will fly near-empty aircraft from this autumn to preserve multimillion-pound take-off and landing slots . . . ."). The consequences of losing a slot for "peak-time" flights can be as much as £30 million in Britain, and clearly retaining this slot is worth the price of running empty flights. *See id.* ("[B]mi does not want to lose its coveted slots at Heathrow, which are valued at £770 million."). For further discussion on EU slot mechanisms, see Levine, *supra* note 108, at 54–56; Dario Maffeo, *Slot Trading in the Reform of the Council Regulation (EEC) No. 95/93: A Comparative Analysis with the United States*, 66 J. AIR L. & COM. 1569 (2001).

316. *See* Congestion Management Rule for LaGuardia Airport, 73 Fed. Reg. 20,846 (Apr. 17, 2008) (rulemaking on slot auctions at LaGuardia). The final rules on slot auctions at the three New York airports were developed in November of 2008, while the DOT intended to begin the auctions on or around January 12, 2009. *See* Congestion Management Rule for LaGuardia Airport, 73 Fed. Reg. 66,517, 66,517 (Nov. 10. 2008); Congestion Management Rule for John F. Kennedy International Airport and Newark Liberty International Airport, 73 Fed. Reg. 66,516, 66,516–17 (Nov. 10, 2008). For a detailed breakdown of the policy in table format, see Levine, *supra* note 108, at 87.

vent it from carrying out its plan to auction slots.[317] The ATA, along with many other parties joining in the action, claimed the DOT did not have the legal authority to implement a market-based mechanism for allocating the slots.[318] After a Government Accountability Office (GAO) report concluded that the FAA did not have the authority to auction off slots,[319] opposition to market-based mechanisms gained even more momentum, with Congress expressing its frustration as well.[320] On December 9, 2008, the United States Court of Appeals for the District of Columbia granted the motion to stay the slot auctions,[321] with Secretary of Transportation Ray LaHood finally rescinding them altogether in May 2009.[322] During the FAA's legal struggle to

317. *See* Air Transp. Ass'n v. FAA, No. 08-1262 (D.C. Cir. filed Aug. 11, 2008); *see also* Matthew L. Wald, *Authority to Fight Landing Slot Auction Proposal*, N.Y. TIMES, Aug. 5, 2008, at B5. The FAA ordinarily has the authority to charge user fees without explicit statutory authority because Congress wants to make the FAA as self-sustaining as possible. 31 U.S.C. § 9701(a) (2006). The user fees must be "fair" and based on: the costs to the government; the value of the service or thing of value to the recipient; public policy or interest served; and other relevant facts." § 9701(b)(1)–(2). However, Congress has taken away the FAA's authority to collect these fees for the past ten years by preventing it from "promulgat[ing] new aviation user fees not specifically authorized by law . . . ." *See* 1998 Department of Transportation and Related Agencies Appropriations Act, Pub. L. No. 105-66, 111 Stat. 1425, 1429 (1997); Consolidated Appropriations Act of 2008, Pub. L. No. 110-161, 121 Stat. 1844, 2379 (2007); *see also* AUTHORITY TO AUCTION, *supra* note 297, at 12–15. Accordingly, the FAA would lack the authority to have slot auctions because they would amount to a new aviation user fee.

318. The DOT claimed its authority to hold slot auctions was derived from its "property disposition authority." AUTHORITY TO AUCTION, *supra* note 297, at 6–7; *see* 49 U.S.C. §§ 106, 40110; John F. Kennedy International Airport and Newark Liberty International Airport, 73 Fed. Reg. at 26,626, 29,631 (May 21, 2008). Under this argument, the FAA has both the authority to "construct" property and "lease to others such . . . property." § 106(n)(1)(B). It may also enter into "contracts, leases, cooperative agreements, or other transactions as may be necessary to carry out the functions of the [FAA]." § 106(l)(6). Given its established ability to create slots, the FAA now considers the slots as property and plans to "dispose of [its] interest in *property* for adequate compensation" by leasing out the slots to airlines at the congested airports. § 40110(a)(2) (emphasis added). The critical problem with this proposal is that it would violate many of the requirements that airports not discriminate against certain carriers or charge fees higher than the cost of providing the airfield services. *See* discussion *supra* Part IV.A.1.

319. *See* AUTHORITY TO AUCTION, *supra* note 297, at 16; *see generally* King & Rabinovitz, *supra* note 224.

320. *See, e.g.*, 154 CONG. REC. S10,461-02 (daily ed. Oct. 2, 2008) (statement of Sen. Bond) ("Our aviation system needs a comprehensive overhaul, operationally and technologically, to fix the problems of congestion. An untested scheme to further tax airlines and passengers is certainly not what is needed."); *Rep. Frelinghuysen Joins Bipartisan Group of Lawmakers in Opposing DOT's Airport Slot Auctions*, U.S. FED. NEWS, Oct. 31, 2008, *available at* 2008 WLNR 20868367.

321. Matthew L. Wald, *Court Order Delays Auction of Landing Slots at Airports*, N.Y. TIMES, Dec. 9, 2008, http://www.nytimes.com/2008/12/09/nyregion/09slots.html; *see also* Petitions for Review, Air Transp. Ass'n of Am. v. FAA, Case No. 08-1333 (D.C. Cir. Oct. 14, 2008). In addition, the U.S. House of Representatives passed a spending bill that included a provision preventing the Secretary of Transportation from auctioning off slots at any congested airports. *See* Transportation, Housing and Urban Development, and Related Agencies Appropriations Act of 2009, H.R. 1105, 111th Cong. § 115(a)(2) (2009) ("No funds . . . may be used by the [SOT] to . . . take any action . . . involv[ing] . . . the implementation . . . of . . . congestion pricing at such an airport . . . .").

322. *See* Congestion Management Rule for John F. Kennedy International Airport and Newark

implement slot auctions, they also introduced the Next Generation Air Transportation System Financing Reform Act of 2007,[323] a bill that raised more considerations, including whether the DOT should be allowed to use market-based mechanisms at all to achieve lower airport congestion.

The FAA and proponents of slot auctions argue, theoretically, that market-based pricing for slots at certain "peak period" hours will force airlines to use its slots most efficiently by readjusting its schedules during non-congested hours or using bigger airplanes, which would carry more passengers, during those times.[324] Critics are less optimistic. First, they argue that congested airports will be incentivized to "maintain congestion [in order to] reap the financial rewards of congestion pricing while avoiding the costs of expansion."[325] Second, one author argues that major airlines' "considerable financial contributions" have "entitled them to the use of airport facilities and slots."[326] However, any system adjustments would be gradual and the phase-out over subsequent years would allow a reasonable return on its investment, or the local government could pay the airline its return. Lastly,

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Liberty International Airport, 74 Fed. Reg. 22,714 (May 14, 2009) (notice of proposed rescission at JFK and Newark); Congestion Management Rule for LaGuardia Airport, 74 Fed. Reg. 22,717 (May 14, 2009) (notice of proposed rescission at LaGuardia).

323. Next Generation Air Transportation System Financing Reform Act of 2007, S. 1076, 110th Cong. (2007). Specifically, the "Pilot program for market-based mechanisms at congested airports" would authorize the FAA to implement slot auctions:

> In order to promote the efficient use of airport capacity or the efficient movement of air traffic, the Secretary of Transportation shall establish a pilot program for market-based pricing mechanisms for domestic flights at not more than 15 airports under which an airport owner . . . may adopt . . . a market-based mechanism for the airport . . . .

§ 504(a). A market-based mechanism includes "the use of auctions, or congestion or peak period pricing, under which fees may vary by time of day or day of the week in order to reduce aviation congestion and delays." § 504(e). For further information on the FAA Reauthorization Act of 2007, see H.R. REP. NO. 110-331 (2007). The newest bill seeking funding for NextGen does not include market-based mechanisms for both alleviating congestion and raising funds for investments in NextGen. *See generally* Federal Aviation Administration Reauthorization Act of 2009, H.R. 915, 111th Cong. (2009) (requesting appropriations from 2009 through 2012).

324. Jan K. Brueckner, *Internalization of Airport Congestion*, 8 J. AIR TRANSP. MGMT. 141, 141 (2002); *see also* Bryan Matthews & Batool Menaz, *Airport Capacity: The Problem of Slot Allocation*, 2003 INST. FOR TRANSP. STUD. 2 (2003), *available at* http://www.conallboyle.com/housing/matthewsMenazAirslots2003.pdf (discussing the slot allocation mechanisms in the EU).

325. King & Rabinovitz, *supra* note 224, at 23; *see also* John J. Corbett, *Small Communities Are Concerned About Congestion Pricing*, 17 AIR & SPACE LAW. 17, 18 (2002) ("[Congestion pricing] accepts the status quo in runway capacity, allowing DOT/FAA to continue their traditionally passive roles in new runway and new airport development."). This concern may be overly pessimistic because the FAA constantly works with the busiest airports in the country to expand capacity in anyway possible, and all airports are required to reinvest any excess revenues in the airport. Any exceptions to that rule for certain airports, e.g., Boston, Chicago, Oakland, will likely be minimal.

326. Hardaway, *supra* note 237, at 66; King & Rabinovitz, *supra* note 224, at 24.

one author argues that the proposed auctions could actually increase problems by creating competition between politicians and airport proprietors for auction proceeds that would inevitably go to politically-motivated causes rather than expanding infrastructure.[327]

The broader issue implied above is that congestion pricing "attempts to insert an element of the free market into a government-regulated market."[328] If slot auctions were incorporated at congested airports without supplemental alienability of airport gate-facility leasing, the auctions would not perform as expected because the airlines still hold the ability to indirectly prevent entrants into the market.[329] By effectively keeping entrants out, incumbent air-

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327. *See* Levine, *supra* note 108, at 63–64. Levine subsequently proposes a unique auction structure for airport congestion:

> Establish[] a blind auction in which slots are chosen at random and made available to all bidders (including the previous owners), with the proceeds going to the previous owner and the amount of both the winning and second-highest bid (but not the identity of the second-highest bidder) being made public.

Id. at 37–38. There are other relatively minor details about this proposal as well. First, any new slots created as a result of expansion would be auctioned off by the airports and retained strictly for other expansion and infrastructural developments. *Id.* at 83. Second, it prevents airlines from arguing that the current slots they hold would be improperly taken from them. *Id.* Lastly, and most controversially, it calls for zero exemptions to the auction, meaning no political constituency, namely small community advocates or new entrants, would have priority to the slots. *Id.* at 76. He argues that these exemptions—allowing priority for smaller carriers or new entrants—discourage efficiency by substituting higher-valued flights for lower-valued ones. *See id.* For an opposing argument to this view on exemptions, see generally Corbett, *supra* note 325. Although this auction does accomplish the purpose of forcing airlines to consider the value of their slots on the market relative to their own use, it is nothing more than a cleverly disguised buy-sell rule." *See supra* notes 300–301 (discussing the buy-sell rule). Previous owners can outbid potential entrants and pocket their own cash, which would effectively limit competition. In addition, owners can discretely bid on their own slots, thereby artificially controlling their own price, almost as if they were selling them on a secondary market. Despite claims that this "force[s] the bidding airlines . . . to value the slots independently of knowledge of the competitive impact of the transfer," masking the identity of potential buyers does not disguise the reality that a competitor will take the slot regardless of the final price. Levine, *supra* note 108, at 82. In this manner, it does not reduce the incentives to hoard slots any more than the problematic buy-sell rule, and also does not address the anticompetitive long-term lease arrangements.

328. Joshua L. Schank, *Solving Airside Airport Congestion: Why Peak Runway Pricing Is Not Working*, 11 J. AIR TRANSP. MGMT. 417, 424 (2005). The author also argues that other forms of transportation such as trains would be suitable substitutes for air travel and would have a significant effect in reducing congestion. *Id.* There appears to be some support for this in Congress as well. *See, e.g.*, Passenger Rail Investment and Improvement Act of 2007, S. 294, 110th Cong. (2007); 154 CONG. REC. H6771 (daily ed. July 22, 2008) (statement of Rep. Mica) ("When you can't get into New York or out of New York [airports], the rest of the system goes down, and there is nothing, even [NextGen] that can make planes fly that much closer, to solve this problem. What we're going to have to do is go to a different system, and that system is high-speed rail."). Under the Obama Administration, Secretary of Transportation LaHood has voiced his support for an Amtrak system that would significantly provide those suggested alternatives. *See generally Nomination of LaHood*, *supra* note 7. This could provide effective alternatives to shorter flights departing out of airports in the New York region, and dampen congestion levels as well.

329. *See* discussion *supra* Part IV.A.2 (discussing how airlines have significant control over infrastructure development as well as long-term leasing agreements, both of which are used as instru-

lines have incentives to bid on lower-valued flights or hold on to the ones they have because of the oligopoly profits they incur.[330] The FAA needs to consider these issues as it attempts to solve these increasingly inefficient results.

D. The Gloomy Future of Airport-Demand Management

President Barack Obama's Secretary of Transportation, Ray LaHood, has taken a firm stance against any market-based mechanisms for slot allocations with the complete opposite approach: "If you're really trying to cut down congestion, then eliminate the slots. But the idea of then going back and re-auctioning them doesn't make any sense."[331] LaHood believes the key to fixing congestion is "obviously" NextGen.[332] Examining the historical context properly puts this perspective in clearer view.[333] First, when Congress tried to phase out the HDR in 2001, this measure created obvious problems at Chicago's O'Hare Airport, making it the worst in on-time performance immediately after its demise.[334] As addressed before, focusing solely on NextGen without measures to effectively distribute limited airport resources would be disastrous.[335] But the irony of LaHood's sole focus on

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ments to prevent competitors from obtaining facilities for entry).

330. The idea behind oligopoly profits is rather straightforward. If an air carrier is locked into a long-term lease at an airport for a fixed amount of gate facilities, it has an incentive to keep entrants out by out-bidding them in a slot market. By doing so, it effectively decreases overall competition and permits itself to raise prices on passengers. The residual between the increased price and the otherwise resulting price from competition is an oligopoly profit. *See* Hardaway, *supra* note 237, at 53–60. Even Congress recognizes the potential for oligopolistic abuse of landing slots. A bill introduced to amend the Clayton Act would place a limit on the number of takeoff and landing slots major airlines can own. *See* High Density Airport Competition Act of 2001, S. 520, 107th Cong. § 29(b) (2001) (applying to Washington National and LaGuardia airports); 147 CONG. REC. S2221 (daily ed. Mar. 13, 2001) (statement of Sen. DeWine); Michael F. Urbanski et al., *Antitrust and Trade Regulation Law*, 35 U. RICH. L. REV. 453, 496 (2001). Although such a measure could be effective in the auction context by placing limits on the number of slots that can be obtained per hour, it still does not allocate the slots in the most economically efficient manner because slots are not allocated to those air carriers based on their corresponding economic values. *See generally* discussion *infra* Part V.

331. *Nomination of LaHood*, *supra* note 7, at 48. Based upon these statements, airlines have seized the opportunity to have the ongoing lawsuit between the FAA and airlines dropped by LaHood. *See* John Crawley, *Airlines Ask U.S. to Withdraw NY Airport Slot Sales*, REUTERS, Jan. 23, 2009, http://www.reuters.com/article/domesticNews/idUSTRE50M6Q020090124.

332. *Nomination of LaHood*, *supra* note 7, at 46; *see also supra* Part III.C.3.

333. *See* discussion *supra* Part IV.C.1 (discussing the history of failing FAA policies regarding slots).

334. *See supra* note 310 and accompanying text.

335. *See* discussion *supra* Part III.C.3.

NextGen derives from the JPDO's Integrated Plan, which suggests that in areas where "infrastructure expansion cannot be accomplished," airports will need to utilize "market-based mechanisms such as peak period pricing" to allocate slots in order to "ease congestion."[336] LaHood's attempt to escape demand management policies and focus on NextGen is circular. History shows that eliminating slots for short-term alleviation will lead to disastrous results and does not provide the proper cure for implementing a more agile airport environment.[337]

V. PRIVATIZATION AND SOCIAL EFFICIENCY

From a policy perspective, social efficiency relates to the "relationship between aggregate benefits . . . and the aggregate costs of [a] situation."[338] Naturally, if society as a whole sees a particular policy as providing benefits that exceed its potential costs, there is an instinctual tendency to pursue that "efficient" measure.[339] In the most dense airport environments, air travel demand will continuously surpass any marginal increases in available capacity, leading to air traffic congestion that produces significant social costs.[340] Have the benefits of eliminating these social costs become so high that the drawbacks of an alternative regulatory scheme—privatization—become

336. INTEGRATED PLAN, *supra* note 8, at 12. This appears to be the only plan the JPDO and FAA have derived thus far. As mentioned, the usefulness of congestion pricing in the current environment is limited, and the hopes of legally being able to implement such pricing is nearly impossible now. *See supra* note 321 and accompanying text (discussing the most recent efforts at barring any forms of congestion pricing from being implemented at high-density airports).

337. *See also* Infanger, *supra* note 231 ("The problem is LaHood doesn't have a lot of aviation background. He'll take his cues from the people at the top in the DOT. He has to, and that's not good."). There is very little theoretical support for elimination of slots either. One author believes that no congestion-based pricing is needed when only one carrier has a monopoly over air travel at a particular airport. Brueckner, *supra* note 324, at 147. This is because the monopolist airline internalizes airport congestion it imposes on itself by considering the impact on its operating costs, resulting in self-regulation. *Id.* at 145. However, Brueckner argues that even with multiple airlines operating at an airport, "carriers are shown to internalize only the congestion they impose on themselves." *Id.* at 147. Thus, Brueckner believes that congestion-based fees on airlines should be based upon the "costs imposed on other carriers," not all of the external costs of congestion. *Id.* Nonetheless, most commentators believe some form of regulation is needed. *See id.*

338. A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 7 (3d ed. 2003).

339. The socially "efficient" result is used "to denote that allocation of resources in which [economic] value is maximized . . . ." POSNER, *supra* note 160, at 11. The term "economic value" of an airport resource is measured by the amount a certain carrier is willing to pay for the particular facility or resource. *See id.* at 11. By achieving social efficiency, not only are scarce resources allocated in the most effective manner, but the economic value of all parties is maximized. Whether the overall economic value gains are fairly distributed is an issue that will be further explored. *See* discussion *infra* Part V.B.

340. *See generally* discussion *supra* Part III.D.

more appealing in terms of social efficiency?[341] If so, are the benefits of these societal gains fairly distributed?[342]

A. High-Density "Privatized" Airports—The Model of Efficiency

Airport privatization has numerous potential benefits that cannot be understated. Those most commonly identified include diversified sources of private capital for development,[343] greater efficiency in airport operations,[344] and increased customer satisfaction.[345] However, private operators could al-

341. The author limits this analysis to highly-congested airports rather than non-congested airports. The social benefits incurred will vary depending upon the level of airport congestion and likely would not be large enough at non-congested airports, thus not justifying the increased welfare benefits of privatization. This is mostly attributed to the fact that the current non-discriminatory access requirement for air carriers would not have such damaging effects on non-congested airports as it has had on congested airports. *See* discussion *supra* Part IV.A. However, it is worth inquiring whether all major airports, at some point in the future, will incur enough congestion costs that the current "flat-based rate" pricing schemes necessitate a transition to privatization.

342. *See* discussion *infra* Part V.B.

343. Casey Andrew Burton, Comment, *An Analysis of the Proposed Privatization of Chicago's Midway Airport*, 72 J. AIR L. & COM. 597, 613–14 (2007). Currently, most airports rely on debt financing for most of their infrastructural improvements. *See supra* note 257 and accompanying text (discussing the reasons for the rise of municipal-bond financing for most airport developments). However, a private operator would not be inclined to rely solely on debt financing for its major transactions, which would make the operations run more efficiently as well. Burton, *supra*, at 614.

344. The most common argument against this benefit is that nearly ninety percent of airport operations are already run by private operators, leaving little room for lowering costs any further. AIRPORT PRIVATIZATION, *supra* note 257, at 22. This is a rather narrow argument though with no consideration of the airport-airline fee structures. *See* discussion *supra* Part IV.A.2. Producing competition for the concessions and other minor contracts around airport operations simply means that the overall operating costs of the airport are lower. Consequently, under the residual fee structure the savings from those private contracts translate into lower charges for ground facilities. This would increase demand for them and competition, subsequently raising the level of airport congestion.

345. Many proponents of privatization also point to successful international models to further their arguments despite the questionable comparisons used. AIRPORT PRIVATIZATION, *supra* note 251, at 5. The commonly referred to example is the United Kingdom. *See id.* In 1987, the U.K. sold the British Airports Authority (BAA), a government corporation, in a public share offering of $2.5 billion. *Id.* at 30. Although the government regulates safety, the rates charged to airlines, and environmental protection, the results have been mixed, with substantial profits in the mid-1990s. *Id.* at 17. For a thorough list of international privatization efforts, see Zane O. Gresham & Brian Busey, *"Do as I Say and Not as I Do"—United States Behind in Airport Privatization*, 17 AIR & SPACE LAW. 12, 13 (2002) ("Not every experience has been positive . . . but the overall conclusion is that carefully structured and thoughtfully executed private-sector participation can produce substantial benefits to the travelling public, and can reduce costs to airlines as well."). However, any success abroad must be closely scrutinized because many countries privatizing their airports never previously had access to even bond markets like the publicly-owned governments do in the United States. *See id.* at 14.

so more effectively fight congestion than a government-run airport by conditioning the transfer on the elimination of congestion, measured by monthly or quarterly performance results.[346] This technique has been recognized for various forms of privatization, predicated on the notion that "governments should shift their focus from specifying inputs to specifying some desired outcome, leaving private sector providers with the opportunity of formulating means of realizing that outcome in the most cost-efficient way possible."[347] The transfer of interests in airports from government operations to a private regulated monopoly could provide a solution for demand management if three conditions are met: the operator is given the ability to price discriminate against carriers for ground facilities;[348] transparent, periodic slot auctions are held;[349] and efficient regulation of an airport's monopoly power exists.[350]

1. Price Discrimination for Ground Facilities

Several policies with respect to allocating ground facilities at high-density airports are necessary for the private party to eliminate airport congestion. First, eliminating the availability of long-term leases and majority-in-interest clauses is a requisite for creating more fluid entry and thus, increased competition.[351] Forcing airlines into short-term arrangements will produce a more flexible air transportation system that can adjust to rapidly changing demand.[352] Second, Congress needs to loosen the regulations that

346. This also avoids the critique that giving airport proprietors monopoly power will create an incentive to maintain congestion in order to avoid infrastructure developments to reap the economic rents. *See supra* note 325 and accompanying text.

347. Ronald J. Daniels & Michael J. Trebilcock, *Private Provision of Public Infrastructure: An Organizational Analysis of the Next Privatization Frontier*, 46 U. TORONTO L.J. 375, 394 (1996). Privatization is not simply the transfer of all ownership interest in the airport to the private sector; it may encompass many different forms, including a management contract, a government corporation, auctioning off a lease to the private sector for a specified term, or even a publicly-held corporation. *See also* Gresham & Busey, *supra* note 345, at 12 ("It can be as limited as so-called BOTs, arrangements under which a private entity *b*uilds, *o*perates for an extended period, and then *t*ransfers a particular airport facility to a public airport operator." (emphasis in original)); Betancor & Rendeiro, *supra* note 77, at 18–26.

348. *See infra* Part V.A.1.

349. *See infra* Part V.A.2.

350. *See infra* Part V.A.3.

351. *See* discussion *supra* Part IV.A.2 and accompanying text (discussing the problems arising from utilizing long-term lease arrangements).

352. In recognizing the need for solving the lease-arrangement problem, NextGen in its Concept of Operations considered another policy issue: "In the interest of efficient use of resources, should the Federal Government have a policy of encouraging flexible/common use gates over single-use gates at airports . . . ?" CONOPS, *supra* note 109, at D-3; *see also supra* note 261. Common-use facilities in theory could be effective, but in practice may prove difficult for implementation if the high transaction costs of continuous movement could be avoided. In addition, most airports schedule flights months in advance and any "flexibility" would have to account for these considerations

require airport proprietors to equate revenues with their costs of providing the airfield's resources.[353] The current price controls prevent excessive monopoly profits by forcing airports into reasonable investment returns and uniform cost allocation across all carriers.[354] But while regulation seems to ensure that the monopolists' profits are minimal, it allows for an "unknown extent of productive inefficiency."[355] Price controls create inefficiency losses, which result when "economic resources are directed away from [airlines] where those resources have the largest benefit . . . and toward [airlines] which value those resources less."[356] Because prices are a necessary mechanism to ensure "resources are used in the most economically efficient fashion,"[357] ground facilities should be charged based upon willingness to pay or expected profitability, commonly called "Ramsey pricing."[358] A pri-

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as well. Most importantly, at specifically high-density airports, flexible/common-use gate facilities must be supplemented with discriminatory pricing in order to control the level of demand.

353. *See supra* Part IV.A.1.

354. *See* Forsyth, *supra* note 253, at 21; *see also* Hoon Oum et al., *supra* note 274, at 218.

355. Forsyth, *supra* note 247, at 21. Airport services are generally generated through large fixed costs and very low marginal costs—the price of providing the service for one more airline or passenger. Because airports could not recover their costs if they charged the marginal cost of one landing operation (because the value is so low), the debate is how to allocate the large fixed costs airports assume. Current regulations are grounded in the idea of charging carriers the same portion of the airport's total costs, or average cost, known as uniform cost allocation. Illustrated by the concept of cross-subsidies, this regulatory policy is inefficient because costs are not allocated to the airlines based upon their economic value for the use of facilities. For instance, a certain airline that values facilities at a price above the average costs subsidizes the airlines valuing facilities below average cost. *See* Faulhaber, *supra* note 247, at 16. The result is a misallocation of resources because airlines do not pay in proportion to the economic value that they place on airport facilities.

356. Faulhaber, *supra* note 247, at 13 (arguing that price controls lead to efficiency losses). For instance, one carrier could barricade itself in the airport with long-term leases and have less economic value on the particular ground facilities it has while a potential outside entrant, who values it more and could utilize it more effectively, cannot enter. Ultimately, because rates are the same for carriers across the board and are not allocated to those that will extract the most production of them, there is a resulting economic loss. For further discussion on inefficient use of ground facilities, see *supra* Part IV.A.2.

357. Faulhaber, *supra* note 247, at 12.

358. *See supra* Part IV.A.1. The measurement of willingness to pay is, in economic terms, the measure of the airlines' demand elasticity for airport resources, referred to as Ramsey pricing. Roy Goldberg, *Will It Happen Again?—FAA's Disastrous Prior Experience with User Fees*, 71 J. AIR L. & COM. 37, 41 (2006); *see* SHARKEY, *supra* note 236, at 50. Based upon the problem discussed in note 355, Ramsey pricing attempts to spread these costs across users in a way that minimizes the economic loss of an imperfect situation. *See* Betancor & Rendeiro, *supra* note 77, at 27 ("[Ramsey pricing] suggests that when the marginal cost rule [that price should equate with marginal costs] does not allow enough revenue generation to cover costs, it would be more efficient to charge users according to their willingness to pay. . . . [T]his . . . avoids the utilization of cross-subsidies."). The FAA has only used Ramsey pricing one time when it began charging user fees for "overflights" by mainly international carriers in the late 1990s. Goldberg, *supra*, at 40–41. Although Goldberg is

vate operator will be more capable of determining the carrier's risk of failure, a reflection of each carrier's willingness to pay.[359] For instance, if an airline pays the maximum it is willing to pay for a gate facility, it is forced to extract all of the gate's potential value in order to recover its investment. In essence Ramsey pricing forces the airline to use the gate more efficiently than it had before. The loosening of limitations on discriminatory pricing and prohibiting long-term lease arrangements for ground facilities will enhance a private operator's ability to perfectly price discriminate, which "may be consistent with and even necessary to allocative efficiency" of airport resources.[360] This pricing structure ensures there is limited deadweight loss from the use of scarce airport facilities by forcing unprofitable and wasteful air carriers out of the system.[361]

Critics against using a different rate structure argue that airlines will raise their rates on passengers, effectively passing the costs of congestion onto consumers.[362] However, because airport costs are roughly five percent of airlines' total costs it would not be disastrous to raise rates on them. One study suggests that for every one percent increase in the price of airline tickets, more than one percent declines to buy tickets.[363] As a result, airlines will arguably internalize the rising costs and force reductions in other areas.[364] Alternatively though, decreased fuel costs from the implementation

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very critical in his article regarding Ramsey pricing, his criticism is derived from the questionable legal authority the FAA instituted the policy under, rather than the substance of the pricing itself. *See generally id.*

359. Charging each carrier by willingness to pay is based upon the theory of price discrimination. POSNER, *supra* note 160, at 291 ("A monopolist who does not face a danger of arbitrage is likely to fix different prices to different purchasers depending not on different costs of selling to them . . . but on the elasticity of their demands for his product. This is price discrimination."). In perfect price discrimination, the monopolist can charge each individual his or her maximum willingness to pay, extracting every individual's total welfare. IPPOLITO, *supra* note 235, at 173. However, to price discriminate, the airport 'must have some knowledge of consumers' willingness to pay and be able to prevent [sub-leasing]." WERNER Z. HIRSCH, LAW AND ECONOMICS: AN INTRODUCTORY ANALYSIS 288 (3rd ed. 1999). Because the monopolist would not allow sub-leasing of its facilities, airlines are forced to maximize the existing use of its rented facility. However, the degree of price discrimination will depend upon the monopolist's ability to determine willingness to pay. Thus, perfect price discrimination is arguably unrealistic because it costs the monopolist to segment the market and determine each carrier's willingness to pay. Depending on the value of these transaction costs, it may cut into the airport's ability to price discriminate effectively.

360. Posner, *supra* note 238, at 572.

361. *See* IPPOLITO, *supra* note 235, at 174 (discussing how price discrimination reduces the amount of deadweight loss from a particular transaction).

362. *See, e.g.*, Gresham & Busey, *supra* note 345, at 16 (discussing the airlines' argument against privatization and arguing that privatization provides decreased costs in other avenues such as landing fees).

363. AIRPORT PRIVATIZATION, *supra* note 257, at 46.

364. This is especially true for short-distance flights where demand is more price elastic. AIRSPACE REDESIGN, *supra* note 106, at 39 ("[D]emand for [air] travel over shorter distances and travel by nonbusiness travelers is price elastic."). Passenger rails tend to compete with short-distance flights such as New York to Washington, D.C. *Id.* at 40. Elastic demand means that for a

of NextGen may offset increased facility prices as well. But if for some reason the airline cannot handle the increased costs, any potential increases on passengers' rates would only be temporary because an entrant could come in and undercut them, assuming the barriers to entry are more fluid from privatization and short-term leases.[365] Nonetheless, there are several arguments supporting the notion that consumers would be minimally affected under Ramsey pricing.

Any concerns about potential collusion between the airport proprietor and an air carrier will be regulated by antitrust legislation.[366] Through modest disclosure requirements, the FAA could require that the private airport proprietors disclose their justifications for the charges upon airlines, creating a more transparent environment that would prevent anticompetitive behavior.[367] Ramsey pricing allows the airport proprietor to get the most profitable airlines within the first barrier to entry—ground facilities—and maximizes the economic value of these resources. Subsequently though, the

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one-percentage increase in the price of an airline ticket, the demand for air travel will decrease by more than one-percentage point. *See* IPPOLITO, *supra* note 235, at 59–61. Thus, price discrimination effects on air travel rates will depend in part on the distance of the flight.

365. The extra incentive to cut costs will also trigger a more competitive market between suppliers and air carriers, providing more growth in other avenues of the economy. The FAA has also long advocated that market-based mechanisms for use of facilities would incentivize airlines to use larger planes during peak hours to maximize the use of those time slots. REDUCING DELAYS FOR SUMMER, *supra* note 70, at 24.

366. The Sherman and Clayton Acts are the main authorities to regulate against this type of collusion. *See* Sherman Antitrust Act, ch. 647, 26 Stat. 209 (1890) (codified as amended at 15 U.S.C. §§ 1–7 (1976)); Clayton Antitrust Act of 1914, ch. 323, 38 Stat. 730 (codified as amended at 15 U.S.C. §§ 12–27; 29 U.S.C. §§ 52–53). Any contract between an airliner and the airport proprietor will be considered illegal, and the airliner and airport proprietor will be fined. *See* 15 U.S.C. § 1 (2006) ("Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and . . . shall be punished by fine . . . ."). For a discussion on antitrust policy and its affect on monopolistic behavior, see M.A. UTTON, MARKET DOMINANCE AND ANTITRUST POLICY 44–56 (2d ed. 2003).

367. This policy would be much more favorable than the antitrust laws that currently exist against publicly-run airports. Many local governments have the power to argue exemption from Section 1 of the Sherman Act under the "state action" doctrine from *Parker v. Brown*, 317 U.S. 341, 360 (1943). For this exemption to apply, the "challenged restraint must be one clearly articulated and affirmatively expressed as state policy," and this "policy must be actively supervised by the state itself." N.Y. Airlines, Inc. v. Dukes County, 623 F. Supp. 1435, 1451 (D. Mass. 1985) (internal quotation marks omitted). Airports will usually assert this claim when challenged by a carrier although it is not futile to an airline carrier's lawsuit. Goldberg, *supra* note 251, at 355. But even the potential exemption for public airports hampers airline-airport negotiations, another reason why private operators would be better suited.

airport proprietor must prevent these air carriers from scheduling amounts of flights exceeding the airport's practical capacity.[368]

2. Transparent Slot Auctions

Realizing that slots are seemingly unavoidable, the private operator will be responsible for configuring the optimal level of slots allowed per hour.[369] Assigning control to the proprietors, subject to extensive safety regulations, will allow them to set an efficient cap that helps meet their mandate of eliminating airport congestion.[370] The FAA's new role is to collaborate with the private airport operator in looking for ways to expand the number of slots per hour while the airport becomes responsible for administering a slot system.[371] Once the airport finds an optimal number of slots per hour, there must be a form of allocating them efficiently.[372]

The FAA's slot auction proposal and the airport proprietor's landing fees are duplicative—creating an ineffective system that is currently plagued by redundant fees and stale airline-airport contracts. Slot and landing fees need to be consolidated into one fee that will be determined through auctions

368. On the distinction between practical and saturation capacity, see discussion *supra* note 77.

369. *See supra* Part IV.B.1; Betancor & Rendeiro, *supra* note 77, at 34 (discussing how the first step in ensuring the efficient use of runway space during peak congestion hours is finding the optimal capacity level). One author noted that the entity responsible for finding the optimal amount of slots during a certain period of time will have to consider the following factors: weather, the various aircraft flying in and out at that time, and the frequency with which aircraft can move through the system. Levine, *supra* note 108, at 45.

370. There is some support for allowing a third-party regulator or independent authorities to determine the proper level of capacity for dealing with congestion, such as the EU's system. *See* Council Regulation 95/93, Common Rules for the Allocation of Slots at Community Airports, art. 6, 1993 O.J. (L 14) (EEC) 1 ("[T]he competent authorities shall determine the capacity available for slot allocation twice yearly in cooperation with representatives of air traffic control, customs and immigration authorities and air carriers using the airport . . . and the airport coordinator . . . ."); Betancor & Rendeiro, *supra* note 77, at 34 ("An alternative way [to find optimal capacity level] could be provided by a regulator that establishes the optimal level of capacity through a cost-benefit analysis that compares congestion costs against benefits arising from the availability of larger capacity."). However, an independent regulator would take away from the private operator's ability to deal with the problem of congestion. The operator needs to be encouraged to continuously adjust for the proper level of capacity as the weather changes day-to-day and various other impediments arise on a weekly to monthly basis. Updating optimal capacity twice yearly, as the EU system does, does not create a flexible model that adjusts regularly for factors limiting or expanding capacity, nor does it consider changes in air travel demand. The private operator, especially under a mandate, is the most suitable for creating this agility.

371. For example, the implementation of NextGen is projected to bring capacity expansion amounting to thirty percent. Harrison, *supra* note 118, at 3C1-3; *see also* ConOps, *supra* note 106, at 2-26. Any additional slots created as a result of expansion will be added to the number of slots in the proposed auction.

372. Betancor & Rendeiro, *supra* note 77, at 34 ("Once optimal capacity has been determined, it has to be efficiently allocated. . . . [T]his consists of determining a price that equilibrates market supply and demand.").

held by the airport proprietor.[373] The new system will consolidate slot and landing fees into one transparent market. For instance, the airport could hold bi-monthly or quarterly auctions for the rights to takeoff or land at a certain time.[374] By requiring slot auction prices to be publicly listed, increased transparency of airport-facility markets will allow potential new entrants to gauge its costs more easily before entering the market. One possible argument against this potential "two-step pricing method" is that the airport extracts the airline's surplus twice instead of through only an initial charge for gate facilities. However, once airlines have obtained a gate/terminal space, the auction prices will simply reflect the remaining economic value an airline has allocated towards the use of all its necessary ground facilities.[375]

With increased amounts of short-term leases, constructing a more transparent market for airport facilities will increase competition for airport resources, and subsequently award them to the airline that can use them most effectively.[376] Not only does the consolidated pricing system allow a private

373. *See* IPPOLITO, *supra* note 235, at 176 (discussing how auctions "extract surplus from buyers in markets in which there is either one or just a few sellers").

374. The actual structure of the auction could have several different forms. In an English auction, the standard process begins with a seller having a reserve price that must be met, and the highest bidder above this reserve price obtains the slot. *See* Matthews & Menaz, *supra* note 324, at 6. In a Dutch auction, the seller begins with a high price and slowly lowers it until an airline buys the slot. *Id.* For a first-price sealed bid auction, each airline would submit a bid price, unknown to all other bidders, and the highest bid would win the slot. *Id.* A Vickrey auction is nearly identical to the first-price sealed bid auction, except that the highest bidder pays the price submitted by the second highest bidder. *Id.* at 7. Another consideration, as one author correctly points out, is that any slot allocation method may ultimately depend on the airport's environment itself, and attempts to find a universal or cure-for-all method should be avoided. *See* Shea, *supra* note 227, at 641.

375. The slot system compensates for the practical deficiencies accompanying the pricing method for gate facilities. *See supra* note 359 (arguing that airport proprietors cannot ever perfectly price discriminate nor determine exactly what an airline's elasticity of demand for facilities is because of the effects of transaction costs). For instance, suppose a profit-maximizing airline configures its budget, *A*, for airport facilities and slots. The pricing method for gate facilities will extract the value, *B*, from the airline, which will obviously be less than *A*. The residual between *A* and *B* will be the amount remaining for the airline to allocate towards slots. In effect, the slot auctions expose the airline's remaining surplus. Consequently, the "two-step pricing method" for facilities and slots perfectly exposes each carrier's economic value of facilities at the high-density airport, resulting in the near perfect allocation of resources. *But see supra id.* (discussing the effects of transaction costs on price discrimination).

376. The implementation of any peak-period pricing scheme for landing slots has also raised concerns about its effects on small communities. *See, e.g.*, Corbett, *supra* note 325; *see also supra* note 327 (discussing the priority exemptions given to small communities in Levine's auction proposal). The main argument is that increasing prices on landing for each slot will only incentivize airlines to fly the most profitable routes, which are unlikely to be to smaller communities. However, these concerns would likely be inflated given Secretary of Transportation LaHood's dedication to small

operator to manage its limited airport facilities efficiently, it is necessary for ensuring a reduction in airport congestion and airline over-scheduling. It does, however, raise the determinative question of monopolistic abuse.

3. Regulating Monopolistic Abuse

The main criticism against a "two-step pricing method" or similar pricing structure for ground facilities is that "allowing the unilateral imposition of congestion pricing would end the airlines' regulatory protection against the exercise of monopoly power by airport proprietors and would transfer revenue from airlines and their customers to airport proprietors."[377] The monopolist's potential for ignoring cost-reducing measures and enjoying the advantages of a "two-step pricing method" is the biggest legal issue facing airport privatization in the present time.[378] In any shift towards privatization of airport monopolies, there will always be some economic rents or monopoly profits.[379] Given these realities, the government needs to ensure monopolistic abuse is mitigated enough for the gains from eliminating airport congestion to outweigh any potential costs of monopoly behavior.

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communities. *See Nomination of LaHood*, *supra* note 7 (describing how flights to smaller communities "can be an economic engine . . . . [I]t's an opportunity . . . for people in these communities to have service. And I will work very hard . . . to make this happen."). Under this consolidated-fee structure for slots, the airport proprietor could designate a certain percentage of the slots per hour and gate facilities to qualified "small-community" firms. Even though this author agrees with Levine that it would make the system less economically efficient, the practical reality of political constituencies can never be underestimated. *See supra* note 327 (discussing Levine's argument that exempting flights to smaller communities reduces economic efficiency of allocating airport resources).

377. King & Rabinovitz, *supra* note 224, at 23. The authors continue with another commonly cited argument: the transfer will leave airlines "without any assurance that capacity constraints would be addressed." *Id.* First, because the transfer of the monopoly power to the private sector is conditioned on eliminating congestion and NextGen is concurrently addressing increasing capacity as well, fear against congestion would be addressed. Second, the airport proprietor's ability to price discriminate arguably implies that it could charge above its fixed and variable costs of constructing additional infrastructure. Therefore, the monopolist's ability to use pricing as an allocation device also provides it with the incentive to invest in ground facilities and infrastructure because of the potential high returns.

378. *See, e.g.*, Burton, *supra* note 343, at 617–18 (discussing the potential for monopolistic abuse from airport privatization).

379. In a perfectly competitive market, monopoly profits are non-existent. *See* discussion *supra* note 235. However, this optimal configuration can never be obtained given the extensive social costs if airports were to be constructed in each municipality and tried competing with one another. As a result, monopoly power in the airport environment will never dissipate. Therefore, the goal then is to obtain the "second best" result, which attempts to determine the best policies that will "salvage as much social welfare as we can from a given situation." Levine, *supra* note 108, at 40. Therefore, efforts should be extended towards minimizing the level of these monopoly profits and using the resources as efficiently as possible. For an economic discussion of the "second best" theory, see R.G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11 (1956).

a. Modeling Privatization Welfare Effects

Modeling each actor's welfare effects can illustrate the government's trouble of eliminating airport congestion through privatization, and provides clearer guidance for dealing with the risk of monopolistic abuse. Suppose the private operator obtains the monopoly profits from the airlines, X,[380] through its "two-step pricing method," and eliminates the social costs of airport congestion, Z,[381] in accordance with its mandate. The result is a transfer of X from the airlines to the airports and an overall net societal benefit of Z and X.[382] Because every actor gains, social efficiency is clearly achieved by the transfer of the airport to the monopolist.[383] But one may perceive this transfer as unfair because "society"—including everyone *except* for the monopolist—must pay the value of monopoly profits, X, to the airport proprietor (through the airlines) in order to obtain gains from congestion relief, Z.[384] Therefore, public policy must encourage "fairness" by ensuring that socie-

380. From another perspective, these monopoly profits could be characterized as a "tax" on airlines for the increased capacity the government has created through NextGen which must be allocated. Also, because this raises prices on airlines in the value of X, any potential increase in prices on passengers would be included in this value. However, for purposes of the analysis, whether the costs are absorbed by the passengers or airlines is irrelevant.

381. The congestion, Z, is a value that is relatively ascertainable and for simplicity here, will remain constant because congestion costs are rather fixed in the short-term. But, Z arguably also includes the aforementioned privatization benefits, not only the gains from removing congestion. First, with each government action to reduce monopoly profits, the more competitive the airport proprietor will be and hence, the more long-run benefits. Second, fewer barriers of entry for airlines to enter the market will eventually allow low-cost carriers easier access, resulting in additional benefits for passengers.

382. Notice how the gain, Z, is predicated on the transfer of X from one actor to another. This transaction can either be classified as Kaldor-Hicks efficient or Pareto efficient. A Kaldor-Hicks efficient move is where a "party who gains can compensate the party that loses and still be better off from the move," while Pareto efficient allocation is a "trade that makes at least one party better off without making anyone worse off." IPPOLITO, *supra* note 235, at 72, 14. Arguably, society would be better off in a Pareto outcome because it would avoid the transaction costs associated with compensating the losing party. Here, the airport proprietor is clearly better off as a result of the move, but the remaining actors will only be better off if their gain, Z, is greater than or equal to their payment, X. Whether both groups are better off, and thus a Pareto efficient result, will depend on the values. But in the case they are not, there are redistributive mechanisms to ensure both parties are better off as a result of the transaction, a so-called Kaldor-Hicks efficient transaction. *See* discussion *infra* Part V.A.3.b.

383. *See supra* note 339 and accompanying text.

384. This conflict has largely been the conflict in law and economics theory today: the debate between efficiency and equity. Even though the overall benefits are achieved, placing a large percentage of the gains in the hands of one actor at the expense of others is simply not effective public policy. This is why additional policies are needed to effectively redistribute those gains more fairly. *See generally infra* Part V.A.3.b.

ty's gain, Z, outweighs its "fee," X, thereby making privatization the socially efficient outcome from congestion-dominated airports. With the added potential for abuse of monopoly power that could ultimately reduce society's gains, however, what policies could maximize Z by ensuring an airport proprietor's competitive-type behavior?[385]

b. Maximizing the Return on Privatization

Several policies are available for society in ensuring that its investment, X, will yield a far greater return in Z.[386] First, a tax on the profits of the monopolist in the form of a "surtax," at a rate of sixty or seventy percent for instance, could ensure that any monopoly profits would at least be limited by that respective amount.[387] Another possibility, and potentially the best solution, is for the state or local subdivision managing the airport to hold an auction, accepting bids for the airport's monopolizing capabilities. That way, for example, if the government finds the monopoly profits are worth the value of X, the company pays the government a fee, Y, for rights to collect the monopoly profits in its most efficient manner. The fee, Y, paid to the government would likely be high, such as sixty or seventy percent of X, acting in essence as another form of a tax.

Alternatively, the government could incorporate the airport and issue stock as a publicly-held company, subjecting it to numerous requirements and scrutiny that would allow it to be more transparent.[388] By allowing the

385. The ultimate result from monopolistic abuse without government redistributive mechanisms is that "the net proceeds from [such a system] . . . would generate far more revenue than is needed to cover the airport's capital and operating costs." Corbett, *supra* note 325, at 19. With increased levels of monopoly profits, the less competitive the monopoly will be, and hence, will have less incentive to innovate or compete to lower its costs, ending in a lower value for society in Z. The fears of monopolistic abuse and ignoring attempts to reduce costs may be overstated though. For instance, New Zealand does not impose price regulation on its corporatized airports, and as a result, the airports do not seem to be setting high prices for the use of resources. *See* Forsyth, *supra* note 253, at 24.

386. The important consideration when analyzing each policy is the level of transaction costs associated with the particular redistributive mechanism, which are the "time and out-of-pocket expenses incurred to accumulate and evaluate information and to effect the desired exchange." IPPOLITO, *supra* note 235, at 123; *see also supra* note 359 (discussing transaction costs in the context of price discrimination). Many times these costs are assumed to be zero, but they may have considerable weight in deciding which policy measure to pursue.

387. *See* Posner, *supra* note 238, at 566 (describing how monopoly profits can be addressed with "minor modification of the tax laws at less social cost than by a system of direct regulatory controls"). The suggestion is also in line with one of the goals of taxation in general, namely, applying a tax to one entity or individual in order to compensate another party that was worse off from a particular transaction. POSNER, *supra* note 160, at 511–13 ("Taxation is sometimes a method of regulation, intended to change the allocation of resources . . . or the distribution of wealth . . . .").

388. The structure of the publicly-held airport corporation could be effective as well. Only the original owners of stock will benefit from the monopoly profits because the price of the stock, when it is issued, will immediately reflect the future monopoly profits. *See* Posner, *supra* note 238, at 573.

local government to retain a minority stake in the airport and have individuals on the board of directors, both the cities' and passengers' interests in ensuring fairness may be heard.[389] Similar to the example above, the government could tax, through a surtax, the dividends of the corporation, in effect acting as a redistributive income mechanism.[390] Lastly, there has been a rise of secondary airports in the main regions where high-density congestion is occurring.[391] This competition could lead to a decrease in the amount of monopoly profits the airport can obtain.[392]

Altogether, the prescribed policies create two benefits from the monopoly abuse problem. First, they act as a redistributive measure of the monopolist's eventual profits—which were discriminatorily taken from airlines—in order to restore fairness to the two-step pricing method. Second, it would force private operators to act more efficiently and implement cost-reducing measures in order to profit-maximize and recoup the windfall they lost to the government. By minimizing the potential for monopolistic abuse, transferring interests in high-density airports to the private sector will provide aggregate benefits to society in terms of social efficiency. However, Congress must first address the current federal laws governing airport privatization that are insufficient to yield the potential benefits described.

The corporate form also could subject the airport to a take-over if clear abuse of the airport is being done or for many other reasons.

389. A good example of this corporate form is the New Zealand privatization effort. *See* Forsyth, *supra* note 253, at 20. Privatized airports in New Zealand are not subject to price controls and are incorporated, with a minority-stake of the company belonging to the local government. *Id.* at 20–24. The business organization can generally provide government stakeholders with continuous interests in the airport while allowing the private sector to manage and profit from its operations. However, it is important to note that these are not capacity-constrained airports, limiting the airport as a basis for comparison. *Id.* at 20.

390. *See supra* note 387.

391. *See, e.g.*, Elsa Brenner, *The Future? It's Stewart Airport*, N.Y. TIMES, Dec. 9, 2007, § 11, at 9, *available at* http://www.nytimes.com/2007/12/09/realestate/09wczo.html?ex=1354856400&en=1ed2b74674ac3198&ei=5088&partner=rssnyt&emc=rss (discussing the Port Authority of New York and New Jersey's acquisition of Stewart International Airport for $78.5 million in a 93-year lease, which will be added to the other three airports they operate: LaGuardia, Newark, and JFK).

392. Although airports can compete with one another to reduce the potential monopoly profits, adding airports might increase air traffic congestion in the same region. Therefore, though expanding ground facilities to accommodate additional carriers wanting access assists in demand management, it may have subsequent effects in adding congestion to the airspace in that region.

B. *Legal Hurdles: The Problematic Pilot Program*

In 1996, Congress began a privatization pilot program through the Federal Aviation Reauthorization Act of 1996.[393] Under the program, only five airports across the nation are allowed to be privatized, and only one may be a larger hub airport.[394] The transfer of an airport interest to the private sector may only be done through a lease unless it is only used for general aviation purposes.[395] The eventual private operator, the lessee, will then be exempt from several requirements, including the regulation to use airport revenues for only "capital or operating costs of the airport."[396] However, the airport revenues may only be used for non-airport purposes "to the extent necessary . . . to earn compensation from the operations of the airport."[397] If a local government decides to lease its airport, it must first file a preliminary application with the FAA relating to objectives, timetables, and other financial documents.[398] If accepted, the final, rather rigorous, in-depth application

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393. Federal Aviation Reauthorization Act of 1996, Pub. L. No. 104-264, § 149, 110 Stat. 3213, 3224–27 (1996) (codified at 49 U.S.C. § 47134 (2006)). Historically, the United States has not allowed any state or local government to sell its airport by privatization, either by lease or outright. Burton, *supra* note 343, at 604. The only prior effort at privatization was a management contract between the British Airport Authority (BAA) and the Indianapolis Airport, but this was the extent of privatization. *Id.*; *see also* Busey & Gresham, *supra* note 345, at 14 (discussing several other cases of private contractors taking over retail concessions and other aspects of airport operations). The only way to privatize an airport by sale or lease in the United States is through the pilot program. *Id.*

394. 49 U.S.C. § 47134(b), (d)(2). A hub airport is considered any airport having one or more percent of the total passenger boardings in the preceding calendar year. § 47134(d)(2); *see also* § 47102(14)(A)–(B) ("[P]assenger boardings" mean "revenue passenger boardings in the United States in the prior calendar year" and "includes passengers who continue on an aircraft in international flight that stops at an airport in the 48 contiguous States, Alaska, or Hawaii for a nontraffic purpose."). In addition, one of the five privatized airports must be a general aviation airport. § 47134(d)(1). The FAA Reauthorization Act of 2007 tried to expand the number of allowable airports from five to fifteen, but the bill failed to pass. *See* S. 1076, 113th Cong. § 806 (1997). Of the five potential slots for privatization, the Stewart International Airport became the first airport to become privatized when SWF Airport Acquisition, Inc. obtained it under a 99-year lease agreement on April 1, 2000. Airport Privatization Pilot Program, 65 Fed. Reg. 24,251, 24,251 (Apr. 25, 2000). However, in 2007 the Port Authority of New York and New Jersey, which already managed LaGuardia, Newark, and JFK, obtained Stewart in an Asset Purchase agreement on July 17, 2007. *See* Brenner, *supra* note 391. As of January 2009, zero of the five slots are filled. Chicago's Midway Airport was in the process of being transferred to the private sector, but "collapsed earlier this year amid the credit crisis." Bob Sechler, *US Airport Executives Eye Privatization Amid Traffic Slump*, WALL ST. J., Oct. 13, 2009, http://online.wsj.com/article/BT-CO-20091013-711106.html; *see also* Airport Privatization Pilot Program, 73 Fed. Reg. 62,583, 62,583 (Oct. 21, 2008) (notice of receipt of application of Chicago Midway International Airport).

395. § 47134(a).

396. §§ 47134(b)(3), 47133(a)(1). The other exemptions include the requirement to pay back any grants or property received from the Federal government. § 47134(b)(2).

397. § 47134(b)(3).

398. *Status of Airport Privatization Efforts: Hearing Before the Subcomm. on Aviation of the H. Comm. on Transportation & Infrastructure*, 106th Cong. 31 (1999) [hereinafter *Status of Airport*

process is the most difficult stage. Upon receiving the final application,[399] the FAA will review it and determine if it meets the nine requirements set forth in § 47134(c).[400]

If approved, the proprietor remains bound by certain "regulations." First, the pilot program requires that the airport remain available for public use, and second, "every fee imposed on an air carrier will not [be allowed] to increase faster than inflation unless approved by sixty-five percent of the airlines."[401] Third, the "lessee will maintain, improve, and modernize the . . . airport."[402] Notice the main three terms of the transfer are not substantially

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Privatization Efforts] (statement of David L. Bennett, Dir. of Office of Airport Safety Standards, FAA) ("The preliminary application requires enough information to show that a sponsor is serious about a privatization project but also allows the sponsor to be sure of an opportunity to participate in the program before going through the process of negotiating and selecting a private operator."); Burton, *supra* note 343, at 608.

399. The final application must include several parts: the terms of the transfer, the private operator's qualifications, exemptions requested from the Federal government, a description of the airport's operations and maintenance after transfer, and sixty-five percent of the air carriers must approve the exemption to use revenue for non-airport purposes. Airport Privatization Pilot Program: Application Procedures, 62 Fed. Reg. 48,693, 48,706–08 (Sept. 16, 1997); *see also* Airport Privatization Pilot Program: Application Procedures, 62 Fed. Reg. 63,211 (Nov. 26, 1997) (amending the final application procedures).

400. § 47134(c). The legislative history provides background on how the DOT is likely to judge applicants:

> The Committee would expect DOT to exercise its discretion in this area judiciously and approve only those transactions where it finds that the sponsor and new owner have the interests of the airport and the aviation system in mind. . . . [S]everal factors for DOT to consider . . . include the commitment to safety and noise abatement of the new owner and an assurance of equal access to the airport. The bill does not require size or geographical diversity as factors for the Secretary to consider in selecting airports for participation in the program.

H.R. REP. NO. 104-714(I), at 27 (1996), *reprinted in* 1996 U.S.C.C.A.N. 3658, 3664. However, the DOT "carefully avoid[s] dictating how the privatization must be done and the structure of it is left to the sponsor and the private operator." *Status of Airport Privatization Efforts*, *supra* note 398, at 31.

401. § 47134(c)(1), (4). The term "air carrier" includes any air carrier serving the airport and "whose aircraft landing at the airport during the preceding calendar year had a total landed weight . . . of at least 65 percent of the total landed weight of all aircraft landing at the airport . . . ." § 47134(c)(4)(B). In the most recent FAA funding proposal, there is a provision that would increase the sixty-five percent requirement to seventy-five percent. Federal Aviation Administration Reauthorization Act of 2009, H.R. 915, 111th Cong. § 143(a) (2009). While it might be the intention to make the program more appealing for airlines, preventing proprietors from using pricing as a mechanism for deterring unprofitable airlines from high-density airports does nothing to alleviate congestion.

402. § 47134(c)(3). The other six terms and conditions are not necessarily applicable here. They include: airport will not approach insolvency or go bankrupt; safety and security will remain at the highest levels; environmental and noise concerns will be minimized; and any collective bargaining agreements will not be cancelled as a result of the lease. § 47134(c). Even after these conditions are met, the FAA must also "ensure that the interests of general aviation users of the airport are not ad-

different from the current regulatory structure governing publicly-operated airports.[403] The only significant difference is the ability of the private operator to retain its revenues for non-aviation purposes.[404] But as one author correctly notes, the last two requirements are contradictory and discourage infrastructural developments by limiting the airport from raising rates on airlines to achieve a return on its investment.[405] In addition, by empowering airlines during negotiations with airports, the latter is more likely to cave in to potential inefficient demands made by carriers.[406] Without bars on long-term leases, the private operator is also no longer forced to seek out potential entrants. Rather, the "sixty-five percent rule" encourages long-standing relationships and agreements with airlines, a major deficiency in promoting competition.[407] Without the ability to discriminate against air carriers in any form and efficiently limit those that access the airports' limited resources, regulation still prevails.[408]

To create a more flexible airport environment that supplements NextGen, Congress needs to amend the pilot program to include broader discretion for airport proprietors to charge based upon the carrier's economic value

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versely affected." § 47134(f). This requirement will need to be modified if privatization of high-density airports is to have any effect on airport congestion. Because these airports already cap the number of flights per hour, if they were privatized, the requirement supporting general aviation would not be met as general aviation pilots would be adversely affected from the capping rules. Additionally, as NextGen begins to be implemented, fewer general aviation aircraft are going to have the necessary technology on board in order to fly into the high-density airports, which would undoubtedly affect them as well.

403. *See supra* Part IV.A.1.

404. *See supra* text accompanying note 396.

405. Burton, *supra* note 343, at 609. This certainly will have an effect on the private operator's ability to successfully invest in modernization and infrastructural improvements to achieve the return it desires. *See Status on the Airport Privatization Efforts*, *supra* note 398, at 23 (statement of David C. Suomi, Vice Pres., BAA USA, Inc.) ("Any change to the pilot program . . . has to take into consideration how companies . . . would continue to invest in these types of projects because focusing on what types of returns we need, what types of investors we can attract to invest in infrastructure, it is important that these considerations be taken into any program . . . . "). Giving too much leverage to the airlines over these returns and financing considerations would deter any effectiveness of the pilot program.

406. *See Status on the Airport Privatization Efforts*, *supra* note 398, at 22 ("With the existing Pilot Program, the protection to the airlines is quite extreme, to the extent that you have to have 65 percent of the activity and 65 percent of the number of carriers to approve a decision to move forward and privatize the airport. [This does not] necessarily reflect[] the proper balance of interest in what should be a good faith negotiation on that decision."); *see also* discussion *supra* Part IV.A.2.

407. *See* discussion *supra* Part IV.A.

408. The rate regulation and discriminatory provisions are exactly what Congress wanted to maintain even though it implemented a privatization pilot program. As Congress indicated:

> The Committee recognizes that airport users may be concerned that an airport could use its monopoly power to increase their fees to unreasonable levels. Therefore, the bill includes provisions to ensure that no money can be diverted to the original owner and fees cannot be raised faster than the rate of inflation unless a super-majority of the airlines at that airport agree.

H.R. REP. NO. 104-714(I), at 26 (1996), *reprinted in* 1996 U.S.C.C.A.N. 3658, 3663.

of the airport's resources, a limit on long-term lease agreements, and the consolidation of slots-landing fees into periodic auctions. But these mechanisms should only be provided to the private operator if the airport qualifies as a "high-density airport," effectively limiting it to those where significant social benefits may be captured.[409] Therefore, by withholding these powers subject to the condition of eliminating airport congestion and the above-mentioned regulations on monopoly profits, airport privatization can provide substantial societal efficiency gains.[410]

C. A Bright Future for Privatization

Even beyond the potential congestion savings, several other reasons suggest privatization may be the appealing forecast for local governments. First, dozens of local governments are increasingly considering the sale of their airports in order to decrease growing budget deficits.[411] Second, with

409. As initially noted, the potential gains from high-density airports are substantial. At three New York region airports alone, the most recent estimate is at $2.6 billion this past year and up to $79 billion over the next eighteen years. *See supra* note 18.

410. Congress's only purpose in allowing airports to be privatized initially was to tap into additional funds, not necessarily to allow for rate discrimination or inaccessibility to any one user. *See* H.R. REP. NO. 104-714(I), at 25 (1996), *reprinted in* 1996 U.S.C.C.A.N. 3658, 3662 ("In the Committee's view, permitting airports to be privatized, either by sale or a long-term lease, could tap into additional sources of capital for infrastructure improvements. It could also lead to better management, improved customer service, and lower costs of operating at airports."); *see also Status of Airport Privatization Efforts*, *supra* note 398, at 40 ("[T]he original intent of the Pilot Program may have been a little bit too narrowly focused. It seemed to be driven almost exclusively by a desire for private sector investment at the airport to the extent that it did not recognize a lot of the other benefits that the private sector can bring to the airport . . . ."). The currently unexploited societal gains that could be captured from high-density airport privatization bring an added benefit and appeal that Congress never recognized when contemplating the pilot program in 1996. This time around, Congress cannot wait for flight delays to incur under NextGen in order to begin revising its airport privatization pilot program.

411. *See, e.g.*, *Officials Consider Privatizing Kansas City Airport*, MISSOURIAN, Feb. 25, 2009, http://www.columbiamissourian.com/stories/2009/02/25/update-officials-consider-privatizing-kansas-city-airport/ ("Local officials are considering a plan that would privatize Kansas City International Airport and bring in more than $1 billion for the city."); Eric Gershon, *Putting Bradley on the Block?: GOP Leaders Say It's an Idea Worth Considering in Difficult Economic Times*, HARTFORD COURANT, Feb. 19, 2009, at A17 ("[L]eaders in the state legislature have suggested selling Bradley International Airport in Windsor Locks to a private owner to raise money for the state treasury . . . . Airport officials . . . gave an off-the-cuff market value for Bradley of less than $1 billion . . . ."); Chris Steller, *Airport Privatization Set to Take Off at Legislature; MAC-Delta Deal Grounded*, THE MINN. INDEP., Jan. 7, 2009 ("[I]n the legislative session . . . , elected representatives will take up schemes to make money through airport privatization inspired by a lucrative, 99-year deal at Chicago's Midway Airport."); Dan Weikel & Louis Sahagun, *Long Beach Takes Airport Issue Private*, L.A. TIMES, Jan. 6, 2009, at B3, *available at* http://www.latimes.com/news/printedition/california/la-me-airport6-2009jan06,0,2935554.story ("Privatizing government-owned assets, such as utilities,

the federal government about to make a multi-billion dollar investment in NextGen,[412] an airport's economic value to the private sector will rise significantly, making the sale even more lucrative for governments looking for corrective budget solutions.[413] Finally, unlike the FAA's trembling slot debacle, Secretary of Transportation Ray LaHood has urged for "the private sector [to have] a bigger role in rebuilding the nation's aging . . . infrastructure,"[414] which could provide help in reprising answers for congestion relief. But without any reforms to the current pilot program, the optimistic outlook could end hollow and ineffective.

VI. CONCLUSION

The nation's air transportation system is nearing insolvency, and with air traffic expected to double or triple in the next fifteen years, the government's attempts to create a more efficient system will have increasing impact. The FAA and local governments' bifurcated approaches in managing airport congestion and fueling competition in the aviation industry have had minimal effect. Congress's ambitious efforts to assist through the implementation of NextGen will promulgate much-needed capacity in many of the nation's airports. However, the FAA's liability-escape maneuvers—throwing the "discretionary function" flag—do not maximize the potential

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bridges, roads and airports, is being touted by supporters as a way for many local and state governments to raise money for new projects or to help solve growing budget deficits caused by the economic recession."); *Fielkow: Airport Privatization Option Worth Considering*, NEW ORLEANS CITY BUS., Nov. 19, 2008, http://neworleanscitybusiness.com/uptotheminute.cfm?recID=21573 ("[E]xtra money from privatization could be a boost for the city budget and areas in need of additional investment. He didn't endorse privatization, just acknowledged it as an option to weigh. Regional business leaders have also raised the potential of a state takeover in exchange for redevelopment funds."). Despite the recent collapse in the privatization effort of Chicago's Midway Airport—which planned to fetch $2.5 billion for a 99-year lease—many cities are still likely to consider the transition towards airport privatization. Sechler, *supra* note 394. With airlines cutting services overall and airport revenues steadily declining, "some airport executives said they see little choice for the industry as a whole but to look at innovative measures such as privatization . . . ." *Id.*

412. The JPDO has estimated the costs of the transformation from fifteen to twenty-two million dollars. TRANSITIONING TO NEXTGEN, *supra* note 71, at 3; *see also* Pogue, *supra* note 118.

413. The most obvious example of increasing airport value from NextGen is the increased levels of profits for airport proprietors. Current landing operations exhibit economies of scale, meaning that "as an airport increases its traffic, the cost per unit of traffic declines." Betancor & Rendeiro, *supra* note 77, at 9. The fundamental result from NextGen is increased traffic and more landing operations, which translate into lower costs for the airport and higher profit margins. This result could create concerns for the federal government that may not particularly want its investment to merely increase the profit earned by local governments in the sale of its airports. In essence, the NextGen project could lead to value accession that acts as a grant to local governments.

414. Christopher Conkey, *Nominee for Transportation Dept. Urges Role for Private Sector*, WALL ST. J., Jan. 21, 2009, http://online.wsj.com/article/SB123258590996404577.html?mod=dist_smartbrief. The arrival of Secretary LaHood could also bring in more public-private partnerships, which he and Congress believe will be influential in the future of infrastructure development. *See Nomination of LaHood*, *supra* note 7.

safety and flexibility needed throughout the airspace system. Without accountability reform within the FAA and ATO, the revolutionary system will fall behind immediately after it clears the starting gates.

Even with the proper adjustments to NextGen, a system with the cost of nearly twenty billion dollars in the end still misses the mark in dealing with the core problem: congestion at high-density airports. If the current airport policies are not addressed, the multi-billion dollar taxpayer investment will fail to solve those costly and irritating flight delays. As the social costs proliferate from misallocating valuable airport facilities, a relatively unknown and underutilized privatization pilot program becomes more appealing—and against much opposition, necessary.

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Appendix: Acronyms

4DT	4D Trajectory Flight Path
AAIA	Airport and Airways Improvement Act
ACARS	Aircraft Communication Addressing and Reporting System
ADA	Airline Deregulation Act
ADF	Automatic Direction Finder
ADS-B	Automatic Dependent Surveillance—Broadcast
AOPA	Aircraft Owner and Pilot's Association
ARTCC	Air Route Traffic Control Center
ASDE-X	Airport Surface Detection Equipment, Model X
ATA	Airline Transportation Association
ATC	Air Traffic Control
ATM	Air Traffic Management
ATO	Air Traffic Organization
BAA	British Airports Authority
CAB	Civil Aeronautics Board
CLEEN	Continuous Lower Energy, Emissions, and Noise Program
CWP	Corporate Maintenance Philosophy
DME	Distance Measuring Equipment
DOT	Department of Transportation
DRVSM	Domestic Reduced Separation Minimum
EOVM	Emergency Obstruction Video Map
EU	European Union
FAA	Federal Aviation Administration
FAC	Federal Aviation Commission
FAR	Federal Aviation Regulations
FMS	Flight Management System
FTCA	Federal Tort Claims Act
GAO	U.S. Government Accountability Office
GPS	Global Positioning Satellite
HDR	High-Density Rule

IAP	Instrument Approach Procedure
IFR	Instrument Flight Rules
ILS	Instrument Landing System
JFK	John F. Kennedy International Airport
JPDO	Joint Planning and Development Office
LAAS	Local Area Augmentation System
LOC	Localizer
MSL	Median Sea Level
NAS	National Airspace System
NRP	National Route Program
NEO	Network-Enabled Operations
NNEW	NextGen Network Enabled Weather
NTSB	National Transportation Safety Board
NYA	New York Air
PBO	Performance-Based Organization
PFC	Passenger Facility Charges
PIC	Pilot-in-Command
RCM	Reliability Centered Maintenance
RNAV	Area Navigation
RNP	Required Navigation Performance
RTCA	Radio Technical Commission on Aeronautics
SATS	Small Aircraft Transportation System
SESAR	Single European Sky Air Traffic Management Research
SM	Separation Management Process
SSR	Secondary Surveillance Radar
SWIM	System-Wide Information Management
TARDIS	Terminal Automated Radar Display and Information Systems
TBO	Trajectory-Based Operations
TCAS	Traffic and Collision Avoidance System
TM	Trajectory Management
TSA	Transportation Security Administration

TWA	Transcontinental and Western Air
USATSC	United States Air Traffic Services Corporation
VFR	Visual Flight Rules
VOR	Very High-Frequency Omni-Range
WAAS	Wide Area Augmentation System