# Aviation Aff --- NUDI Seniors

## \*\*1AC\*\*

### 1AC – Air Traffic Control Advantage

#### Contention 1: Air Traffic Control

#### Recent FAA reauthorization non-uniques disads but was insufficient to resolve air traffic control problems

Poole 12 (Robert, Searle Freedom Trust Transportation Fellow and Director of Transportation Policy, “Air Traffic Control Reform Newsletter #90 – FAA reauthorization, aviation emissions trading war, ATC user fees, Europe's next-generation milestones, ERAM woes and FAA shortcomings”, February 24, <http://reason.org/news/printer/air-traffic-control-reform-news-90>)

After 23 extensions since the nominal expiration of the last FAA authorization (Sept. 30, 2007), Congress finally enacted and the President signed the bill. Despite some blather by politicians about how the bill opens the door to ATC modernization by fully funding NextGen, the bill does nothing of the kind. In fact, it freezes for four years the FAA budget account (Facilities & Equipment) from which NextGen projects (and a lot of other capital expenditures) are paid for. All the other main accounts are also frozen for four years—airport grants (AIP), operations (mostly payroll), and research (tiny), making this the first FAA reauthorization ever that does not increase spending.¶ Actually, however, the impact is worse than flat. That’s because the largest budget category, the $9.6 billion per year Operations account, almost certainly will not remain at that level during the four-year period. Doing so would mean violating the terms of the FAA’s union contracts, which provide for annual increases in compensation. Hence, when Congress each year gets around to appropriating the money for FAA, if it sticks with the overall $15.9 billion per year FAA budget total, something else will have to be cut if Operations goes up each year. It won’t be AIP, because that is the one category that is on the “mandatory” side of the budget. The Research account is too small to matter. So the account that takes the hit will be—you guessed it-- Facilities & Equipment (a.k.a. NextGen). Just to illustrate the magnitudes, assume the Operations budget increases by 5% in each of FY2013, 2014, and 2015. By FY2015, it would have increased from $9.653 billion to $11.174 billion, and the four-year difference would be $3.024 billion. Subtracting that from the budget’s four-year total for F&E ($10.906 billion) would reduce F&E to $7.872 billion over four years. So FAA would have to defer some $3 billion of F&E projects into future years, further stretching out the transition to NextGen. (And this example ignores the possibility of across-the-board cuts in all federal discretionary spending as a future deficit-reduction measure.)

#### Air traffic will double by 2025 bringing a total system collapse absent ATC upgrades

Williams 9 (Genevra, J.D. Candidate at Southern Methodist University Dedman School of Law and B.B.A. from the University of Iowa, “GPS For The Sky: A Survey of Automatic Dependent Surveillance-(ADS-B) and its Implementation in the United States”, Journal of Air Law and Commerce, Spring, 74 J. Air L. & Com. 473, Lexis)

DESPITE ALL of the modern technological advances that everyday consumers enjoy, the United States' air traffic infrastructure is relatively antiquated. A typical college student very well may carry a cell phone with a broadband internet connection, email, a camera, and Global Positioning (GPS) technology, 1 and yet air traffic controller technology is so basic that it can only get an accurate read on an aircraft's position once every six to twelve seconds. 2 "Your child's Xbox video game system is more advanced than the air traffic control system that has been guiding aircraft in and out of increasingly crowded airspace since the 1950s." 3 Demand for air travel is on the rise. The Federal Aviation Administration (FAA) expects passenger traffic to double by 2025, and the World War II-era radar technology that currently manages air traffic in the national air space (NAS) will be incapable of handling it. 4 The ineffectiveness [\*474] of radar impacts air safety, 5 air capacity, and the environment. 6 The solution is Automatic Dependent Surveillance-Broadcast (ADS-B), the central component to the U.S. government's planned overhaul of the entire aviation infrastructure. 7 ADS-B promises to improve safety by allowing aircraft to be precisely and continuously located in the sky, both by air traffic controllers and by other aircraft. 8 This greater precision in air traffic monitoring may lead to improved air capacity by allowing planes to takeoff, fly, and land in tighter formation and in a greater range of weather conditions. 9 This, in turn, will lead to less fuel waste and, consequently, fewer emissions polluting the environment. 10 These benefits have already been proven in both passenger and cargo aircraft, and today we stand at the brink of mandatory use of ADS-B in most U.S. aircraft. 11

This survey of ADS-B technology aims to give aircraft owners and their counsel a comprehensive understanding of current air traffic control challenges and of the FAA's push to implement ADS-B nationwide. Section I discusses today's problems with air traffic management and safety, how ADS-B could solve those problems, and the ways that ADS-B has already been deployed. The FAA expects aircraft passengers to double in the next twenty years. 12 The environment in which our current radar technology operates is chaotic, at best. Air traffic congestion problems are compounded by runway shortages. 13 Air traffic [\*475] controllers, who are stretched thin 14 and embroiled in a bitter labor dispute, 15 rely on World War II 16 radar technology that is simply not equipped to handle such an increase. 17 By utilizing ADS-B, the aviation community can improve situational awareness both on the ground and in the cockpit, increase air capacity, 18 and improve safety. 19 Additionally, this improved efficiency may reduce fuel consumption and consequently reduce greenhouse gas emissions. 20 These benefits have already been demonstrated in Alaska, where there has been a forty-seven percent drop in fatal accidents among aircraft equipped with ADS-B, 21 and at United Parcel Service (UPS), which has enjoyed an increase in flight efficiency and a reduction in fuel costs. 22 Section II discusses ADS-B in the context of the FAA's much larger program to overhaul all aspects of the aviation infrastructure. The project, called Next Generation Air Transportation System (NextGen), aims to transform the aviation infrastructure by integrating all parts of air transportation into a unified information system. 23 Because it will bring air traffic surveillance into the 21st century and provide substantial improvements to the accuracy of air traffic monitoring, ADS-B is a key piece of the broader NextGen program. 24 However, the FAA's poor track record with modernization 25 and an uncertain funding [\*476] future for the FAA 26 mean that NextGen's success is less than certain. At a minimum, it is likely that the ADS-B portion of NextGen will be funded and implemented. Section III analyzes the FAA's proposed regulation to require ADS-B in most U.S. aircraft by 2020. The proposed rule, first released in October 2007, was met with an overwhelming volume of comment and criticism. 27 In response, the FAA convened a panel of stakeholders who analyzed and synthesized the comments into thirty-six recommendations. 28 The panel's recommendations cover a very broad range of topics. 29 Section III focuses on three of their key concerns, including congestion on the radio frequency over which ADS-B will operate, 30 a weak business case for adoption by the general aviation community, 31 and the need for the FAA to develop incentives which will encourage early, voluntary adoption of ADS-B. 32 The Aviation Rulemaking Committee's (ARC) recommendations are discussed with an eye towards how the final rule might be impacted or altered by the feedback. 33 And finally, Section Three discusses the new administration of President Barack Obama, and his newly appointed Secretary of Transportation Ray LaHood. 34 This section makes inferences about how President Obama's nascent administration may impact the ADS-B mandate and whether there will be funding for the program. Based on the Secretary's testimony during his confirmation hearing, 35 and based on the fact that installation [\*477] of the ground system is already in progress, 36 one can be optimistic that funding for ADS-B will be supported by his department.

I. A STORM IS BREWING: CROWDED SKIES, RUNWAY SHORTAGES, AND A LABOR CRISIS PUSH THE U.S. AVIATION INFRASTRUCTURE TO THE BRINK OF BREAKDOWN

Delays at the airport have been the media story de jure for the past two years, 37 but the issues that challenge the most basic components of the U.S. aviation infrastructure are no passing problem. The number of aircraft passengers is expected to double by 2025 - up from 740 million today. 38 This will be fueled both by an increase in commercial aviation passengers and in the number of private aircraft. 39 Huge technological improvements are happening in the realm of private air travel; expansions in the charter plane and fractional ownership sectors have made private flight easier and dramatically more affordable. 40 While this is great news for consumers, it will further tax an already stressed air traffic control system. 41 "A shift of 2 percent of today's commercial passengers to very light jets that seat 4-6 passengers would result in triple the number of flights necessary [\*478] to carry the same number of passengers." 42 "The current system cannot handle the projected traffic demands expected by 2015. Absent modernization, the consequences will be a total system collapse." 43

#### Next Generation air transportation’s key—modernizes traffic control and bolsters US economic recovery

JPDO 7 “Business Case for the Next Generation Transportation System”, 8/24, <http://www.jpdo.gov/library/nextgen_business_case_ver_1.pdf>

The Aviation Industry is Critical to the U.S. Economy: The aviation industry contributes ¶ approximately $640 billion to the U.S. economy—or 5.4 percent of the U.S. gross domestic ¶ produce (GDP)— and accounts for more than 9 million jobs¶ 1¶ and about $314 billion in wages.¶ 2¶ The industry is one of the strongest contributors to the U.S. trade balance, as represented by net ¶ aerospace exports that totaled more than $36 billion in 2005. Aerospace is also the third largest ¶ U.S. export category and one of the few in which the U.S. has a trade surplus.¶ 3¶ Air Traffic Control Problems Becoming Acute: The current air traffic system was built on ¶ technology that has reached the limits of its ability to handle more traffic. The current system is ¶ based on a foundation of technologies developed as far back as the 1940s and 1950s, and many ¶ of these systems have far exceeded their original life expectancy. ¶ Fundamental Change in Air Traffic Control is Needed: While the current national airspace ¶ system (NAS) is safe and resilient, demand is now exceeding capacity in several areas of the ¶ country and forecasts indicate a doubling to tripling of demand by 2025. The Federal Aviation ¶ Administration (FAA) has implemented a spectrum of technology upgrades and procedural and ¶ airspace changes to maximize the use of available capacity. However, modernization programs ¶ that are primarily intended for “technology refresh” have reached the point of diminishing ¶ returns. A continued proliferation of patchwork upgrades to an already fragmented system ¶ simply cannot accommodate the exponential growth in air travel expected over the next 20 ¶ years—nor can it accommodate the evolving safety, security, environmental, and national ¶ defense objectives. For example, congestion already exacts a toll of $9.4 billion per year due to ¶ passenger delays¶ 4¶ , and that number could grow to $20 billion by 2025. For airlines, we estimate ¶ a $2 billion profit loss—funds that could otherwise be used for future fleet modernization and¶ expansion. ¶ ¶ A complete transformation of our nation’s air transportation system is needed to facilitate the ¶ expected growth of the aviation transportation market and accommodate emerging industry ¶ trends and business models that are so vital to the U.S. economy. The Next Generation Air ¶ Transportation System (NextGen) will establish a scalable, flexible air transportation system that ¶ can adapt to market demands and provide an evolutionary pathway to a revolutionary future. The ¶ Joint Planning and Development Office (JPDO), created by Congress to coordinate the ¶ development of NextGen, has made significant progress in defining NextGen as embodied by: ¶ (a) the NextGen Concept of Operations (ConOps) that describes essential capabilities, (b) the ¶ NextGen Enterprise Architecture that provides a set of blueprints describing the state of NextGen ¶ in 2025 and how the enabling capabilities fit together, and (c) the NextGen Integrated Work Plan ¶ (IWP) that provides a more detailed framework for system requirements development, ¶ management, and implementation. ¶ Plan to Transition to Next Generation Air Traffic System: An essential risk management ¶ element of the IWP is the detailed definition of a transformational pathway for NextGen implementation through stages that we refer to as epochs. Epoch 1, Foundational Capabilities ¶ (2007-2011), focuses on the development and implementation of mature foundational ¶ technologies and capabilities—and is well underway. Investments during this phase include the ¶ development and purchase of physical infrastructure and equipment to support systemwide use ¶ of digital communications, networking, and avionics. Epoch 2, Hybrid System (2012-2018), ¶ builds on this foundation and enables the aviation and aerospace industry to grow in response to ¶ market conditions and passenger demands rather than reacting to NAS constraints. Delivering ¶ specific NextGen capabilities during this second phase establishes the automation and ¶ procedures required to allow pilots to start playing a more active role in the system through selfseparation, merging, and passing. Epoch 3, NextGen Operations (2019-2025), represents the ¶ expansion of NextGen capabilities into a nationwide system—resulting in a cohesive architecture ¶ that allows aviation services to be adapted and tailored to accommodate varying operational ¶ needs and demand profiles. In this final epoch, the system’s physical transformation is ¶ completed, and the phase-out of outdated infrastructure is finished. As new partnerships, service ¶ delivery, and business models emerge, air transportation completely evolves beyond the NAS ¶ into an adaptable, scalable, and sustainable aviation system. ¶ Benefits of a NextGen System: Preliminary benefits analyses indicate that NextGen capacity ¶ increases could yield economic growth of as much as $175 billion through 2025.¶ 5¶ These benefits ¶ are not achievable without investments by the government and industry. Initial estimates of the ¶ FAA investment required to achieve the NextGen benefits is estimated at $15 billion to $22 ¶ billion through 2025.¶ 6¶ Preliminary estimates for the collateral investments required from the ¶ aviation industry are projected to be $14 billion to $20 billion over this same timeframe.¶ 7¶ With such substantial benefits to the nation, it is clear that the investment in NextGen is both ¶ necessary and worthwhile. In addition to NextGen’s economic impact, NextGen enables other ¶ enduring benefits that are more difficult to quantify—environmental improvements, safety ¶ enhancements, and national security and defense benefits. The investment requirements and ¶ benefits presented in this business case assume that NextGen capabilities will be developed, ¶ delivered, and financed under a business model similar to the current model used by FAA to ¶ manage the NAS. The JPDO will continue to refine NextGen benefit and cost estimates to ¶ develop implementation strategies that maximize economic value and minimize implementation ¶ risks.

#### It’s reverse causal – ATC failure collapses the global economy – NextGen solves

AIA 11 (Aerospace Industries Association, “Civil Aviation – Second to None”, http://www.aia-aerospace.org/assets/ip\_civil\_2011.pdf)

ISSUE: **The U.S. civil aviation industry plays a vital role in the health of the world’s economy**. BACKGROUND The most **recent data show** that the sale of **goods and** services tied directly or indirectly **to civil aviation constituted $1.3 trillion, or** about **5.6 percent of** the nation’s total **g**ross **d**omestic **p**roduct in 2009. **Our industry** directly and indirectly **sustains** nearly **12 million jobs**. The **U.S. aerospace** industry **remains the single largest contributor to** the nation’s **balance of trade**, with $87 billion in exports and a $57.4 billion trade surplus in 2011. The global recession of the past few years has reduced demand for leisure and business travel and the shipment of just-in-time goods. Many of our nation’s aging **aviation infrastructure limitations have been masked by the economic slowdown. Delays are down**; aircraft CO2 emissions are 10 percent below 2005 levels. **Yet**, our 1960s-era air traffic **control system will not be able to handle demand when it returns. Unless we invest in sorely needed transformational aviation infrastructure now, civil aviation generated economic growth will be stunted and the economic cost of system delay will likely eclipse $40 billion annually by 2012**. FAA has already invested more than$3 billion in the Next Generation Air Transportation System and plans to spend up to $20 billion more. The contract to install ADS-B ground stations throughout the country is on time and on budget and should be completed by 2013. The **economic** and environmental **benefits of NextGen**, when fully implemented, **are impressive. Routing and delay-reducing efficiencies will save billions of dollars annually and save more than a billion gallons of fuel**. Those are conservative estimates which will provide an economic return on government investment in less than three years and will be the environmental equivalent of removing 2.2 million cars off the road. The global aviation industry has committed to improve overall fuel efficiency by 1.5 percent per year through 2020; achieve carbon neutral growth from 2020; and cut aviation’s net CO2 emissions in half by 2050 compared to 2005 levels. One of the biggest impediments to confidence in the country’s commitment to implement NextGen expeditiously is that our National Airspace System has been operating without an updated program and funding authority (a FAA Reauthorization Bill) for nearly four years. This unprecedented delay in modernizing the statutes that govern the oversight and operation of the most complex aviation authority in the world has had numerous deleterious effects. New starts are prohibited. Programs are not anchored to long-term financial authority. And new concepts and technologies such as unmanned aircraft systems are held back while other nations march forward. AIA RECOMMENDATIONS Like our national defense, funding for the safety and efficiency of our nation’s aviation infrastructure should never be shortchanged. The safe and fiscally sensible course of action is to accelerate, not delay, the **implementation of NextGen. By doing so, we** invigorate the economy, generatejobs, save fuel, reduce CO2 emissions and, most importantly, **improve system safety**. To do this most effectively, AIA recommends that: The Transportation Department swiftly review and implement the 23 recommendations of the Future of Aviation Advisory Committee; Congress pass a multi-year FAA Reauthorization Bill as soon as possible; and Congress ensure NextGen implementation stays on schedule by fully funding FAA’s capital and RE&D accounts.

#### Extinction

Kemp 10 (Geoffrey, Director of Regional Strategic Programs – Nixon Center and Former Director of the Middle East Arms Control Project – Carnegie Endowment for International Peace, The East Moves West: India, China, and Asia’s Growing Presence in the Middle East, p. 233-234)

The second scenario, called Mayhem and Chaos, is the opposite of the first scenario; everything that can go wrong does go wrong. The world economic situation weakens rather than strengthens, and India, China, and Japan suffer a major reduction in their growth rates, further weakening the global economy. As a result, energy demand falls and the price of fossil fuels plummets, leading to a financial crisis for the energy-producing states, which are forced to cut back dramatically on expansion programs and social welfare. That in turn leads to political unrest: and nurtures different radical groups, including, but not limited to, Islamic extremists. The internal stability of some countries is challenged, and there are more “failed states.” Most serious is the collapse of the democratic government in Pakistan and its takeover by Muslim extremists, who then take possession of a large number of nuclear weapons. The danger of war between India and Pakistan increases significantly. Iran, always worried about an extremist Pakistan, expands and weaponizes its nuclear program. That further enhances nuclear proliferation in the Middle East, with Saudi Arabia, Turkey, and Egypt joining Israel and Iran as nuclear states. Under these circumstances, the potential for nuclear terrorism increases, and the possibility of a nuclear terrorist attack in either the Western world or in the oil-producing states may lead to a further devastating collapse of the world economic market, with a tsunami-like impact on stability. In this scenario, major disruptions can be expected, with dire consequences for two-thirds of the planet’s population.

#### We have strong statistical support – their defense doesn’t account for global crises

Royal 10 (Jedediah, Director of Cooperative Threat Reduction at the U.S. Department of Defense, “Economic Integration, Economic Signaling and the Problem of Economic Crises,” in Economics of War and Peace: Economic, Legal and Political Perspectives, ed. Goldsmith and Brauer, p. 213-215)

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defence behaviour of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, on the systemic level, Pollins (2008) advances Modelski and Thompson's (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crises could usher in a redistribution of relative power (see also Gilpin, 1981) that leads to uncertainty about power balances, increasing the risk of miscalculation (Fearon, 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflict as a rising power may seek to challenge a declining power (Werner, 1999). Separately, Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remain unknown. Second, on a dyadic level, Copeland's (1996, 2000) theory of trade expectations suggests that ‘future expectation of trade’ is a significant variable in understanding economic conditions and security behaviour of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations. However, if the expectations of future trade decline, particularly for difficult to replace items such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crises could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states.4 Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write, The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict tends to spawn internal conflict, which in turn returns the favour. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other. (Blomberg & Hess, 2002, p. 89)Economic decline has also been linked with an increase in the likelihood of terrorism (Blomberg, Hess, & Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. ‘Diversionary theory’ suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a ‘rally around the flag’ effect. Wang (1996), DeRouen (1995), and Blomberg, Hess, and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states, due to the fact that democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States, and thus weak Presidential popularity, are statistically linked to an increase in the use of force. In summary, recent economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels.5 This implied connection between integration, crises and armed conflict has not featured prominently in the economic-security debate and deserves more attention. This observation is not contradictory to other perspectives that link economic interdependence with a decrease in the likelihood of external conflict, such as those mentioned in the first paragraph of this chapter. Those studies tend to focus on dyadic interdependence instead of global interdependence and do not specifically consider the occurrence of and conditions created by economic crises. As such, the view presented here should be considered ancillary to those views.

#### Independently, failing ATC wrecks US competitiveness and the aerospace industry—NextGen solves

Blakey 11 (Marion, president and CEO of the Aerospace Industries Association, "US Tech Lead in Jeopardy”, Aviation Weekly, EBSCO)

But with budget worries crowding out all other concerns in Washington these days, this legacy of public/private synergy is under siege. Proposals to slash aerospace and defense have put the choice starkly before Congress: Will we continue to invest in U.S. leadership, or consign aerospace to the list of great industries that America once led? Warning signs are everywhere. For the first time in 100 years, the U.S. has no new manned military aircraft in design. As countries around the world roll out advanced technologies like stealth jets, unmanned systems and next-generation air traffic systems, the risks of standing still are obvious. The story is no different in space and civil aviation. With the retirement of the shuttle, the U.S. will--for the first time in decades--lack the ability to put astronauts into space. Our air traffic control (ATC) infrastructure still uses 1960s-era radar technologies, causing delays and wasting millions of gallons of fuel each year. A U.S. pilot is likely to have a more advanced navigation system in his or her car, or phone, than in her airliner. Half of U.S. aerospace engineers are eligible to retire come 2015. America is simply not producing enough engineers to replace them and the cost if this "intellectual disarmament" continues unchecked will be enormous. Most seriously, widespread layoffs are devastating our high-skill workforce--putting a strategic asset at risk. Shuttle commander Mark Kelly recently summed up the risk: "People leave, engineers and operations people will move on. . . . It is the corporate memory that I think I am most worried about." While aerospace and defense remain strong for now, we need to act if we want to stay on top. First, we need to commit to responsible levels of research and procurement. Congress has been diligent in funding ongoing operations, but modernization has not kept up. And, deep cuts to advanced research and space are under way--more than $2 billion in research plus $600 million in national security space cuts in recent House appropriations bills alone. The U.S. must also upgrade its obsolete ATC system. Just as the interstate highway investments led to decades of broad-based growth across the entire economy, the next-generation air traffic system will shrink delays and ensure that air travel continues to connect our people and drive innovation and growth.

#### That’s key to maintaining hegemony

**Walker et al 2** (Robert Walker is Chair of the Commission on the Future of the United States Aerospace Industry Commissioners, Buzz Aldrin, Ed Bolen, John Douglass, Neil Tyson, Heidi Wood, John Hamre, William Schneider, Robert Stevens, Tom Buffenbarger, Whitten Peters, Tillie Fowler, Final Report of the Commission on the Future of the United States Aerospace Industry Commissioners, November, http://www.trade.gov/td/aerospace/aerospacecommission/AeroCommissionFinalReport.pdf)

**Defending our nation against its enemies is the first and fundamental commitment of the federal govern-ment.2** This translates into two broad missions—Defend America and Project Power—when and where needed. In order to defend America and project power, the nation needs the ability to move manpower, materiel, intelligence information and precision weaponry swiftly to any point around the globe, when needed. This has been, and will continue to be, a mainstay of our national security strategy. The events of September 11, 2001 dramatically demonstrated the extent of our national reliance on aerospace capabilities and related military contribu-tions to homeland security. Combat air patrols swept the skies; satellites supported real-time communica-tions for emergency responders, imagery for recov- ery, and intelligence on terrorist activities; and the security and protection of key government officials was enabled by timely air transport. As recent events in Afghanistan and Kosovo show**, the power generated by our nation’s aerospace capa-bilities is an—and perhaps the—essential ingredient in force projection and expeditionary operations**. In both places**, at the outset of the crisis, satellites and reconnaissance aircraft, some unmanned, provided critical strategic and tactical intelligence to our national leadership.**

#### Hegemony solves nuclear war and extinction

Thomas P.M. Barnett 11 Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” March 7 http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads

It is worth first examining the larger picture: We live in a time of arguably the greatest structural change in the global order yet endured, with this historical moment's most amazing feature being its relative and absolute lack of mass violence. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the guardian of globalization, the U.S. military has been the greatest force for peace the world has ever known. Had America been removed from the global dynamics that governed the 20th century, the mass murder never would have ended. Indeed, it's entirely conceivable there would now be no identifiable human civilization left, once nuclear weapons entered the killing equation. But the world did not keep sliding down that path of perpetual war. Instead, America stepped up and changed everything by ushering in our now-perpetual great-power peace. We introduced the international liberal trade order known as globalization and played loyal Leviathan over its spread. What resulted was the collapse of empires, an explosion of democracy, the persistent spread of human rights, the liberation of women, the doubling of life expectancy, a roughly 10-fold increase in adjusted global GDP and a profound and persistent reduction in battle deaths from state-based conflicts. That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force.

As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw a death toll of about 100 million across two world wars. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are clearly headed for a world order characterized by multipolarity, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come.

### 1AC – Environment Advantage

#### Contention 2: Biosphere

#### Human-induced warming is happening now – it’s indisputable

Rahmstorf 8 (Richard, Professor of Physics of the Oceans – Potsdam University, “Anthopogenic Climate Change?”, Global Warming: Looking Beyond Kyoto, Ed. Zedillo, p. 42-49)

It is time to turn to statement B: human activities are altering the climate. This can be broken into two parts. The first is as follows: global climate is warming. This is by now a generally undisputed point (except by novelist Michael Crichton), so we deal with it only briefly. The two leading compilations of data measured with thermometers are shown in figure 3-3, that of the National Aeronautics and Space Administration (NASA) and that of the British Hadley Centre for Climate Change. Although they differ in the details, due to the inclusion of different data sets and use of different spatial averaging and quality control procedures, they both show a consistent picture, with a global mean warming of 0.8°C since the late nineteenth century. Temperatures over the past ten years clearly were the warmest since measured records have been available. The year 1998 sticks out well above the longterm trend due to the occurrence of a major El Nino event that year (the last El Nino so far and one of the strongest on record). These events are examples of the largest natural climate variations on multiyear time scales and, by releasing heat from the ocean, generally cause positive anomalies in global mean temperature. It is remarkable that the year 2005 rivaled the heat of 1998 even though no El Nino event occurred that year. (A bizarre curiosity, perhaps worth mentioning, is that several prominent "climate skeptics" recently used the extreme year 1998 to claim in the media that global warming had ended. In Lindzen's words, "Indeed, the absence of any record breakers during the past seven years is statistical evidence that temperatures are not increasing.")33 In addition to the surface measurements, the more recent portion of the global warming trend (since 1979) is also documented by satellite data. It is not straightforward to derive a reliable surface temperature trend from satellites, as they measure radiation coming from throughout the atmosphere (not just near the surface), including the stratosphere, which has strongly cooled, and the records are not homogeneous' due to the short life span of individual satellites, the problem of orbital decay, observations at different times of day, and drifts in instrument calibration.' Current analyses of these satellite data show trends that are fully consistent with surface measurements and model simulations." If no reliable temperature measurements existed, could we be sure that the climate is warming? The "canaries in the coal mine" of climate change (as glaciologist Lonnie Thompson puts it) ~are mountain glaciers. We know, both from old photographs and from the position of the terminal moraines heaped up by the flowing ice, that mountain glaciers have been in retreat all over the world during the past century. There are precious few exceptions, and they are associated with a strong increase in precipitation or local cooling.36 I have inspected examples of shrinking glaciers myself in field trips to Switzerland, Norway, and New Zealand. As glaciers respond sensitively to temperature changes, data on the extent of glaciers have been used to reconstruct a history of Northern Hemisphere temperature over the past four centuries (see figure 3-4). Cores drilled in tropical glaciers show signs of recent melting that is unprecedented at least throughout the Holocene-the past 10,000 years. Another powerful sign of warming, visible clearly from satellites, is the shrinking Arctic sea ice cover (figure 3-5), which has declined 20 percent since satellite observations began in 1979. While climate clearly became warmer in the twentieth century, much discussion particularly in the popular media has focused on the question of how "unusual" this warming is in a longer-term context. While this is an interesting question, it has often been mixed incorrectly with the question of causation. Scientifically, how unusual recent warming is-say, compared to the past millennium-in itself contains little information about its cause. Even a highly unusual warming could have a natural cause (for example, an exceptional increase in solar activity). And even a warming within the bounds of past natural variations could have a predominantly anthropogenic cause. I come to the question of causation shortly, after briefly visiting the evidence for past natural climate variations. Records from the time before systematic temperature measurements were collected are based on "proxy data," coming from tree rings, ice cores, corals, and other sources. These proxy data are generally linked to local temperatures in some way, but they may be influenced by other parameters as well (for example, precipitation), they may have a seasonal bias (for example, the growth season for tree rings), and high-quality long records are difficult to obtain and therefore few in number and geographic coverage. Therefore, there is still substantial uncertainty in the evolution of past global or hemispheric temperatures. (Comparing only local or regional temperature; as in Europe, is of limited value for our purposes,' as regional variations can be much larger than global ones and can have many regional causes, unrelated to global-scale forcing and climate change.) The first quantitative reconstruction for the Northern Hemisphere temperature of the past millennium, including an error estimation, was presented by Mann, Bradley, and Hughes and rightly highlighted in the 2001 IPCC report as one of the major new findings since its 1995 report; it is shown in figure 3\_6.39 The analysis suggests that, despite the large error bars, twentieth-century warming is indeed highly unusual and probably was unprecedented during the past millennium. This result, presumably because of its symbolic power, has attracted much criticism, to some extent in scientific journals, but even more so in the popular media. The hockey stick-shaped curve became a symbol for the IPCC, .and criticizing this particular data analysis became an avenue for some to question the credibility of the IPCC. Three important things have been overlooked in much of the media coverage. First, even if the scientific critics had been right, this would not have called into question the very cautious conclusion drawn by the IPCC from the reconstruction by Mann, Bradley, and Hughes: "New analyses of proxy data for the Northern Hemisphere indicate that the increase in temperature in the twentieth century is likely to have been the largest of any century during the past 1,000 years." This conclusion has since been supported further by every single one of close to a dozen new reconstructions (two of which are shown in figure 3-6). Second, by far the most serious scientific criticism raised against Mann, Hughes, and Bradley was simply based on a mistake. 40 The prominent paper of von Storch and others, which claimed (based on a model test) that the method of Mann, Bradley, and Hughes systematically underestimated variability, "was [itself] based on incorrect implementation of the reconstruction procedure."41 With correct implementation, climate field reconstruction procedures such as the one used by Mann, Bradley, and Hughes have been shown to perform well in similar model tests. Third, whether their reconstruction is accurate or not has no bearing on policy. If their analysis underestimated past natural climate variability, this would certainly not argue for a smaller climate sensitivity and thus a lesser concern about the consequences of our emissions. Some have argued that, in contrast, it would point to a larger climate sensitivity. While this is a valid point in principle, it does not apply in practice to the climate sensitivity estimates discussed herein or to the range given by IPCC, since these did not use the reconstruction of Mann, Hughes, and Bradley or any other proxy records of the past millennium. Media claims that "a pillar of the Kyoto Protocol" had been called into question were therefore misinformed. As an aside, the protocol was agreed in 1997, before the reconstruction in question even existed. The overheated public debate on this topic has, at least, helped to attract more researchers and funding to this area of paleoclimatology; its methodology has advanced significantly, and a number of new reconstructions have been presented in recent years. While the science has moved forward, the first seminal reconstruction by Mann, Hughes, and Bradley has held up remarkably well, with its main features reproduced by more recent work. Further progress probably will require substantial amounts of new proxy data, rather than further refinement of the statistical techniques pioneered by Mann, Hughes, and Bradley. Developing these data sets will require time and substantial effort. It is time to address the final statement: most of the observed warming over the past fifty years is anthropogenic. A large number of studies exist that have taken different approaches to analyze this issue, which is generally called the "attribution problem." I do not discuss the exact share of the anthropogenic contribution (although this is an interesting question). By "most" I imply mean "more than 50 percent.” The first and crucial piece of evidence is, of course, that the magnitude of the warming is what is expected from the anthropogenic perturbation of the radiation balance, so anthropogenic forcing is able to explain all of the temperature rise. As discussed here, the rise in greenhouse gases alone corresponds to 2.6 W/tn2 of forcing. This by itself, after subtraction of the observed 0'.6 W/m2 of ocean heat uptake, would Cause 1.6°C of warming since preindustrial times for medium climate sensitivity (3"C). With a current "best guess'; aerosol forcing of 1 W/m2, the expected warming is O.8°c. The point here is not that it is possible to obtain the 'exact observed number-this is fortuitous because the amount of aerosol' forcing is still very' uncertain-but that the expected magnitude is roughly right. There can be little doubt that the anthropogenic forcing is large enough to explain most of the warming. Depending on aerosol forcing and climate sensitivity, it could explain a large fraction of the warming, or all of it, or even more warming than has been observed (leaving room for natural processes to counteract some of the warming). The second important piece of evidence is clear: there is no viable alternative explanation. In the scientific literature, no serious alternative hypothesis has been proposed to explain the observed global warming. Other possible causes, such as solar activity, volcanic activity, cosmic rays, or orbital cycles, are well observed, but they do not show trends capable of explaining the observed warming. Since 1978, solar irradiance has been measured directly from satellites and shows the well-known eleven-year solar cycle, but no trend. There are various estimates of solar variability before this time, based on sunspot numbers, solar cycle length, the geomagnetic AA index, neutron monitor data, and, carbon-14 data. These indicate that solar activity probably increased somewhat up to 1940. While there is disagreement about the variation in previous centuries, different authors agree that solar activity did not significantly increase during the last sixty-five years. Therefore, this cannot explain the warming, and neither can any of the other factors mentioned. Models driven by natural factors only, leaving the anthropogenic forcing aside, show a cooling in the second half of the twentieth century (for an example, See figure 2-2, panel a, in chapter 2 of this volume). The trend in the sum of natural forcings is downward. The only way out would be either some as yet undiscovered unknown forcing or a warming trend that arises by chance from an unforced internal variability in the climate system. The latter cannot be completely ruled out, but has to be considered highly unlikely. No evidence in the observed record, proxy data, or current models suggest that such internal variability could cause a sustained trend of global warming of the observed magnitude. As discussed, twentieth century warming is unprecedented over the past 1,000 years (or even 2,000 years, as the few longer reconstructions available now suggest), which does not 'support the idea of large internal fluctuations. Also, those past variations correlate well with past forcing (solar variability, volcanic activity) and thus appear to be largely forced rather than due to unforced internal variability." And indeed, it would be difficult for a large and sustained unforced variability to satisfy the fundamental physical law of energy conservation. Natural internal variability generally shifts heat around different parts of the climate system-for example, the large El Nino event of 1998, which warmed, the atmosphere by releasing heat stored in the ocean. This mechanism implies that the ocean heat content drops as the atmosphere warms. For past decades, as discussed, we observed the atmosphere warming and the ocean heat content increasing, which rules out heat release from the ocean as a cause of surface warming. The heat content of the whole climate system is increasing, and there is no plausible source of this heat other than the heat trapped by greenhouse gases. ' A completely different approach to attribution is to analyze the spatial patterns of climate change. This is done in so-called fingerprint studies, which associate particular patterns or "fingerprints" with different forcings. It is plausible that the pattern of a solar-forced climate change differs from the pattern of a change caused by greenhouse gases. For example, a characteristic of greenhouse gases is that heat is trapped closer to the Earth's surface and that, unlike solar variability, greenhouse gases tend to warm more in winter, and at night. Such studies have used different data sets and have been performed by different groups of researchers with different statistical methods. They consistently conclude that the observed spatial pattern of warming can only be explained by greenhouse gases.49 Overall, it has to be considered, highly likely' that the observed warming is indeed predominantly due to the human-caused increase in greenhouse gases. ' This paper discussed the evidence for the anthropogenic increase in atmospheric CO2 concentration and the effect of CO2 on climate, finding that this anthropogenic increase is proven beyond reasonable doubt and that a mass of evidence points to a CO2 effect on climate of 3C ± 1.59C global-warming for a doubling of concentration. (This is, the classic IPCC range; my personal assessment is that, in-the light of new studies since the IPCC Third Assessment Report, the uncertainty range can now be narrowed somewhat to 3°C ± 1.0C) This is based on consistent results from theory, models, and data analysis, and, even in the absence-of any computer models, the same result would still hold based on physics and on data from climate history alone. Considering the plethora of consistent evidence, the chance that these conclusions are wrong has to be considered minute. If the preceding is accepted, then it follows logically and incontrovertibly that a further increase in CO2 concentration will lead to further warming. The magnitude of our emissions depends on human behavior, but the climatic response to various emissions scenarios can be computed from the information presented here. The result is the famous range of future global temperature scenarios shown in figure 3\_6.50 Two additional steps are involved in these computations: the consideration of anthropogenic forcings other than CO2 (for example, other greenhouse gases and aerosols) and the computation of concentrations from the emissions. Other gases are not discussed here, although they are important to get quantitatively accurate results. CO2 is the largest and most important forcing. Concerning concentrations, the scenarios shown basically assume that ocean and biosphere take up a similar share of our emitted CO2 as in the past. This could turn out to be an optimistic assumption; some models indicate the possibility of a positive feedback, with the biosphere turning into a carbon source rather than a sink under growing climatic stress. It is clear that even in the more optimistic of the shown (non-mitigation) scenarios, global temperature would rise by 2-3°C above its preindustrial level by the end of this century. Even for a paleoclimatologist like myself, this is an extraordinarily high temperature, which is very likely unprecedented in at least the past 100,000 years. As far as the data show, we would have to go back about 3 million years, to the Pliocene, for comparable temperatures. The rate of this warming (which is important for the ability of ecosystems to cope) is also highly unusual and unprecedented probably for an even longer time. The last major global warming trend occurred when the last great Ice Age ended between 15,000 and 10,000 years ago: this was a warming of about 5°C over 5,000 years, that is, a rate of only 0.1 °C per century. 52 The expected magnitude and rate of planetary warming is highly likely to come with major risk and impacts in terms of sea level rise (Pliocene sea level was 25-35 meters higher than now due to smaller Greenland and Antarctic ice sheets), extreme events (for example, hurricane activity is expected to increase in a warmer climate), and ecosystem loss. The second part of this paper examined the evidence for the current warming of the planet and discussed what is known about its causes. This part showed that global warming is already a measured and-well-established fact, not a theory. Many different lines of evidence consistently show that most of the observed warming of the past fifty years was caused by human activity. Above all, this warming is exactly what would be expected given the anthropogenic rise in greenhouse gases, and no viable alternative explanation for this warming has been proposed in the scientific literature. Taken together., the very strong evidence accumulated from thousands of independent studies, has over the past decades convinced virtually every climatologist around the world (many of whom were initially quite skeptical, including myself) that anthropogenic global warming is a reality with which we need to deal.

#### Warming causes extinction

Flournoy 12 -- Citing Feng Hsu, PhD NASA Scientist @ the Goddard Space Flight Center. Don Flournoy is a PhD and MA from the University of Texas, Former Dean of the University College @ Ohio University, Former Associate Dean @ State University of New York and Case Institute of Technology, Project Manager for University/Industry Experiments for the NASA ACTS Satellite, Currently Professor of Telecommunications @ Scripps College of Communications @ Ohio University (Don, "Solar Power Satellites," January, Springer Briefs in Space Development, Book, p. 10-11)

In the Online Journal of Space Communication , Dr. Feng Hsu, a  NASA scientist at Goddard Space Flight Center, a research center in the forefront of science of space and Earth, writes, “The evidence of global warming is alarming,” noting the potential for a catastrophic planetary climate change is real and troubling (Hsu 2010 ) . Hsu and his NASA colleagues were engaged in monitoring and analyzing climate changes on a global scale, through which they received first-hand scientific information and data relating to global warming issues, including the dynamics of polar ice cap melting. After discussing this research with colleagues who were world experts on the subject, he wrote: I now have no doubt global temperatures are rising, and that global warming is a serious problem confronting all of humanity. No matter whether these trends are due to human interference or to the cosmic cycling of our solar system, there are two basic facts that are crystal clear: (a) there is overwhelming scientific evidence showing positive correlations between the level of CO2 concentrations in Earth’s atmosphere with respect to the historical fluctuations of global temperature changes; and (b) the overwhelming majority of the world’s scientific community is in agreement about the risks of a potential catastrophic global climate change. That is, if we humans continue to ignore this problem and do nothing, if we continue dumping huge quantities of greenhouse gases into Earth’s biosphere, humanity will be at dire risk (Hsu 2010 ) . As a technology risk assessment expert, Hsu says he can show with some confidence that the planet will face more risk doing nothing to curb its fossil-based energy addictions than it will in making a fundamental shift in its energy supply. “This,” he writes, “is because the risks of a catastrophic anthropogenic climate change can be potentially the extinction of human species, a risk that is simply too high for us to take any chances” (Hsu 2010 ) .

#### Plan solves through increased efficiency—reduces flight time and optimizes fueling

SNS 11 (State News Service, Forefront of news reporting, 2/28, “AVIATION NOISE AND AIR QUALITY SYMPOSIUM”, Lexis)

 NextGen is also helping us to improve efficiency and to provide benefits through the deployment of precision-based navigation procedures that save fuel and emissions. If you think time is money, NextGen is for you. We are working in collaboration with Alaska Air Group on a program called Greener Skies Over Seattle to deliver reduced emissions and fuel burn through optimized descents and Required Navigation Performance approaches. Thats another couple of acronyms to remember, RNP: required navigation performance, and RNAV: area navigation. We expect that Greener Skies will demonstrate the same positive results that weve seen with similar initiatives within the National Airspace System.¶ To date, weve published more than 900 performance-based navigation arrival and departure routes and procedures. Again, making the business case, performance-based navigation pays for itself, having already saved millions of dollars in fuel at major U.S. airports. Southwest Airlines is a prime example. It is estimated that for every single minute of time saved on each flight, their annual savings quickly add up to 156,000 metric tons in emissions a year, which translates into a savings of $25 million. Seconds do count. Time ismoney indeed.¶ NextGen also changes things on the ground. Surface management is a prime benefactor. As youll hear quite a bit during this conference, airports need to manage not only aircraft but the many other types of vehicles that service the aircraft and airport. Imagine a parking lot with Lamborghinis and tricycles. Weve deployed the latest airport surface detection radar ASDE-X at 32 airports, with another three scheduled to receive it by this May. Initiatives at JFK and Memphis demonstrate that the technologies and procedures put in place reduced taxi times by about 2-4 minutes. When youre buying fuel by the pound, seconds count. But in addition to cost savings, ASDE-X provides another layer of safety by improving situational awareness for both operators and controllers.¶ As you can see, weve been able to take major strides in lessening the environmental effects of aviation over the past several decades. Even so, aircraft noise continues to be the environmental impact of most concern to communities. Aircraft emissions contribute to air quality related health effects, as do emissions from all combustion processes, and at times are causing heightened concerns locally and globally. The potential effects of aircraft emissions on the climate of our planet may be the most serious long term environmental consequence facing aviation. In fact, aviation environmental impacts could be the principal constraints on capacity and operations in the United States. Further, as I noted earlier, energy supply and its cost, not to mention associated climate change issues, could increasingly shape the future growth and operations of U.S. aviation.¶ These combined environmental and energy challenges must be successfully managed and mitigated for the U.S. to meet aviation transportation needs of the 21st century.

#### Airline emissions are the key contributors to climate change

Sewill 5 – Brendon, vice president of the British Trust for Conservation Volunteers, “Fly Now, Grieve Later”, <http://www.aef.org.uk/downloads/FlyNowFull.pdf>

Aviation is the industry with the fastest¶ growing contribution to climate change.¶ Between 1990 and 2000 worldwide aviation¶ emissions grew by 50%.¶ While other industries, such as power¶ stations or chemical plants, have been¶ cleaning up their act, air transport is¶ pumping out more and more pollution each¶ year. In previous centuries it was believed¶ that the rivers and the sea could absorb¶ whatever sewage and filth was tipped into¶ them. Now we know better. Yet people¶ who fly still blithely assume that the air¶ can absorb whatever invisible chemicals¶ are poured into it. Airbus predict that in the next twenty¶ years the number of aircraft worldwide¶ will double - and they are building the vast¶ new Airbus 380 to cope with the growth in¶ air travel.¶ 19¶ Around the world,¶ governments are actively encouraging this¶ expansion in the belief that it brings¶ employment and wealth. The Prime¶ Ministers of Britain, France, Germany and¶ Spain attended and applauded (and¶ subsidised) the Airbus launch. Many of the¶ developing countries see air travel as their¶ means to share in western living standards.¶ Governments everywhere see the¶ expansion of aviation as the driver of¶ economic progress - without realising that¶ the environmental cost may be greater than¶ the economic benefit.¶ The Intergovernmental Panel on Climate¶ Change, the world’s top climate scientists, were so worried about the growing impact¶ of air travel that in 1999 they produced a¶ special report, “Aviation and the Global¶ Atmosphere”, their first report on a single¶ industry. They found that in 1992 aviation¶ contributed 3.5% of man-made global¶ warming - a figure that is quoted regularly¶ by the airlines to show how good they are.¶ Because it is difficult to forecast how the¶ world will change in the more distant¶ future, the scientists worked on a number of¶ different scenarios. Most of their¶ calculations were based on 'business as¶ usual', that the rest of industry carries on as¶ at present. But if it is assumed that aviation¶ carries on expanding, while all other¶ emissions are reduced by 60%, then on most¶ scenarios it is clear that by 2050 (even with¶ optimistic assumptions about¶ improvements in aircraft fuel efficiency)¶ flying will account for a quarter or more of¶ total world global warming.¶ Thus aviation is set to become the world’s¶ dirtiest industry.

#### US is key – reformed ATC makes the US an international green policy leader

AOPA 9 – Aircraft Owners and Pilot Association, “NextGen funding would spur jobs”, 9/24, <http://www.aopa.org/advocacy/articles/2009/091124nextgen.html>

Moving forward with the new air traffic control system also would improve aviation safety, reduce delays, cut carbon emissions, and help the United States remain a world leader in aviation.¶ The European Union, Australia, and Canada are surpassing the United States in implementing NextGen, and the United States must act quickly to retain its leadership position, according to the groups. “Other countries like China and India will look to either the U.S. or Europe for leadership as they develop their air traffic control systems,” the letter says. “If the U.S. does not demonstrate leadership in deploying these technologies, opportunities for U.S. manufacturers and workers will be lost.”¶ While the United States traditionally has not been viewed as a “green” country, “accelerated NextGen implementation also has the potential to put aviation at the forefront of ‘green’ initiatives,” the groups said, citing the Government Accountability Office’s statistics that NextGen could cut carbon emissions 12 percent, which would be equal to “taking 2.2 million cars off the road for one year.”

#### Their authors are funded by the fossil fuel industry and should be dismissed – prefer peer-reviewed studies

Davies 8 – Author and Geophysicist at the Australian National University, 6/11/08 [Dr. Geoff Davies, Science Alert, “Why listen to scientists?” <http://www.sciencealert.com.au/opinions/20081106-17474.html>]

Professor Don Aitkin’s recent promotion of the “sceptical” view of global warming and the ensuing heated debates on several web sites bring to the fore the question of what authority attaches to the published conclusions and judgments of climate scientists. Professor Aitkin, who is not a scientist, is in no doubt himself that the more outspoken climate scientists have a “quasi-religious” attitude. That is the mild end of the spectrum of opinions of sceptics/denialists/contrarians. Most of the media and many politicians seem to have the view that scientists are just another interest group, and that scientists’ opinions are just opinions, to be heard or discarded like any others. The Australian government seems to credit only the very conservative end of climate scientists’ warnings, because it is acting as though we have many decades in which to adjust, and many years before anything serious needs to be under way. The big difference between scientists’ professional conclusions and those of others is that science has a pervasive and well-developed quality-control process. The first stage is called peer review. Any paper that is published in a reputable scientific journal must be given the OK by several other scientists in the same field. Furthermore, after publication a paper will be read critically by many more scientists, and it is not uncommon for conclusions to be challenged in subsequent publications. For a paper to become widely acknowledged it must survive such scrutiny for a reasonable period, typically several years. All of this is on top of the fact that a scientific paper is based on observations of the world and on a large accumulation of well-tested regularities, such as the “laws” of physics. Few other groups have any comparable process. Certainly the media, politicians and climate sceptics have no such process. Most of the studies referred to by sceptics have either not been published in a relevant peer- reviewed scientific journal or have subsequently been challenged and found wanting in other peer-reviewed studies. The peer-review process is far from perfect, but it yields a product distinctly less unreliable than all the other opinions flying around. The process of the Intergovernmental Panel on Climate Change (IPCC) adds another layer of caution. Basically the IPCC gets a large number of relevant scientists to step back from the front-line disputes and ask “What can most of us agree on?”. Sceptics who dismiss all of the science because there are many disputes miss or obfuscate this basic aspect of IPCC assessments. There is a degree of judgment involved in the IPCC process, and in virtually any public summary by a climate scientist. Some would claim judgment is not the job of scientists; it is the job of politicians and others. But scientists are the best placed to judge the state of knowledge in their field. If their conclusions are potentially of great import, then they have a responsibility to state their best professional judgment. The claim by Professor Aitkin and many other sceptics that climate scientists don’t discuss the uncertainties in their conclusions and judgments simply misrepresents or misperceives the abundant information on uncertainties. Even the IPCC’s most terse summary statements clearly acknowledge uncertainty when they say, for example, “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations” [emphasis in original]. The term “very likely” is specifically defined in the IPCC summaries to mean the “assessed likelihood, using expert judgment”, is greater than 90 per cent. Clive Hamilton contrasts the scientific and IPCC processes with those of many sceptics (see Atkin’s response here). He traces connections from relatively naïve people like Professor Aitkin back to people and web sites funded by ExxonMobil and others. Sceptics love to question the motives of climate scientists, but rarely mention the motives of the very powerful multi-trillion-dollar fossil fuel industry, parts of which are actively promoting doubt and disinformation in exactly the manner used by the tobacco industry for many years. Observations from the past two or three years, too recent to have been included in the 2007 IPCC Reports, show disturbing signs that the Earth’s response to our activities is happening much faster than expected. The most dramatic sign is a sudden acceleration of the rate of shrinkage of Arctic sea ice. Prominent NASA climate scientist Dr James Hansen is perhaps the most vocal, but far from alone, in arguing that the Earth may be very close to a tipping point beyond which large, unstoppable and irreversible climate change could occur. Scientific issues are not settled by appeals to authority, nor by a vote. That is not the issue here. The issue is whether scientists’ professional judgments have weight. Those in strategic positions in our society, like politicians and journalists, who treat scientists’ collective professional judgments as no better than any other opinion are being seriously irresponsible. You can ignore the IPCC if you want, but you should realise that its most recent assessment may have seriously understated the global warming problem. You can ignore James Hansen if you want, but you should know that his judgments from two or three decades ago are being broadly vindicated.

#### No alt causes – NextGen solves other transportation emissions and air pollution

NEXA 11(NEXA Advisors, April, NEXA Capital Partners provides corporate and strategic financial advisory services, and capital investment, to the aerospace, transportation, logistics and homeland security sectors, “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues”, <http://www.nextgenfund.com/files/downloads/NEF_Economic_Study.pdf>)

In 2008 **GAO advocated accelerated deployment of NextGen to realize environmental benefits**. xv **More efficient operations will lower unit emissions** per passenger **through lower fuel** burn per passenger. Aviation emissions, like other combustible emissions, include pollutants that affect public health. The FAA estimates that **NextGen could reduce aircraft greenhouse emissions by as much as 12 percent, which is equivalent to removing 2.2 million cars from the roads**. xvi Additionally, **improved air transportation will reduce the number of passengers diverted to their cars on the U.S. roadways and thereby reduce air pollution from cars and reduce congestion on the highways.** NextGen procedures will reduce **communities’ exposure to noise through better air traffic management**. For example, Continuous Descent Arrivals will allow aircraft to remain at cruise longer as they approach destination airports, use lower power levels, and thereby lower noise and emissions during landing. **These environmental benefits will also improve international flight efficiencies, further reducing emissions and greenhouse gasses**.

#### Air pollution causes extinction

Driesen 3 (David, Associate Professor – Syracuse Univeristy Law, 10 Buff. Envt'l. L.J. 25, Fall/Spring, Lexis)

Air pollution can **make life unsustainable** by harming the ecosystem **upon which all life depends** and harming the health of both future and present generations. The Rio Declaration articulates six key principles that are relevant to air pollution. These principles can also be understood as goals, because they describe a state of affairs that is worth achieving. Agenda 21, in turn, states a program of action for realizing those goals. Between them, they aid understanding of sustainable development's meaning for air quality. The first principle is that "human beings. . . are entitled to a healthy and productive life in harmony with nature", because they are "at the center of concerns for sustainable development." 3 While the Rio Declaration refers to human health, its reference to life "in harmony with nature" also reflects a concern about the natural environment. 4 Since air pollution damages both human health and the environment, air quality implicates both of these concerns. 5

### 1AC – Plan

#### PLAN: The United States Federal Aviation Administration should provide investment for the infrastructure equipage of Next Generation air transportation system technology through a public-private partnership program in the United States

### 1AC – Solvency

#### Contention 3: Solvency

#### Public private partnerships boost NextGen equipage while not raising costs

ECT 12 [(Eno Center for Transportation, “NextGen: Aligning Costs, Benefits, and Political Leadership”, April, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf](file:///C%3A%5CUsers%5COwner%5CDownloads%5C%28Eno%20Center%20for%20Transportation%2C))

The preceding sections analyzed potential revenue sources ¶ for NextGen infrastructure funding. In this section we ¶ consider possible funding solutions to equipage. Under the ¶ current program, operators are expected to fund their own ¶ equipage. As long as the FAA implements the infrastructure in a timely manner the private operators will have real ¶ benefits to equipping. As a financing solution to equipage, a private-public partnership (P3) would not require raising ¶ additional taxes or fees and offer a solution to help operators pay for the equipage portion of NextGen modernization. A P3 is in theory a more efficient way of facilitating ¶ equipage than collecting taxes from the operators and using ¶ the revenues to pay for equipage. It is more realistic to focus ¶ on private sector financing options coupled with incentivizing operators to invest in equipage instead of employing an ¶ indirect funding method of taxing them to pay for equipage. ¶ Operators and investors need a clear set of incentives to ¶ equipage. Federal loan guarantees and a “best make use of this financing opportunity and expedite equipped best ¶ served” approach have been proposed as means of incentivizing airline equipage and mitigating risk for investors. In ¶ fact, the recent reauthorization bill FAA Modernization and ¶ Reform Act of 2012 authorizes the FAA to use loan guarantees. A loan guarantee could use revenues collected from users as cover if a borrower operator defaults on its payments ¶ to the NextGen Equipage Fund. Under a “best equipped ¶ best served” measure, equipped operators could be given ¶ take off and landing priorities, thus a financial incentive to ¶ equip. As a further incentive for operators, any repayments ¶ can be deferred until expected benefits emerge in the short ¶ run.¶ The federally guaranteed loans from the NextGen Equipage ¶ Fund is a mitigation of the financial risk of NextGen from ¶ operators and private investors by ultimately transferring the ¶ risk to taxpayers. This can actually be equitable and justified ¶ if some of the risk is transferred to operators and passengers through a transparent funding mechanism. Operators should be liable to pay their share of equipage costs, while ¶ revenues collected from passengers can form the basis for a ¶ loan guarantee. ¶ A NextGen P3 could be implemented as follows: ¶ • Operators submit their equipage needs¶ • A P3 purchases the required equipment ¶ • Equipment is leased to the airline. Financing terms are ¶ negotiated. ¶ • Incentive clauses are added as discussed below. ¶ The NextGen Fund P3 is an effective financing solution as ¶ previously discussed that has the potential to resolve the two ¶ main equipage dilemmas:¶ 1. Operators are uncertain about NextGen’s benefits and the¶ FAA’s ability to deliver those benefits in a timely fashion.¶ 2. The “First-Equipage” dilemma: There is a concern that ¶ operators that equip early might lose out to those who ¶ are the last to equip due to technological obsolescence. ¶ Incentive measures could be:¶ • Postponing loan repayments until NextGen benefits are ¶ realized might resolve the first equipage dilemma. ¶ • Federal loan guarantees encourages private sector investors¶ to lend to operators for equipage. A portion of funds ¶ from the NextGen fee can be used as a separate pool of ¶ money as basis for the loan guarantees.¶ • Takeoff and landing priorities for equipped operators: This¶ incentive could be used to deal with the second dilemma ¶ above. Takeoff and landing priorities would give operators ¶ a huge cost advantage particularly in congested airports by¶ enabling them to quickly load and unload passengers.

#### Overall effectiveness of NextGen depends on commercial infrastructure upgrades

Dyment 11 (Michael J, General Partner at NextGen Equipage Fund, “Transitioning to Satellite-Based Air Traffic Control”, Geospatial Today, 9/15/2011, Lexis)

The US airline position on NextGen

Airline scepticism of the FAA's ability to deploy, as well as implement, NextGen infrastructure remains high. Al-though FAA procurement reforms have produced significant improvements by using more solid contracting practices that better balance risks, airlines remain concerned about the long lead times between required capital investment, and net benefit realisation. While US airlines seek ATC modernisation and are generally supportive of the NextGen program, vexing challenges remain:

\* NextGen architecture requires an extensive investment in aircraft equipage, from antennas to black box avionics, displays, and ongoing software upgrades. It is widely accepted, for example, that the cost savings afforded by ADS-B "Out" reside primarily with the FAA and its ability to phase out expensive secondary radar systems, while airlines bear most of the cost. This comes when US airlines can little afford to make such nonproductive investments.

\* Major NextGen benefits can be delivered only when more than half of the air transport fleets are equipped and running the new systems. For example, enroute airspace congestion today causes delays from ATC workload saturation and radar-based separation standards. Capacity is limited by controllers' ability to handle multiple aircraft in a given congested enroute sector with delays from excessive miles-in- trail spacing, inefficient vectoring, and airborne holding. A substantial benefit of DataComm for airlines is the reduction in operating costs associated with reducing these delays. Regression analysis shows a 90 per cent correlation between capacity expansion and equipage level.

\* Aircraft equipage issues aside, FAA controllers will need ATC display changes, new procedures, and training in order to cut over to NextGen operations, to realise the benefits. But details remain in the cut-over to NextGen, and will require close cooperation between FAA and airlines.

\* Global interoperability with these new systems and architectures will be essential, and while many working groups are seeking solutions to harmonisation challenges, questions remain about the end-state architectures, requirements and investment costs for both airlines and ATC service providers.

NextGen equipage costs

While FAA infrastructure cost estimates have produced stable figures, not much is agreed upon with respect to exact aircraft equipage costs. Consequently, NextGen Equipage Fund conducted a detailed domestic turbine fleet forecast from 2009 through 2020 to provide estimated aircraft population and demographics as the foundation for the Fund's performance and capacity.

Accurate depiction of the equipage environment requires categorisation of the existing domestic fleet since there are various configurations of avionics within the aircraft fleet currently in service. The NextGen Fund developed a list of categories with the assistance of industry experts. These categories ("Families") are based on aircraft production year and the ARINC engineering standards in operation.

Target equipage segments in the turbine aircraft category and associated unit costs range in estimated cost from about $100,000 to as much as $1 million per aircraft. These estimates are subject to continued equipage cost updates from the analysts at NEXA in surveys of the supply chain vendors hoping to sell into the market in coming years. Assuming that fully NextGen-equipped aircraft from OEMs are not expected to be available until about 2017, it is expected that nearly all deliveries over the next few years will still require some form of retrofit, update, or up-grade.

The forecast used these Families to construct an equipage cost outlook with each existing avionics configuration and the new equipment required to achieve NextGen DataComm, ADS-B, and Air-SWIM capability, including varying com-binations of required equipment.

The NextGen Fund prepared this information to project the cost of equipage for eligible retrofit aircraft within the domestic US fleet. The results from this fleet and cost forecasting process show that the NextGen Fund is expected to equip up to 75 per cent of the commercial air transport retrofit fleet. To address this total cost, the Fund antic-ipates a mix of investment proceeds from the debt and equity raise and future cash flows generated from NextGen Fund operations.

Equipage risk sharing partnership

A plan to share the capital investment risks among key stakeholders is the best way to ensure NextGen equipage targets are met. Figure 5 summarises costs and benefits of participation and risk-sharing by the major stakeholder groups.

Discussions with airlines and FAA have pointed to the need for the parties to enter into agreements to memorialise these shared risks. It is anticipated that a Memorandum of Agreement ("MOA") would commit the three parties to certain obligations and to incur costs as certain capabilities come online, and by extension can begin to produce benefits such as reduced delays, lower fuel costs, greater aircraft utilization, and related incremental new revenues.

Conclusion

Without a large and well-funded equipage financing solution capable of addressing key stakeholder risks, there will be no NextGen system for the United States.

The NextGen Fund intends to remove barriers to equipage that could impede or threaten the long-term success of NextGen program, and to otherwise accelerate airline equipage through a carefully designed financial incentive pack-age , and a business infrastructure to administer equipment purchases and inventories. With the ground-based NextGen infrastructure build-out proceeding, stakeholders now recognise that properly equipping the nation's aircraft fleet stands on the critical path to realising the benefits of a fully functioning NextGen system.

#### Private sector is ready to fund NextGen through PPPs now—federal government support key

Gibbons 11 – Glen, editor and publisher of Inside GNSS, “Air Traffic Control Modernization: FAA, NextGen, GNSS, and Avionics Equipage”, 4/30, Inside GNSS, <http://www.insidegnss.com/node/2582/>

**The NextGen Equipage Fund believes** **it has the solution, a financing model that “closes the business case**” for equipping fleets**, employing “proven regulatory/policy mechanisms, in combination with private sector capital, commercial leasing structures, and service contract commitments**.”¶ **The public-private partnership (PPP) that the NextGen** **fund seeks to achieve “is a better model and environment for private money to be put to work,”** Dyment says. Because funding will only cover an estimated 75 percent of eligible U.S. aircraft, “It will move airlines to get in line for funds. For those who wait till the end, there’s no money.”¶ Dyment admits that the risk of a default always exists. The key questions in addressing that issue, he says, are “How well can the fund mitigate those risks, and is the FAA credible?”¶ Unlike a federal agency, **a private investment fund — experienced in structuring financial deals and managing risk — can bring the expertise and resources necessary to make a PPP work.**¶“If an airline defaults, we can handle that,” he says. If nothing else, **the fund can get equipment back from a defaulting loan recipient and put it on another airline’s aircraft**.¶ **A pivotal factor in making the fund’s vision a reality is whether the FAA will buy into a PPP that puts the agency on the hook to produce a complex program on schedule.**¶ **“FAA has to evolve** along with the airlines,” says Dyment. “The NextGen fund is not the most popular thing at the FAA. They like to be in control. We’ll work closely with the FAA, but **[the fund] would be Congress’s and investors money.”**¶The latter **PPP participants would decide how the money is spent,** with airlines specifying and purchasing the **equipment within the framework of the FAA technical standard orders for NextGen-capable avionics.**

#### NextGen technology is ready—PPPs for infrastructure are the final hurdle

Schofield 12 Adrian, Senior Air Transport Editor at Aviation Week, “NextGen Emerges”, 5/14, Aviation Week & Space Technology, EBSCO

Almost **from the beginning, the FAA's NextGen initiative has been dogged by accusations of slow progress.** But now **there is growing evidence that the grand air traffic management vision is moving off the drawing board and closer to reality.**¶ **Significant headway is being made on key operational, technical and financial issues**. The cornerstone **satellite-based surveillance network is being rolled out,** and work is about to begin on a transformative air-ground data communication system. The first benefits are emerging from an airspace redesign effort in large metropolitan areas and--perhaps most importantly--a novel plan for funding aircraft equipage is gathering momentum.¶ There is undoubtedly still a long way to go, and debate will continue about whether NextGen should move faster. However, this does not negate the fact that **the initial pieces are falling into place**-- with major ramifications for the U.S. aviation industry.¶ NextGen was launched in 2004, the result of an ambitious call to transform the U.S. air transport system by 2025. **Potential threats to the FAA's budget are an ever-present concern, but an even bigger question mark has been how aircraft operators will pay for the equipment** needed to operate in the modernized environment. U.S. airlines are strapped for cash and are reluctant to invest in new avionics unless they can see a compelling business case.¶ The FAA is showing signs that it is prepared to help airlines pay for at least some equipment. As part of its data communications program, it intends to set aside $80 million to help carriers make the necessary upgrades to their aircraft.¶ On a broader scale, **the equipage funding solution with the most potential is public-private partnerships, where government loan guarantees would help unlock private equity at reasonable rates**.¶ One such initiative, called **the NextGen Fund, has been proposed** by Nexa Capital Partners, with the backing of ITT Exelis. The plan is **for participating airlines to pay back equipage costs as the financial benefits of NextGen emerge**.¶ While the outline of this plan was unveiled more than a year ago, there has been little movement since then. **The NextGen Fund's managers have been waiting for the government to provide the commitments required for the program to work.**

#### FAA commitment’s key to private investment

Schofield and Jackman 12 Adrian, Frank, Senior Air Transport Editor and Editor at Aviation Week, “Banking on NextGen”, 5/16/12, Aviation Week & Space Technology, EBSCO

These days nobody disagrees that the NextGen air traffic management (ATM) program is vital for the health of the industry, and the ground infrastructure is already being deployed by the FAA. But there is still uncertainty over how aircraft equipage should be funded and, in particular, how the cost should be divided between the government and the airlines. Because both are a little cash-strapped right now, there is growing consensus that leveraging private capital is the most realistic alternative. Airlines are still pushing for the government to pay for new avionics required by NextGen, arguing that the airspace system is national infrastructure just as much as highways or bridges. However, it is becoming increasingly obvious that this will be difficult to achieve in the current political and economic environment.¶ Congress is likely to encourage a public-private approach to equipage funding in the FAA reauthorization bill, and the House version already includes language to that effect. The Senate will probably agree with this approach when the two versions of the bill are reconciled during the conference process, says Senate Commerce Committee majority staff member Gael Sullivan during Aviation Week's NextGen Ahead conference.¶ This is good news to the stakeholders involved in one such private capital initiative.¶ Major aerospace companies and Wall Street backers are establishing a $1.5 billion equipage fund that would finance airlines purchasing NextGen avionics. Payments would begin when NextGen efficiencies are realized. Nexa Capital Partners and ITT Corp. are taking the lead in this effort, and the managing partners are Michael Dyment from Nexa and former FAA Chief Operating Officer Russell Chew.¶ Chew says the proposed NextGen fund does not necessarily require supporting language in the FAA bill, but government backing would allow more capital to be raised. Also, a major component of the plan is for the FAA to commit to a NextGen deployment timetable, and this would happen more readily if there was a directive from Congress.¶ The current House language is vague as to what sort of support it would provide, although it is likely that something "more tailored" will be in the final bill, Sullivan says.¶ Chew says the FAA commitments are needed to complete the business case for airlines and Wall Street to invest in NextGen equipage. Under the NextGen fund plan, airline payments would be deferred if the FAA infrastructure commitments are not met. Chew says there is no question that there is enough private capital available to finance equipage, but a compelling business case is needed to unlock it.¶ Private infrastructure investment funds are burgeoning, and even the airlines themselves are "willing to pay for things that make them money or save them money," says Chew. The key is removing the uncertainty about returns on the investment.

## \*\*Inherency\*\*

### AT: Squo Solves

#### Current budget cuts hamstring NextGen

**Efford 12** (Richard, Assistant Vice President, Legislative Affairs of the Aerospace Industries Associate, “Sequestration’s Crippling Effect on NextGen”, March <http://www.aia-aerospace.org/newsroom/publications/aia_eupdate/march_2012_eupdate/sequestrations_crippling_effect_on_nextgen/>)

It is well known that last year’s **Budget Control Act requires devastating cuts to the defense budget beginning ten months from now. It is less evident that these cuts would also cripple a number of non-defense programs including FAA’s Next Generation Air Transportation System**. The Congressional Budget Office estimates that non-defense agencies would suffer an immediate 7.8 percent budget cut from sequestration. **The Center for Budget and Policy Priorities’ estimate comes in even higher at 9.1 percent. For FAA, this means a potential loss of $1 billion or more. FAA – the agency responsible for monitoring and safely guiding 85,000 aircraft each day through our nation’s skies – has never faced a budget cut of this magnitude**. **Two-thirds of FAA’s budget is allocated to operating expenses – most of which pays the salaries of air traffic controllers, safety inspectors and other federal employees whose skills are required each day to ensure safe flights of aircraft through U.S. airspace. The House Appropriations Committee’s Democratic staff estimated that sequestration would cause the layoff of 1,200 air traffic controllers, the closure of almost 250 airport control towers and the loss of 600 safety inspectors and certification staff.** The FAA is one of a handful of federal agencies providing a “business-type” service directly to the U.S. economy 24 hours a day, seven days a week. If FAA employees do not report to work, aircraft cannot fly and design improvements will not be approved**. Employee furloughs and layoffs like these would require lengthy consultation and the exercise of “bumping” rights. It is unlikely that senior officials will allow a nationwide layoff of air traffic controllers that will have a large negative impact on our economy**. An option the agency could exercise to prevent this from happening is the “transfer authority” provided in its annual appropriations bills that could be used to modify sequestration’s across-the-board cuts. **Because the NextGen portfolio provides state-of-the-art capabilities, it will be hit the hardest. AIA believes that as a result of sequestration, NextGen could lose 30-50 percent of its funding, not the 8 percent many believe.** To protect the operating accounts, FAA can apply disproportionate reductions against its procurement and research programs.

#### Current FAA programs delayed and awful

FiercegovernmentIT 12 (leading news agency on government tech innovation, “FAA air traffic facility consolidation effort already late” june 4, lexis)

¶ **Air traffic control facilities across the nation must be consolidated in order to realize the full transformative effect of the Federal Aviation Administration's ongoing air traffic control modernization effort,** an agency official told a May 31 House panel.¶ The modernization effort, an at least $40 billion effort known as NextGen, "fundamentally relies on the agency's ability to optimize our facilities and workforce," said David Grizzle, chief operating officer of the FAA's air traffic organization. Grizzle spoke before the House Transportation and Infrastructure subcommittee on aviation.¶ However, **the FAA is already behind in implementation of a plan finalized in November calling for the merger of long range air route and terminal radar approach control facilities over the next two decades**.¶ The plan calls for the FAA to begin consolidation by building a new integrated facility covering the New York-New Jersey-Philadelphia area. But, said Lou Dixon, Transportation Department principal assistant inspector general for auditing and evaluation, **the FAA has delayed a final decision on where to build that first consolidated facility until May 2013. That decision will impact the consolidation schedule for other locations**, Dixon added.¶ The FAA currently operates 542 facilities--including airport towers--and staffs 292 of them with civil servants and is responsible for the maintenance for 402 of them. Many FAA facilities are quite old; the average age for an en-route facility is 49 years, according to the agency.¶ In 2010, the FAA established a NextGen Future Facilities Special Program Management Office and tasked it with planning large-scale facility consolidations. The agency estimates it needs $2.3 billion to construct and equip the first of four consolidated facilities by 2023; however the FAA reauthorization act signed into law earlier this year would permit the agency to spend less than that, Dixon noted. As a result, the FAA is investigating alternative financing sources such as partnership with other agencies, local government, or the private sector, Dixon added.¶ Dixon also **faulted the FAA for lacking valid metrics for evaluating whether planned consolidated will indeed achieve operational efficiencies and cost savings, a charge Grizzle said during the hearing was accurate.**¶ **"We are working hard to determine the appropriate criteria for making FAA's decisions moving forward**," Grizzle told the commit

#### Current NextGen Insufficient

**Reason Foundation 12** (Reason Foundation advances a free society by developing, applying, and promoting libertarian principles, including individual liberty, free markets, and the rule of law, think tank, 6/26, “Air Traffic Control Newsletter #94” <http://reason.org/news/show/air-traffic-control-reform-news-94>)

And that explains why the ATO’s Chief Operating Officer, David Grizzle, in his testimony at the May 31 hearing essentially told Congress **the agency would not be delivering a comprehensive, long-term plan by the required June 14th date. Instead, “the plan submitted to Congress pursuant to the legislation will only cover the time period into the future for which we have reasonably reliable visibility**. As a result, the plan will go out about 5-8 years.”¶ **This represents a huge missed opportunity, given the age and deterioration of Centers and TRACONs**. **It makes little sense to replace one-for-one the 21 Centers (average age 49 years) and 167 TRACONs** (average age 28 years) if most of those facilities are going to be shut down and their functions transferred to a much smaller number of NextGen facilities. One of the virtues of a complete consolidation plan is that it will give controllers and managers plenty of advance notice about whether and when they may need to relocate, enabling them to know whether their retirement date occurs prior to their facility’s shutdown and, in the case of newer hires, whether it might make more sense to rent rather than buy a home, if relocation is in prospect within, say, 5 or 10 years**.**¶ **For years I’ve worried that when we finally got to the point of planning the NextGen facility consolidation, the main problem would be Congress. It’s dismaying to see that the first problem has arisen within the FAA itself.**

## \*\*Air Traffic Control Advantage\*\*

### XT – Economy Internal Links

#### NextGen ensures economic prosperity and national security interest – $5 of benefit for every $1 invested

Aerospace Industries Associations 12 (“WHITE PAPER ON ENSURING JPDO SUCCESS”4/09/12 <http://www.aia-aerospace.org/assets/wp_ensure-jpdo.pdf>)

A safe, secure and efficient air transportation system is essential to U.S. economic prosperity and future competitiveness. Fundamental improvements to our nation’s air transportation infrastructure are needed to address security requirements and projected capacity shortfalls. The White House Office of Science & Technology Policy (OSTP), the Commission on the Future of the U.S. Aerospace Industry, the National Research Council (NRC), and the U.S. Congress all recommended the timely development of a next-generation air transportation system to support strong U.S. economic growth and the needs of civil aviation, as well as our national and homeland security interests. Numerous studies have documented the enormous contributions aviation makes to the U.S. economy and thus the rationale for pursuing public policies and facilitating infrastructure investments that enable aviation to grow and prosper. A 2002 study by Global Insight and the Campbell-Hill Aviation Group showed aviation’s total impact on the U.S. economy exceeds $900 billion annually (nine percent of the nation’s gross domestic product) and supports over 11 million American jobs. Furthermore, investments in aviation infrastructure produce positive returns. For every dollar invested in airport and air traffic system improvements, up to $5 in benefits returns to the U.S. economy. Finally, the costs of allowing our aviation system capacity to continue to fail to meet the demand far outweigh the costs of transforming the system. Estimates of the costs of flight delays and cancellations to our economy over the next 10 years range from $140-$170 billion.

#### Implementing NextGen on a priority basis is necessary to ensure US leadership and economic stability

Aerospace Industries Associations 12 (WHITE PAPER ON ENSURING JPDO SUCCESS, 4/09/12 <http://www.aia-aerospace.org/assets/wp_ensure-jpdo.pdf>)

The administration must move forward quickly with the investment necessary to implement the next generation air transportation system. Air traffic demand is growing rapidly again, significantly stressing the ability of the current system to provide adequate capacity safely, securely and efficiently. Without significant capacity enhancements soon, the pressure to apply demand limiting schemes on a broad scale will grow, resulting in significant negative impacts on the economy. Emerging security requirements also necessitate taking action now on developing an integrated plan for a next generation air transportation system. Security must be embedded into the design of the system, and it is essential that air traffic security systems be fully integrated with other homeland security systems. If transformation of the air transportation system is delayed, the opportunity to ensure such integration will be lost. While it is feasible to achieve measurable improvements in system performance with initial applications of a next generation air transportation system in as little as two to three years, fully achieving the vision set forth in the JPDO National Plan for a safe, secure, efficient, reliable and affordable air traffic system will take 10 to 20 years. Given the immediate security and economic needs, and the long lead-time for full implementation of a revolutionary new system, it is imperative that we move forward as quickly as possible. Recent developments in Europe are also driving us to accelerate our air transportation system transformation efforts. Europe is aggressively moving forward in developing new air traffic technologies to give that continent the world’s most advanced system and to displace our nation as the global leader in aviation technology. We cannot take this challenge to our leadership lightly. Summary Given the importance of a safe, secure and efficient air transportation system to our country’s economic, homeland and national security, the administration must take action now to increase national commitment to: Immediately partner with industry to implement the next generation air transportation system. · Provide full funding on a priority basis. demand limiting schemes on a broad scale will grow, resulting in significant negative impacts on the economy.

### Stimulus/Multiplier Internal

#### Stimulus especially true in the context of NextGen—job spillover

Nexa Advisors 11 “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues”, April, <http://www.nextgenfund.com/files/downloads/NEF_Economic_Study.pdf>

On behalf of the Air Transport Action Group, Oxford Economic Forecasting xx found that catalytic multiplier for aerospace in North America to be 2.42 (Figure 12). NEXA Advisors applied this factor to the combined direct, indirect, and induced economic benefits and found the resulting catalytic benefits of the Fund in 2018 are estimated to be $16.6 billion. An interesting anecdote is that the International Civil Aviation Organization (ICAO) found in a recent study xxi that globally, every 100 jobs generated by air transport creates or supports an additional 610 jobs in other industries. Thus by extension, the Fund could be expected to create or support 2 million jobs in other industries through catalytic effects

### Jobs Internal

#### **NextGen creates a lot of Jobs**

Blackely 10 (Marion C.,CEO of the Aerospace Industries Association, Feb. 1 “Jobs for America: The NextGen Component” Lexis Nexus)

Marion C. Blakely, the president and CEO of the Aerospace Industries Association, has taken note of the NAMs new report from the Milken Institute, œJobs for America, including the analysis of the economic impact of NextGen, the advanced air transportation system, and aerospace manufacturing. From a statement:¶ Jobs for America says that more than 182,000 jobs could result from a $10.4 billion government investment in the Next Generation Air Transportation System.¶ NextGen is a solution at hand for our nation. The program is shovel ready and in addition to generating jobs will enhance the safety, security and environmental stewardship of our transportation system.¶ Jobs for America also calls out the value of aerospace manufacturing, which employs high-skilled labor and pays above average wages with an extensive value chain that stimulates many other manufacturing industries. According to our research, there are already 2,436 manufacturing, maintenance and installation facilities operating in every state of the union. Investment in NextGen will add more jobs to these already established and productive facilities.

### Tech Spinoff Internal

#### NextGen creates tech spin-off

SP airBUZ.net 11 (exclusive magazine on civil aviation from India that has been launched by Mr Ashok Chawla, Secretary - Ministry of Civil Aviation, September 13 “Reducing Air Congestion; ¶ Without a complete transformation of ATM systems, the safety of increasingly crowded skies in many parts of the globe is likely to be in jeopardy” Lexis Nexus)

A number of spin-offs are expected from NextGen and ADS-B that will impact practically every facet of flight operations. Unlike in the case of radar, surveillance accuracy will be independent of aircraft distance from the interrogation equipment. Required navigation performance (RNP) certified navigation equipment and altimetry will permit a pilot to fly the desired altitude, speed and direction with negligible inaccuracies. A pilot using the ADSB system can execute a gradual descent to land, rather than reducing altitude in steps. Known as optimised profile descent (OPD), this is a significant fuel saver.

### XT – NextGen KT Competitiveness

#### NextGen crucial for global competitiveness

Congressional Documents and Publications 12 (April 26, “House Science, Space, and Technology Subcommittee on Space and Aeronautics Hearing; ¶ "An Overview of the NASA Aeronautics Research Mission Directorate Budget for FY2013."; ¶ Testimony by Jaiwon Shin, Associate Administrator, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration” lexis)

NASA continues to lay the foundation for the future of flight by exploring new ways to manage air traffic, build more fuel-efficient and environmentally friendly airplanes, and ensure aviation's outstanding safety record. Through the research we conduct and sponsor with universities and industry, we help to develop the technology that enables continuous innovation in aviation. Investments in aeronautics technology stimulate the economy, and contribute to the Nation's global competitiveness through the creation of new products and services.To accomplish this comprehensive research agenda, NASA's budget provides $551.5 million to the Aeronautics Research Mission Directorate (ARMD) in FY 2013. This budget continues support for conducting cutting-edge research at the fundamental and integrated systems levels to advance U.S. leadership in aeronautics RandD and to address national aviation challenges. We will continue research into improving aviation safety and minimizing the environmental impact of aviation, and we will also develop innovative air traffic management technologies and revolutionary vehicle technologies for the Next Generation Air Transportation System (NextGen). We will continue research into the integration of Unmanned Aerial Systems (UAS) into the National Airspace System (NAS) and the validation and verification of complex aviation systems.

#### Congestion and traffic hurt US competiveness and the economy as a whole

Hendricks 11 (Tom Hendricks is the senior vice-president of safety, security, and operations for the Air Transport Association, October 5th, “Committee Hearing Transcript” Lexis)

Chairman Petri, and Ranking Member Costello, and other members of the subcommittee, good afternoon. My name is Tom Hendricks. I am the senior vice-president of safety, security, and operations for the Air Transport Association.¶ We are committed to evolving the National Airspace System into the NextGen Air Transportation System or NextGen. To enable this evolution, we believe that Congress and the administration should be guided by a national airline policy that recognizes America's airlines as the global businesses they are, and enables them to operate as such. An indispensable element of such a policy is NextGen. We appreciate the opportunity to express our views today about the progress of that modernization.¶ Airlines understand the importance of NextGen. They are deeply engaged in it. Airlines also recognize that we cannot wait for what is over the horizon if improvements are within our reach and are needed now. We believe that tangible, near-term benefits that improve customer satisfaction with better on-time performance and that saved fuel and reduced emissions can be achieved.¶ The FAA should therefore focus on ensuring that needed policies, procedures, and training are implemented to ensure that the benefits of existing navigation technologies are maximized without delay.¶ Our priorities for this modernization are to accelerate the development or approval process of performance-based navigation procedures-- the RNAV and RNP -- approaches that were previously referred to, streamline the National Environmental Policy Act review process to expedite the development and implementation of PBN and other NextGen procedures, and to develop metrics that gauge the performance of NextGen.¶ We appreciate that each of these objectives was addressed in the FAA Reauthorization and Reform Act of 2011, H.R. 658, which this committee and the full House approved earlier this year.¶ We also commend the House and Senate for resisting any increases in commercial aviation taxes in their respective FAA bills. Airlines and passengers are already subject to 17 federal taxes and fees, which total nearly $17 billion last year in our industry. As a result, federal taxes now constitute $61 of every $300 domestic round-trip ticket, putting commercial aviation at a higher federal tax rate than so-called sin taxes on alcohol, tobacco and firearms.¶ We urge House and Senate transportation leaders to resolve their differences and send a final multiyear FAA bill to the president's desk as soon as possible. We also ask that Congress reject aviation taxes included in the White House's debt-reduction plan, a new $100 per flight departure tax and a tripling of the passenger security tax from $2.50 to $7.50.¶ These taxes would cost passengers and airlines an additional $3.5 billion dollars annually, a 21 percent increase in our annual federal tax bill. The results of which would be devastating to our industry, our passengers, and the U.S. economy.]¶ U.S. airlines have lost $55 billion and cut 160,000 jobs since 2001. The new taxes will result in another 10,000 airline job cuts next year and permanent reductions in service to less profitable, small, and medium-sized communities.¶ In addition to holding the line on the tax burden of our passengers and airlines, enactment of a long-term FAA bill will help advance NextGen. NextGen offers the potential to further improve aviation safety and deliver substantial efficiency and environmental improvements.¶ The National Air Space System, despite being the most complex aviation system in the world, is extraordinarily safe. That remarkable safety record reflects the determined efforts of the FAA, airlines and its employees, as well as other stakeholders, and we appreciate the support and oversight provided by this committee, which has played a key role in helping shape that success.¶ However, as the committee knows all too well, the National Airspace System relies on safe, but outdated technology. An FAA commission study published last November estimated that the total cost of U.S. air transportation delays was over $31 billion dollars in 2007. Without significant modernization of the system, congestion and delays will worsen as traffic increases, thereby undermining not only the viability and global competitiveness of U.S. aviation industry, but the economy as a whole.¶ Concern about the future of air space management as these data show is not a parochial consideration. Aviation is one of the principle drivers of the U.S. economy. Commercial aviation drives 1.3 trillion dollars in annual economic activity or 5 percent of U.S. gross domestic product and 10 million good paying jobs.¶ In this context, the need to improve air space management is immediate and pressing. We cannot wait for all of the pieces of NextGen to come together. We must get the most out of the technology investments already made in our aircrafts. This means that the FAA should focus resources on expediting introduction, the introduction of the most cost-beneficial elements of next gen available --most notably, PBN procedures. These will pay immediate dividends for all stakeholders, including passengers and shippers by reducing delays, lowering fuel burn, and decreasing emissions.¶

#### NextGen key to competitiveness – current system fails

NASA 7 (“NASA & THE NEXT GENERATION AIR TRANSPORTATION SYSTEM (NEXTGEN)”, <http://www.aeronautics.nasa.gov/docs/nextgen_whitepaper_06_26_07.pdf>)

Forecasts indicate a significant increase in demand, ranging from a factor of two to three by 2025. 1 However, **the current system is already strained and cannot scale to meet this demand**. The ensuing shortfall could cost the U.S. billions of dollars annually in lost productivity, increased operational costs, higher fares, **and lost value from flights that airlines must eliminate to keep delays to an acceptable minimum**. 2 As noted in the recently released National Aeronautics R&D Policy, “**Possessing the capability to move goods and people, point-to-point, anywhere in the nation and around the world is essential to advance the local, state, and national economies of the United States.” In short, U.S. competitiveness depends upon an air transportation system that can significantly expand capacity and flexibility, in the presence of weather and other uncertainties, while maintaining safety and protecting the environment**. The problem and the path forward were highlighted in a statement by then-Department of Transportation Secretary, Norman Y. Mineta in a January 27, 2004 speech when he stated, “The changes that are coming are too big, too fundamental for incremental adaptations of the infrastructure…we need to modernize and transform our air transportation system – starting right now.” **Evolutionary extrapolation of the current system simply cannot get us where we need to go.**

**The Solution: The Next Generation Air Transportation System (NextGen)**

**The United States Congress recognized the magnitude of the challenge and addressed it in the Vision 100 Century of Aviation Reauthorization Act** (Public Law 108-176). Vision 100 established the Joint Planning and Development Office (JPDO) to engage multiple agencies that would collaborate to plan, develop and implement the Next Generation Air Transportation System or NextGen. The JPDO is comprised of members from the Departments of Transportation (DOT), Defense (DOD), Commerce (DOC) and Homeland Security (DHS) together with the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA). Each agency has a critical role to play in NextGen. **The recently released NextGen Concept of Operations (ConOps) describes the capabilities the system requires. Achieving these capabilities will require a mixture of research, technology development, policy and procedure development, system development, and other actions.** Agencies will contribute to the achievement of NextGen based on the relationship of their missions to the required capabilities. Table 1 below highlights the key characteristics and capabilities of NextGen, and they are synopsized in Appendix A.

### Aerospace Brink Now

#### Aerospace industry collapse will be fast and take decades to recover from—we’ve reached the tipping point

Albaugh 11 (Jim, Fellow of the American Institute of Aeronautics and Astronautics and member of the International Academy of Astronautics, 4/27, “Keeping America’s Lead in Aerospace”, Speech to the 10th Annual Aviation Summit US Chamber of Commerce, <http://www.aia-aerospace.org/newsroom/speeches_testimony/>)

Today we take America’s industrial base for granted, but we do so at our own peril. Think about what a strong industrial base has meant for our country.¶ It was the “arsenal of democracy” that equipped us to win World War II and the Cold War. It put a man on the moon. It made America the worldwide leader in space, commercial aviation, and defense.¶ But a strong industrial base is not a given. It’s a product of the right policies, investments and priorities – and of time. We don’t have to look far to see how an industrial base can quickly wither away. The UK was once renowned for its aerospace and defense manufacturing. Now that country is buying F-35s, C-17s, Apaches, and Chinooks from us, and of course, commercial airplanes. UK leaders realized a few years ago that they needed an industrial policy and have put one in place. But it won’t be easy for the UK to rebuild its capabilities, and that should serve as a warning to us.¶ When we don’t invest in new development programs and when policymakers don’t consider how procurement decisions impact the industrial base, we risk losing talent and expertise that’s taken us decades to build.¶ Our engineering talent is not a fixed asset. It’s made up of people who need challenging new projects. And if they don’t have them, they move into other industries or retire. Once lost, reconstituting it is very difficult and will take decades. With the F-35 in test flight, we are now at a point where there are no new military airplanes or helicopters in development by the DoD. I think that’s the first time we’ve been in that situation in probably a hundred years. We risk following the UK in dismantling our industrial base if we don’t do something about that.¶ You might think, “We are building aircraft for the military, so what’s the problem?”¶ To be a viable contractor and an integrator of very complex systems, you have to understand how to do R&D. You have to take R&D into detailed design. You have to transition detailed design into production. You have to run your production systems, and you have to have a very healthy supply chain. What we’re seeing right now with no new start in the Department of Defense is we are losing our ability to do detailed design. We are losing our capability to transition design into manufacturing. Once that’s gone, it will take a long time to reconstitute. I know this is an issue. That was one of the problems we had on the 787 program. We had not done a new development program since the 777, and we paid the price as a result.¶

### XT – Aerospace KT Heg

#### Aerospace key to global leadership

Hernnstadt 8 (Owen, Director of Trade and Globalization director of the Trade and Globalization Department, International Association of Machinists and Aerospace Workers, “Offsets and the lack of a comprehensive U.S. policy,” Economic Policy Institute, <http://www.sharedprosperity.org/bp201.html>)

Aerospace is an especially important industry for a nation's economic and physical security, and perhaps no other country has benefited more from the aerospace industry than the United States.9 The Final Report of the Commission on the Future of the United States Aerospace Industry states that the industry "contributes over 15 percent to our Gross Domestic Product and supports over 15 million high quality American jobs" (Aerospace Industry Commission 2002, 1-2). U.S. aerospace has been identified as a major source of "technical innovation with substantial spillovers to other industrial and commercial sectors" and "high-wage employment, which spreads the benefits of rising productivity throughout the U.S. economy.…" The Aerospace Commission also noted the industry's contribution to the nation's "economic growth, quality of life, and scientific achievements…." (Aerospace Industry Commission 2002, 1-2). Despite the importance of aerospace, the deterioration of the industry at home has continued at a dramatic rate. Nearly 500,000 jobs have been lost in the U.S. aerospace industry since 1990 (Aerospace Industry Commission 2002, 8-12; see also AIA 2007), and several hundred thousand more workers have lost their jobs in related industries. Sadly, the fact of these enormous job losses comes as no surprise. More than 10 years ago, in Jobs on the Wing, authors Randy Barber and Robert Scott predicted that "up to 469,000" jobs in the aerospace and related industries "could be eliminated by 2013 because of offset policies and increased foreign competition" (Barber and Scott 1995, 2). In a later study, Scott predicted that by 2013 the industry would suffer a loss of over 25% "of the total jobs in aircraft production in 1995" (Scott 1998). These gloomy predictions are apparently reinforced by U.S. government reports. According to the Department of Labor, the outlook for employment in the U.S. aerospace industry is not rosy: between 2002 and 2012 aerospace employment in the United States will "decrease by 18 percent" (U.S. Department of Labor 2004). The future health of the industry depends in large part on its ability to attract new workers, but the crisis in employment and the prediction that the crisis will deepen does not bode well for attracting new workers. In its final report, the Aerospace Commission summarized this concern: The U.S. aerospace sector, once the employer of choice for the "best and brightest" technically trained workers, now finds it presents a negative image to potential employees. Surveys indicate a feeling of disillusionment about the aerospace industry among its personnel, whether they are production/technical workers, scientists or engineers. The majority of newly dislocated workers say they will not return to aerospace. In a recent survey of nearly 500 U.S. aerospace engineers, managers, production workers, and technical specialists, 80 percent of respondents said they would not recommend aerospace careers to their children. (Aerospace Industries Commission 2002, 8-5) While the Aerospace Commission found that "U.S. policy toward domestic aerospace employment must reaffirm the goal of stabilizing and increasing the number of good and decent jobs in the industry," this policy has yet to be embraced, let alone implemented (Aerospace Industries Commission 2002, 8-12). Far from embracing any sort of effective industrial policy when it comes to aerospace, the U.S. government continues to relegate policy development in this area to private parties, just as it does with offsets in general. The inherent weakness to this approach is obvious—private U.S. companies must compete with foreign companies that have the full support of their governments. If a sale means transferring production and/or technology, private companies are in a difficult position. Given that their interests do not always align with the national interest, they can be expected to maximize corporate returns, even though the use of offsets, which can deeply affect an industry as essential to the nation's economy and security as aerospace, can be detrimental to U.S. national interests. Should there be any doubt about the seriousness of the competition from foreign entities and governments, one has only to look at the success of companies like EADS. What were once fledgling industries are now U.S. competitors who benefit from a sophisticated approach to offsets that moves jobs and technology their way.10 As succinctly stated by the Aerospace Commission, "…foreign nations clearly recognize the potential benefits from aerospace and are attempting to wrest global leadership away from us" (Aerospace Industries Commission 2002, 1-2). A country that truly understands the importance of adopting a comprehensive aerospace policy based on offsets is China. As reported in the 2005 Report to Congress of the of U.S.-China Economic and Security Review Commission, "…Chinese firms have used their leverage to extract offsets—agreements to transfer some of the aircraft production along with related expertise and technology—as part of the deals"; the report further concludes, "China nurtures its domestic aviation and aerospace industry by exploiting the international competition already in the industry" (U.S.-China Review Commission 2005, 30). Indeed, as summarized in one U.S. government report: China is likely to be the largest customer—and possibly an emerging competitor—of the U.S. aerospace industry in the future. China's aerospace manufacturing base is enormous. U.S. companies (and European companies to a lesser extent) have successfully partnered with Chinese companies that provide components or parts for a number of commercial aerospace programs. However, China also is seeking to become a world-class prime commercial aerospace manufacturing industrial base, both through indigenous development programs and joint ventures with non-Chinese companies. (U.S. Department of Commerce 2005b, xii) In testimony in 2001, the International Association of Machinists and Aerospace Workers (IAM) singled out China for developing an effective industrial policy in an effort to create its own aerospace industry. It noted in its testimony that the U.S. International Trade Commission had already found with respect to China, "…the nation's aviation sector intends to pursue a principal role in commercial aircraft manufacturing."11

#### Strong aerospace industry’s vital to overall US power - decline causes a ripple effect

**Thompson 9** (David Thompson is the President – American Institute of Aeronautics and Astronautics, “The Aerospace Workforce”, Federal News Service, 12-10, Lexis)

**Aerospace systems are of considerable importance to U.S. national security, economic prosperity, technological vitality and global leadership. Aeronautical** and space **systems protect our citizens, armed forces and allies abroad**. They connect the farthest corners of the world with safe and efficient air transportation and satellite communications, and they monitor to the Earth, explore the solar system, and study the wider universe.¶ **The U.S. aerospace sector also contributes in major ways to America's economic output and high technology employment**. Aerospace research and development and manufacturing companies generated approximately $240 billion in sales in 2008, or nearly 1.75 percent of our countries gross national product.¶ They currently employ about 650,000 people throughout our country. U.S. government agencies and departments engaged in aerospace research and operations add another 125,000 employees to the sector's workforce, bringing the total to over 775,000 people. Included in this number are more than 200,000 engineers and scientists, one of the largest concentrations of technical brainpower on Earth.¶ However**, the U.S. aerospace workforce is now facing the most serious demographic challenge in his 100-year history.** Simply put, today many more older, experienced professionals are retiring from or otherwise leaving our industrial and governmental aerospace workforce than early career professionals are entering it.¶ This imbalance is expected to become even more severe over the next five years, as the final members of the Apollo era generation of engineers and scientists complete 40 or 45-year careers and transition to well-deserved retirement**. In fact, around 50 percent of the current aerospace workforce will be eligible for retirement within just the next five years.**¶ Meanwhile, **the supply of younger aerospace engineers and scientists entering the industry is woefully insufficient to replace the mounting wave of retirements and other departures that we see in the near future.** In part, this is the result of broader technical career trends as engineering and science graduates from our country's universities continue a multi-decade decline, even as the demand for their knowledge and skills in aerospace and other industries keeps increasing.¶ Today only about 15 percent of U.S. students earn their first college degree in engineering or science, well behind the 40 or 50 percent levels seen in many European and Asian countries. **Due to the dual use nature of aerospace technology and the limited supply of visas available to highly qualified, non-U.S. citizens, our industry's ability to hire the best and brightest graduates from overseas is also severely constrained**. As a result, unless effective action is taken to reverse current trends, the U.S. aerospace sector is expected to experience a dramatic decrease in its technical workforce over the next decade.

### NextGen Deters Threats

#### Dual use nature of NextGen gives us enhanced military capabilities enabling us to avert threats

Mineta and Blakey 4 (Norman and Marion,”Next Generation Transportation System: Integrated Plan” former secretary of transportation and president and chief executive officer of the Aerospace Industries 12/12/04 <http://www.jpdo.gov/library/ngats_v1_1204r.pdf>)

The future air transportation system must be able to facilitate the nation’s ability to respond rapidly to emerging threats while maintaining commercial and civilian access to our airspace. Integrating the information and communication systems of defense agencies is essential to ensuring that our nation is prepared to combat threats. Integrated capabilities will support national defense by improving our ability to share information among agencies and organizations responsible for protecting our country. Sharing information and obtaining a common picture of our skies will enable a proactive approach to protection. It also will facilitate rapid responses to a variety of threats. For example, improved information regarding aircraft that may be entering restricted airspace will likely reduce the need for combat air patrols. The future air transportation system also will improve support for military missions. Commercial carriers will be able to provide more capable and economical transportation services and access to global airspace. Additionally, global harmonization of standards, procedures, and operations will reduce the investment necessary to ensure U.S. military access to international airspace. The availability of improved tracking and surveillance technologies will allow continued commercial and civilian access to our national airspace while mobilizing defense activities. The future system will feature the ability to deﬁne ﬂexible airspace, quickly changing boundaries required by military and civilian operations. This will enhance the ability to support military missions and ensure continuous quality service to other airspace users.

### Aerospace KT Economy

#### Aerospace key to the economy, four reasons

Wensveen 7 (John G. is President and CEO of Airline Visions, 2007 “LLC Air Transportation: A Management Perspective”, pg 28)

Naturally, such an industry is vital to the U.S. economy, especially in the following areas The excellence of U.S. aerospace products has created strong demand abroad, with the result that the industry consistently records a large international trade surplus. Despite several years of decline in number of workers, the aerospace industry remains one of the nation’s largest manufacturing employers. The industry conducts more research and development(R & D) than any other industry, and R & D is a major long-term determinant of national economic growth.4. Impact on other industries. A great many new aerospace-related products and processes have spun oﬀ from the initial aerospace requirement and have provided value to other industries, both in sales and in productive efficiency. In addition, the aero-space industry is a large-scale user of other industries’ goods and services: it has been estimated that for every 100 aerospace jobs created, another 73 are created in other industries. Each of these factors represents a signiﬁcant contribution to the U.S. economy; collectively, they elevate aerospace to a key position among the nation’s major industries.

#### Investment in the aviation industry is vital – provides short and long term sustainable growth

Smyth and Pearce 7 (Mark, Brian International Air transport Association, Senior Economist, “Aviation Economic Benefits” July 2007 <http://www.iata.org/whatwedo/Documents/economics/aviation_economic_benefits.pdf>)

The aviation industry facilitates greater global travel, economic links and trade. It is a key factor in connecting a country to the global economy. It provides greater opportunities for travel and tourism. It connects firms to larger potential sales markets, to more efficient supply chains and to greater investment opportunities. It helps to improve productivity levels, to the benefit of the national economy. This report demonstrates how investment in the aviation industry can create a significant economic return – over and above the returns received directly by users. In particular, it shows how the incremental benefits of aviation investment are greatest for developing economies. It can offer them significant and speedy economic return, providing an important step in their economic development and integration into the global economy. The wider economic returns must not be ignored in debates about future aviation development and investment. They represent the additional social and economic value of air transport that would be lost completely if future aviation growth was constrained or prevented. Consideration of aviation investment projects will rightly take into account the wider environmental costs involved. However, a balanced approach must ensure that the wider economic benefits are included too The report uses statistical results to estimate the economic rate of return of a few examples of aviation investment projects. These examples demonstrate that investment in aviation can create a significant economic rate of return. These returns are in addition to the direct returns earned by investors and users. For example, an investment of C$1,805 million at Vancouver airport was estimated to have led to a 5.4% increase in connectivity for Canada as a whole. As such, this raised Canada’s long-term productivity by 0.04%. Assuming that the number of hours worked remains constant, this implies an annual boost to Canadian GDP of C$348 million (an economic rate of return of 19.3%). The economic rate of return can also be estimated for aviation investment examples in several developing economies (see Table 1). The estimated long-term boost to productivity and GDP ranged from 0.2% to 0.42% (significantly higher than for Canada). Kenya, with the highest increase in connectivity and a larger economy than the other examples, enjoys the highest annual economic rate of return of 59%. For the other developing economies the annual economic rates of return range from 16% to 28%. These are still strong rates of return, but are more comparable with the rate of return in Canada (19.3%). Developing countries face capital costs, especially for new aircraft, that are similar to those faced by developed countries. As such, though the boost to GDP is higher in proportional terms for developing economies, the economic rates of return on investment for some of the examples are similar to that of Canada because the size of their GDP is relatively low and capital costs are still high. Nevertheless, the available economic return is still high and provides a strong justification for investment in the aviation industry.

#### US aerospace industry key to the national economy—exports, jobs, and leadership

Trupo 11 Mary, Senior Advisor and Director of Public Affairs U.S. Department of Commerce International Trade Administration, “AEROSPACE INDUSTRY IS CRITICAL CONTRIBUTOR TO U.S. ECONOMY ACCORDING TO OBAMA TRADE OFFICIAL AT PARIS AIR SHOW”, 6/21,

<http://trade.gov/press/press-releases/2011/aerospace-industry-critical-contributor-to-us-economy-062111.asp>

“The U.S. aerospace industry is a strategic contributor to the economy, national security, and technological innovation of the United States,” Sánchez said. “The industry is key to achieving the President’s goals of doubling exports by the end of 2014 and contributed $78 billion in export sales to the U.S. economy in 2010.” During the U.S. Pavilion opening remarks, Sánchez noted that the aerospace sector in the United States supports more jobs through exports than any other industry. Sánchez witnessed a signing ceremony between Boeing and Aeroflot, Russia’s state-owned airline. Aeroflot has ordered eight 777s valued at $2.1 billion, and the sales will support approximately 14,000 jobs. “The 218 American companies represented in the U.S. International Pavilion demonstrate the innovation and hard work that make us leaders in this sector,” said Sánchez. “I am particularly pleased to see the incredible accomplishments of U.S. companies participating in the Alternative Aviation Fuels Showcase, which demonstrates our leadership in this important sector and shows that we are on the right path to achieving the clean energy future envisioned by President Obama.” The 2011 Paris Air Show is the world’s largest aerospace trade exhibition, and features 2,000 exhibitors, 340,000 visitors, and 200 international delegations. The U.S. aerospace industry ranks among the most competitive in the world, boasting a positive trade balance of $44.1 billion – the largest trade surplus of any U.S. manufacturing industry. It directly sustains about 430,000 jobs, and indirectly supports more than 700,000 additional jobs. Ninety-one percent of U.S. exporters of aerospace products are small and medium-sized firms.

#### US aviation key to the global economy—stimulates trade and growth

IHS 2 Information Company, “National Impact of Civil Aviation”, July, <http://www.aia-aerospace.org/stats/resources/DRI-WEFA_EconomicImpactStudy.pdf>

 Civil aviation has become an integral part of the U.S. economy. It is a key catalyst for economic growth and has a profound influence on the quality of life of populations around the globe. It integrates the world economy and promotes the international exchange of people, products, investment, and ideas. Indeed, to a very large extent, civil aviation has enabled small community and rural populations to enter the mainstream of global commerce by linking such communities with worldwide population, manufacturing, and cultural centers. Civil aviation products and services generate a significant surplus for the U.S. trade accounts and are in the forefront in the development and use of advanced technologies. Fundamentally, civil aviation touches nearly every aspect of our lives, and its success will, to a great degree, shape American society and the U.S. economy in the coming decades.

#### Aviation investment lays the foundation for American jobs  - increase use of airports leads to growth and business innovation

Babbitt 11 (J. Randolph, FAA Administrator, “FAA NextGen Implimintation Plan, March 2011, <http://www.faa.gov/nextgen/media/ng2011_implementation_plan.pdf>)

Our nation’s economy depends on aviation. NextGen lays a foundation that will continually improve and accommodate future needs of air travel while strengthening the economy with one seamless global sky. • NextGen will help communities make better use of their airports. More robust airports can help communities attract new jobs, and help current employers expand their businesses. By doing this the U.S. will strengthen its economy and help communities realize all the benefits that aviation can bring

#### Revitalizing the aerospace industry is key to the economy – accounts for a third of US exports

Mineta and Blakey 4 (Norman and Marion,”Next Generation Transportation System: Integrated Plan” former secretary of transportation and president and chief executive officer of the Aerospace Industries 12/12/04 <http://www.jpdo.gov/library/ngats_v1_1204r.pdf>)

Air transportation fuels the global economy by delivering goods and facilitating the movement of people for business and personal purposes. Already a third of U.S. exports by value are shipped by air. 8 Air transportation will expand with global commerce. Th e number of international air travelers will triple by 2025. 9 10 11 Th e expansion will include direct access to a wider range of foreign destinations and global markets through liberalization agreements such as Open Skies Agreements. Continued expansion depends in part on productivity gains and cost savings. Costs associated with system improvements will not put undue burdens on military, commercial, and private aircraft owners. Th e aviation-manufacturing sector—airframes, avionics, air traﬃ c control and surveillance technologies—all play an important role in the U.S. economy and remain a critical aspect of our national defense. Th e vitality of U.S. aviation manufacturers will strengthen as government concentrates on establishing performance-based standards while industry develops innovative products to capture new markets. Specialty services tailored to individual customer needs, such as on-demand general aviation, will become part of the system. 12 Over the next 20 years, market projections for microjets and unmanned vehicles number in the tens of thousands. 13 14 In the same period, it is projected the cumulative value of aircraft sales and aircraft service markets will exceed $2 trillion. 15 It is essential that we establish a clear vision for the future of this sector based on the least restrictive regulatory environment possible consistent with safety and security requirements. Only when that vision is spelled out will we unleash the energy and creativity of America’s aerospace industry in ways that will ensure the future of the air transportation system.

### AT: Dedev – Green Growth Key

#### We’re on the verge of a global shift towards biospheric empathy---plan furthers that shift and makes growth environmentally sustainable---collapse now destroys the transition

Rifkin 10 (Jeremy, President of the Foundation on Economic Trends, January 11, “'The Empathic Civilization': Rethinking Human Nature in the Biosphere Era”, http://www.huffingtonpost.com/jeremy-rifkin/the-empathic-civilization\_b\_416589.html )

The pivotal turning points in human consciousness occur when new energy regimes converge with new communications revolutions, **creating new economic eras**. The new communications revolutions become the command and control mechanisms for structuring, organizing and managing more complex civilizations that the new energy regimes make possible. For example, in the early modern age, print communication became the means to organize and manage the technologies, organizations, and infrastructure of the coal, steam, and rail revolution. It would have been impossible to administer the first industrial revolution using script and codex.

Communication revolutions not only manage new, more complex energy regimes, but also change human consciousness in the process. Forager/hunter societies relied on oral communications and their consciousness was mythologically constructed. The great hydraulic agricultural civilizations were, for the most part, organized around script communication and steeped in theological consciousness. The first industrial revolution of the 19th century was managed by print communication and ushered in ideological consciousness. Electronic communication became the command and control mechanism for arranging the second industrial revolution in the 20th century and spawned psychological consciousness.

Each more sophisticated communication revolution brings together more diverse people in increasingly more expansive and varied social networks. Oral communication has only limited temporal and spatial reach while script, print and electronic communications each extend the range and depth of human social interaction.

By extending the central nervous system of each individual and the society as a whole, communication revolutions provide an evermore inclusive playing field for empathy to mature and consciousness to expand. For example, during the period of the great hydraulic agricultural civilizations characterized by script and theological consciousness, empathic sensitivity broadened from tribal blood ties to associational ties based on common religious affiliation. Jews came to empathize with Jews, Christians with Christians, Muslims with Muslims, etc. In the first industrial revolution characterized by print and ideological consciousness, empathic sensibility extended to national borders, with Americans empathizing with Americans, Germans with Germans, Japanese with Japanese and so on. In the second industrial revolution, characterized by electronic communication and psychological consciousness, individuals began to identify with like-minded others.

Today, **we are on the cusp of another historic convergence of energy and communication**--a third industrial revolution--that could **extend empathic sensibility to the biosphere itself and all of life on Earth**. The distributed Internet revolution is coming together with distributed renewable energies, **making possible a sustainable, post-carbon economy** that is both globally connected and locally managed.

In the 21st century, hundreds of millions--and eventually billions--of human beings **will** transform their buildings into power plants to harvest renewable energies on site, store those energies in the form of hydrogen and share electricity, peer-to-peer, across local, regional, national and continental inter-grids that act much like the Internet. The open source sharing of energy, like open source sharing of information, **will** give rise to collaborative energy spaces--not unlike the collaborative social spaces that currently exist on the Internet.

When every family and business comes to take responsibility for its own small swath of the biosphere by harnessing renewable energy and sharing it with millions of others on smart power grids that stretch across continents, **we become intimately interconnected** at the most **basic level of earthly existence** by jointly stewarding the energy that bathes the planet and sustains all of life.

The new distributed communication revolution not only organizes distributed renewable energies, but also changes human consciousness. The information communication technologies (ICT) revolution is quickly extending the central nervous system of billions of human beings and connecting the human race across time and space, **allowing empathy to flourish on a global scale**, for the first time in history.

Whether in fact we will begin to empathize as a species will depend on how we use the new distributed communication medium. While distributed communications technologies-and, soon, distributed renewable energies - are connecting the human race, what is so shocking is that no one has offered much of a reason as to why we ought to be connected. We talk breathlessly about access and inclusion in a global communications network but speak little of exactly why we want to communicate with one another on such a planetary scale. What's sorely missing is an overarching reason that billions of human beings should be increasingly connected. Toward what end? The only feeble explanations thus far offered are to share information, be entertained, advance commercial exchange and speed the globalization of the economy. All the above, while relevant, nonetheless seem insufficient to justify why nearly seven billion human beings should be connected and mutually embedded in a globalized society. The idea of even billion individual connections, absent any overall unifying purpose, seems a colossal waste of human energy. More important, making global connections without any real transcendent purpose risks a narrowing rather than an expanding of human consciousness. But what if our distributed global communication networks were put to the task of helping us re-participate in deep communion with the common biosphere that sustains all of our lives?

The biosphere is the narrow band that extends some forty miles from the ocean floor to outer space where living creatures and the Earth's geochemical processes interact to sustain each other. We are learning that the biosphere functions like an indivisible organism. It is the continuous symbiotic relationships between every living creature and between living creatures and the geochemical processes that ensure the survival of the planetary organism and the individual species that live within its biospheric envelope. If every human life, the species as a whole, and all other life-forms are entwined with one another and with the geochemistry of the planet in a rich and complex choreography that sustains life itself, then we are all dependent on and responsible for the health of the whole organism. Carrying out that responsibility means living out our individual lives in our neighborhoods and communities in ways that promote the general well-being of the larger biosphere within which we dwell. **The Third Industrial Revolution offers just such an opportunity.**

If we can harness our empathic sensibility to establish a new global ethic that recognizes and acts to harmonize the many relationships that make up the life-sustaining forces of the planet, **we will** have moved beyond the detached, self-interested and **utilitarian** philosophical **assumptions that accompanied national markets** and nation state governance and into a **new era of biosphere consciousness**. We leave the old world of geopolitics behind and enter into a new world of biosphere politics, with new forms of governance emerging to accompany our new biosphere awareness.

The Third Industrial Revolution and the new era of distributed capitalism **allow us to sculpt a new approach to globalization**, this time emphasizing continentalization from the bottom up. Because renewable energies are more or less equally distributed around the world, **every region is** potentially **amply endowed with the power it needs to be relatively self-sufficient and sustainable** in its lifestyle, while at the same time interconnected via smart grids to other regions across countries and continents.

#### Economic growth creates the largest incentive for conservation—markets orient towards green tech

Borowski 10 (Julie, staff writer at Freedom Works, “Celebrate Capitalism on Earth Day”, 4/22, Freedom Works, <http://www.freedomworks.org/blog/jborowski/celebrate-capitalism-on-earth-day>)

[According](http://www.cato.org/pub_display.php?pub_id=3073) to Cato Institute scholar Jerry Taylor, it's businessmen -- not bureaucrats or environmental activists -- who deserve most of the credit for the environmental gains over the past century and who represent the best hope for a Greener tomorrow. He explains that before any bureaucratic EPA agency, pollution was declining rapidly in the United States as Americans were becoming wealthier. Wealth generally makes societies more environmentally conscious. When the people started demanding environmental-friendly products and services, the free market gladly delivered. People [demanded](http://www.cato.org/pub_display.php?pub_id=8204) gas instead of coal home furnaces, trains voluntarily switched to electric and power plants had an incentive to become more energy efficient. All of this happened without government intervention. The people received their environmental-friendly products, the producers made their profits and pollution levels decreased. In fact, when the newly created EPA intervened with the market the trend reversed and pollution levels starting increasing. Cato Institute scholar Indur Goklany [declares](http://www.cato.org/pub_display.php?pub_id=8204) that the declining pollution levels were significantly declining before the EPA was founded in 1970, But before there was an Earth Day, America's air was becoming cleaner, water-related diseases had been virtually eradicated and, habitat loss, the major threat to species, had been reversed. Between 1957 and 1970, particulate matter concentrations in urban areas declined 15 percent, while sulfur dioxide concentrations peaked in 1963, declining 40 percent between 1962 and 1969…The death rate from various gastrointestinal diseases, which had been 1,427 per million in 1900 had declined to 6 in 1970 in large part due to chlorination. Taylor goes on to [explain](http://www.cato.org/pub_display.php?pub_id=3073) that capitalism is responsible for reducing pollution, Meanwhile, capitalism rewards efficiency and punishes waste. Profit-hungry companies found ingenious ways to reduce the natural resource inputs necessary to produce all kinds of goods, which in turn reduced environmental demands on the land and the amount of waste that flowed through smokestacks and water pipes. As we learned to do more and more with a given unit of resources, the waste involved (which manifests itself in the form of pollution) shrank… Capitalism can save more lives threatened by environmental pollution than all the environmental organizations combined.

#### Strong economies solve the environment best—market motivation for green technology are empirically most successful

Dunlop 1 Becky, Vice President, External Relations at The Heritage Foundation, “Cleaning the Air”, The Heritage Foundation, 1/21, <http://www.heritage.org/about/speeches/cleaning-the-air>

How many of you were in town when we had the pfisteria scare?You would have thought that the world was coming to an end because of pfisteria.And EPA and the environmental extremists were so eager to find pfisteria in Virginia.And they couldn't, but I'll tell you, they sure were out there looking.They had pfisteria in the waters of Maryland -where, by the way, Parris Glendening, Mr. Green, is the governor.But in Virginia, we had managed our natural resources. We had worked with our businesses on environmental quality, and we did not have the same problems that they had. The reason, incidentally, could have nothing to do with managing resources or working with businesses.It could be entirely a natural phenomenon. There are some things mankind can't control, so one looks for ways to manage natural resources based on best available sound science. The final conservative environmental principle -which you might expect coming from me- is that environmental policies that emanate from liberty are the most successful. Where do people in the world turn today for solutions?Our country.We have technology, we're on the cutting edge, we're always looking for new and better ways to improve our quality of life. Because we have a free enterprise system, we have entrepreneurs who are always looking for solutions for environmental challenges. We’re Americans! These principles stood us in good stead during George Allen’s governorship in Virginia.The quality and condition of the environment improved significantly, and the economic success and “pursuit of happiness” that our citizens enjoyed had never been greater or more widespread. Conservatives learned that we can win the hearts and minds of the people on environmental issues when we demonstrate that we are eager and able to apply our conservative principles to improving the quality and condition of the resources important to environmental quality.

#### A strong economy is a pre-requisite for environmental protection—motivates property protection and tech innovation

Taylor 3 (Jerry, director of natural resource studies at CATO, “Happy Earth Day? Thank Capitalism”, 4/22, http://www.cato.org/pub\_display.php?pub\_id=3073)

Indeed, we wouldn't even have environmentalists in our midst were it not for capitalism. Environmental amenities, after all, are luxury goods. America -- like much of the Third World today -- had no environmental movement to speak of until living standards rose sufficiently so that we could turn our attention from simply providing for food, shelter, and a reasonable education to higher "quality of life" issues. The richer you are, the more likely you are to be an environmentalist. And people wouldn't be rich without capitalism.¶ Wealth not only breeds environmentalists, it begets environmental quality. There are dozens of studies showing that, as per capita income initially rises from subsistence levels, air and water pollution increases correspondingly. But once per capita income hits between $3,500 and $15,000 (dependent upon the pollutant), the ambient concentration of pollutants begins to decline just as rapidly as it had previously increased. This relationship is found for virtually every significant pollutant in every single region of the planet. It is an iron law. Given that wealthier societies use more resources than poorer societies, such findings are indeed counterintuitive. But the data don't lie. How do we explain this?¶ The obvious answer -- that wealthier societies are willing to trade-off the economic costs of government regulation for environmental improvements and that poorer societies are not -- is only partially correct. In the United States, pollution declines generally predated the passage of laws mandating pollution controls. In fact, for most pollutants, declines were greater before the federal government passed its panoply of environmental regulations than after the EPA came upon the scene.¶ Much of this had to do with individual demands for environmental quality. People who could afford cleaner-burning furnaces, for instance, bought them. People who wanted recreational services spent their money accordingly, creating profit opportunities for the provision of untrammeled nature. Property values rose in cleaner areas and declined in more polluted areas, shifting capital from Brown to Green investments. Market agents will supply whatever it is that people are willing to spend money on. And when people are willing to spend money on environmental quality, the market will provide it.¶ Meanwhile, capitalism rewards efficiency and punishes waste. Profit-hungry companies found ingenious ways to reduce the natural resource inputs necessary to produce all kinds of goods, which in turn reduced environmental demands on the land and the amount of waste that flowed through smokestacks and water pipes. As we learned to do more and more with a given unit of resources, the waste involved (which manifests itself in the form of pollution) shrank.¶ This trend was magnified by the shift away from manufacturing to service industries, which characterizes wealthy, growing economies. The latter are far less pollution-intensive than the former. But the former are necessary prerequisites for the latter.¶ Property rights -- a necessary prerequisite for free market economies -- also provide strong incentives to invest in resource health. Without them, no one cares about future returns because no one can be sure they'll be around to reap the gains. Property rights are also important means by which private desires for resource conservation and preservation can be realized. When the government, on the other hand, holds a monopoly on such decisions, minority preferences in developing societies are overruled (see the old Soviet block for details).¶ Furthermore, only wealthy societies can afford the investments necessary to secure basic environmental improvements, such as sewage treatment and electrification. Unsanitary water and the indoor air pollution (caused primarily by burning organic fuels in the home for heating and cooking needs) are directly responsible for about 10 million deaths a year in the Third World, making poverty the number one environmental killer on the planet today.¶ Capitalism can save more lives threatened by environmental pollution than all the environmental organizations combined.¶ Finally, the technological advances that are part and parcel of growing economies create more natural resources than they consume. That's because what is or is not a "natural resource" is dependent upon our ability to harness the resource in question for human benefit. Resources are therefore a function of human knowledge. Because the stock of human knowledge increases faster in free economies than it does in socialist economies, it should be no surprise that most natural resources in the western world are more abundant today than ever before no matter which measure one uses.

#### Air transportation GHG emissions rapidly expanding—only modernizing ATC solves without compromising the industry

Adler 2K Jonathan, senior fellow in Environmental Policy at the Competitive Enterprise Institute, “GREENHOUSE POLICY WITHOUT REGRETS: A FREE MARKET APPROACH TO THE UNCERTAIN RISKS OF CLIMATE CHANGE”, July, <http://cei.org/pdf/1783.pdf>

Energy markets are not the only place to look for “no regrets” deregulatory opportunities. Deregulation in other areas may also increase energy efficiency. Airline transportation, for example, is an increasing source of greenhouse-gas emissions. Greater demand for air travel means more flights, which means greater fuel use and increased emissions. Yet, the current government-operated system of air traffic control may hinder innovations that could reduce fuel use and emissions. For instance, allowing pilots to fly more direct routes between destinations—so-called “free flight”— could save substantial amounts of fuel and reduce emissions by as much as 17 percent. Although one ordinarily does not think of airplanes as a prominent source of CO2 , aircraft are responsible for roughly 3 percent of the total global emissions of CO2 . 84 It is for this reason that some environmental organizations have proposed implementing some sort of international tax or regulatory control to reduce the volume of air travel. The combustion of carbon-based fuels releases CO2 into the atmosphere. The emissions are greatest when the engine is hottest, such as when the plane takes off. It is unlikely the CO2 emissions from air travel will decline without a proportionate decrease in fuel use. Because fuel consumption is the second largest cost for airlines—an estimated $10 billion per year, or 15 percent of airlines’ operating costs—airlines have already begun to seek means of reducing their fuel consumption, thereby increasing their competitiveness and profitability. 85 Indeed, the industry has already cut fuel consumption by nearly 50 percent since 1977. 86 This reduction has been a result of investments in newer, more efficient aircraft, as well as basic operational changes such as lowering cruising speeds, taxiing with only one engine, and shutting down engines when takeoff is delayed by inclement weather. Proposals to reduce airline emissions further, such as to 1990 levels, will force a dramatic reduction in air travel. Consumers will be forced into other modes of travel that are often more expensive and substantially less safe per mile traveled. Barring changes in existing air travel regulations, the imposition of tax or regulatory controls to meet 1990 emission levels could make it virtually impossible for US airlines to meet the increasing demand for air travel. The Air Transport Association (ATA) estimates that reducing emissions to 1990 levels would result in a 25 to 35 percent reduction in air services.

## \*\*Environment Advantage\*\*

### XT – Aviation Industry Key

#### Airplane emissions are four times worse than any other activity

Sewill 5 (Brendon, vice president of the British Trust for Conservation Volunteers, “Fly Now, Grieve Later”, <http://www.aef.org.uk/downloads/FlyNowFull.pdf>)

Air travel is much more harmful to the¶ climate than other activities which create¶ CO2¶ . Aircraft cause greater damage¶ because, putting it in non-scientific¶ language:¶ 1. their exhaust gases are emitted at¶ high altitude where they create a blanket of¶ translucent smog which reflects heat back¶ to earth;¶ 2. the hot moist air from aircraft¶ engines may, in certain conditions, form¶ condensation trails, or contrails, which add¶ to global warming;¶ 3. the burning of kerosene in aircraft¶ engines creates water vapour which helps¶ to form cirrus clouds, again adding to¶ global warming.¶ The Royal Commission on Environmental¶ Pollution calculated that the impact of¶ aviation on climate change, called the¶ radiative forcing impact, is between 2.5 and¶ 4 times as bad as measured by CO2¶ emissions alone.¶ 12¶ The UK Government has¶ tended to use a factor of 2.7. These figures¶ exclude the cirrus cloud effect.¶ More recent research undertaken for the¶ European Commission, by a group of¶ scientists under the uninspiring name¶ TRADEOFF¶ 13¶ , has found that when the¶ cirrus cloud effect is included the impact is¶ even higher. Their conclusion is that the¶ radiative forcing impact is 4.1 times the¶ impact of CO2 ¶ alone. Although this work¶ has not yet been confirmed by other¶ scientists, it seems reasonable to use a¶ factor of around.

#### Aviation is a significant contributor to warming—their authors underestimate

McCarthy 10 (Joseph, Specialist in environmental policy, “Aviation and Climate Change”, 1/27, <http://www.fas.org/sgp/crs/misc/R40090.pdf>)

Aircraft account for about 10% of the U.S. transportation sector’s GHG emissions, or 2.6% to 3.4% of total U.S. GHG emissions. In the United States, aviation emissions have grown more slowly than those of other transportation sectors, and slightly less than the emissions of the economy as a whole over the last two decades, but worldwide aviation has been among the fastergrowing sources of GHG emissions. According to the Commission of the European Union, emissions from international aviation increased by almost 70% between 1990 and 2002. 4 The United Nations Intergovernmental Panel on Climate Change (IPCC), in a 1999 study that is still widely cited, projected that the impact of aircraft emissions on climate would be 2.6 to 11 times as large in 2050 as it was in 1992. 5 If, as many argue, GHG emissions must be reduced 50% to 80% in that time period, emissions from aviation would need to be drastically reduced to provide a proportional share of the targeted reduction. U.S. emissions from aircraft have run counter to the worldwide trends and projections. Since 1990, aircraft GHG emissions have declined as a percentage of total U.S. emissions (see Table 1). The biggest factor in the decline was a 54% decrease in emissions from domestic military operations, which more than offset increases in domestic commercial and general aviation 6 emissions. Emissions from domestic operation of commercial aircraft grew 13% between 1990 and 2007. That figure was well below the growth in air travel: according to the Air Transport Association (the association that represents the domestic airlines) passenger-miles traveled domestically on U.S. commercial airlines increased 74% between 1990 and 2007 and cargo revenue-ton miles increased 136%. 7 Two types of efficiency increases contributed to the relatively slow growth in U.S. commercial aircraft emissions. First, load factors (the percentage of seats occupied) increased to 79.8% in 2007, compared with 60.4% in 1990. Second, fuel efficiency itself increased, as older, less efficient aircraft were retired in favor of newer, more efficient models. These savings can be substantial. For example, American Airlines estimates that the 18-year old MD-80s currently flying use 35% more fuel than the Boeing 737-800 aircraft that are to replace them over the next two years. 8 EPA’s Inventory of U.S. Greenhouse Gas Emissions and Sinks shows that domestic flights of all kinds (military, commercial aircraft, and general aviation) accounted for about 10% of the GHG emissions from the U.S. transportation sector in 2006—2.6% of overall U.S. GHG emissions. Aviation’s impact on climate may be greater than these figures suggest, however, for two reasons. First, emissions resulting from international transportation are not currently included in the U.S. emission totals. 9 These emissions totaled 52.7 million metric tons in 2007. If they were included in the U.S. aviation statistics, emissions from aircraft of all types would have accounted for 3.4% of the U.S. GHG total. Second, the bulk of the aviation sector’s emissions occur high in the atmosphere, where their impact on climate is greater than that of emissions at ground level. According to a number of sources, the total impact of aviation could be around twice the impact of carbon dioxide alone when this factor is taken into account. 10 Emissions from jet aircraft also lead to the formation of cirrus clouds, as the condensation trails (contrails) of water vapor and sulfur particles emitted from engines at high altitudes form ice crystals that persist as clouds under some atmospheric conditions. Scientists are uncertain how to measure the occurrence and impact of such clouds, but they are reasonably certain that the clouds add to the greenhouse effect of aircraft emissions, perhaps substantially. 11 Thus, while the precise share of aviation in total greenhouse gas emissions depends on what is included, and the impact of some emissions is unclear, there is little doubt that aviation is a significant contributor to U.S. and world GHG emissions.

#### Growing industry, radiative force, and nitrogen oxides make checking aviation impact key to solving warming

PMI Media 7 (Aerospace specialists, “Aviation Growth and Global Warming”, May, <http://www.pmi-media.com/PMiAviationGrowth.pdf>)

“Driven by a strong economy, new entrants, large emerging markets and ¶ increasing liberalisation, air travel has grown nearly 30% since 2000, the ¶ strongest recovery in aviation history,” according to Airbus. “Over the 2006-¶ 2025…world passenger traffic is expected to increase by 4.8% per annum. ¶ This traffic growth, combined with fleet renewal, will require the delivery of ¶ 21,860 new passenger aircraft with more than 100 seats. The number of ¶ passenger aircraft in service will more than double from 12,676 at the end of ¶ 2005 to 27,307 in 2025.” ¶ Such levels of growth sit awkwardly with the concept of having to restrain ¶ markets in the face of a potential global environmental crisis. Until recently, ¶ empirical scientific knowledge of the extent of the aviation industry’s ¶ contribution to greenhouse gas emissions was unclear. But the 1999 UN’s ¶ International Panel on Climate Change (IPCC) produced, for the first time, a ¶ set of data which governments could use to inform their climate change ¶ policies. Although the IPCC findings have drawn some criticism, subsequent ¶ research - and other IPCC reports – has tended to support rather than negate ¶ the original findings. ¶ According to the original IPCC report, aircraft accounted for 3.5% of global ¶ warming from all human activities in 1990 and aircraft greenhouse emissions ¶ will continue to rise and could contribute up to 15% of global warming from all ¶ human activities by 2050. The IPCC estimated that radiative forcing from all ¶ aircraft greenhouse gas emissions is a factor of two to four times higher than ¶ that from its carbon dioxide (CO2) emissions alone. ¶ Carbon dioxide is not the only problem. According to the Aviation Environment ¶ Federation: ¶ “Nitrogen oxides (NOx) and water vapour from aircraft engines are important ¶ greenhouse gases. Water vapour contributes to the formation of contrails, ¶ often visible from the ground, which in turn are linked to an increase in the ¶ formation of cirrus clouds. Both contrails and cirrus clouds warm the Earth's ¶ surface magnifying the global warming effect of aviation. Together, NOx and ¶ water vapour account for nearly two-thirds of aviation’s impact on the ¶ atmosphere. Hence any strategy to reduce aircraft emissions will need to ¶ consider other gases and not just CO2.¶

### XT – ATC Modeled

#### US ATC modeled internationally

Blakey 11 (Marion, President of AIA, “House Transportation and Infrastructure, Subcommittee on Aviation: Hearing on the Authorization of the Federal Aviation Administration “, 2/9, <http://www.aia-aerospace.org/assets/11%2002%2007%20%20AIA%20Written%20Testimony%20HS%20TI%20Hearing%20FINAL.pdf>)

Implications on the trade front are also important. U.S. leadership in ATM technology and procedure development is being challenged in Europe and Canada. China and India will see the greatest growth in aviation travel for years to come. Both look to the United States or Europe for leadership as they develop their respective air traffic control systems. If the United States does not promptly deploy these technologies, opportunities for U.S. manufacturers and workers will be lost. The key to sustainable growth in the aviation sector is the accelerated implementation of NextGen. Without NextGen, our national airspace will remain cluttered and inefficient and undermine the economic benefits of America’s commercial aviation industry.

#### ATC modernization is key to global harmonization and sets the stage for environmental cooperation

JPDO 10 Joint Planning and Development Office, “Next Generation Air Transportation

System International Strategy”, 1/7, <http://www.jpdo.gov/library/InformationPapers/JPDO_International%20Strategy.pdf>

NextGen will deliver improved services and resulting operational benefits in all areas of aviation to its stakeholders. ¶ Achieving these goals requires prioritization and synchronization of activities to deliver capabilities on schedule and at ¶ acceptable costs. An important first step is to differentiate ¶ what activities need to be harmonized, and what can occur ¶ independently. System deployment schedules must be coordinated among system users, service providers, and industry. The systems should provide incremental improvements that build upon each other in a logical manner. New ¶ systems, processes, standards, and capabilities should be ¶ developed and delivered with internationally harmonized ¶ procedures and operating practices. The deployment of ¶ new technologies and operational capabilities should ¶ occur simultaneously with global partners to help maximize ¶ benefits. New technologies must be deployed in such a way that they are assimilated ¶ into the global system with minimal impact. In assessing impact, consideration must be given to areas ¶ such as production, equipage, cost, training, safety, and maintenance. Collaboration must occur where it will produce the greatest benefit. Different states are ¶ maturing their strategies and systems at a rate ¶ relative to their requirements. Certain states ¶ and organizations that stand out as leaders in ¶ advanced aviation technologies will be obvious targets for collaboration. Along with the ¶ U.S., Europe is recognized as a world leader ¶ in advancing the aviation industry through ¶ their Single European Sky ATM Research (SESAR) program. Partnering with the European ¶ Commission on the SESAR initiative is key for ¶ mutual success. Coordination with other air ¶ navigation service providers (ANSPs), due to ¶ geographical location and traffic densities, ¶ is crucial for success. Partnership with these ¶ providers has occurred with Australia, Canada, ¶ Japan, Mexico, and China. Additional partnerships will be necessary for a globally interoperable system. ¶ In addition to ANSPs, it will also be key to form strong partnerships with targeted state, regional, and international organizations and agencies that are engaged in future air transportation systems development. ¶ These alliances will occur in areas such as international security and defense (e.g., air traffic management ¶ security, interoperable systems for passport control, passenger and baggage security screening, and border protection measures). Environmental issues related to aviation will continue to be addressed in ICAO ¶ through its committee on aviation environmental protection. Alliances and partnerships will be beneficial in many areas such as commerce, space flight, safety management, spectrum allocations, weather ¶ and aeronautical information exchange models, and others.

#### ATC modernization is the best approach to reducing GHG emissions

Aviation Industry Stakeholder 9 “Aviation and Climate Change”, Feb, <http://www.aia-aerospace.org/assets/climate_02_17_09.pdf>

Air traffic control modernization. The most effective action our nation can take today ¶ to reduce aviation’s GHG emissions is to modernize the country’s antiquated air traffic ¶ control (ATC) system. The IPCC estimated in 1999 that “improvements in air traffic ¶ management could help to improve overall fuel efficiency by 6-12%.”¶ 6¶ The Congress ¶ should move forward promptly to renew this vital component of the nation’s ¶ infrastructure and should facilitate acquisition of the necessary equipment by operators ¶ for the existing fleet of airplanes so they can operate in a modernized airspace. This is ¶ an inherently federal responsibility essential for reducing greenhouse gas emissions.

### XT – NextGen Solves Warming

#### NextGen practice and tech reduce fuel emissions and GHG

Dillingham 8 Gerald, Director of Physical Infrastructure Issues for the GAO, “NextGen and Research ¶ and Development Are Keys ¶ to Reducing Emissions and ¶ Their Impact on Health ¶ and Climate”, <http://www.gao.gov/new.items/d08706t.pdf>

Technologies and procedures that are being developed as part of NextGen ¶ to improve the efficiency of flight operations can also reduce aircraft ¶ emissions. According to FAA, the implementation of NextGen could ¶ reduce greenhouse gas emissions from aircraft by up to 12 percent. One ¶ NextGen technology, considered a centerpiece of NextGen, is the ¶ Automatic Dependent Surveillance-Broadcast (ADS-B) satellite aircraft ¶ navigation system. ADS-B is designed, along with other navigation ¶ technologies, to enable more precise control of aircraft during en route ¶ flight, approach, and descent. ADS-B will allow for closer and safer ¶ separations between aircraft and more direct routing, which will improve¶ fuel efficiency and reduce carbon dioxide emissions. This improved ¶ control will also facilitate the use of air traffic control procedures that will ¶ reduce communities’ exposure to aviation emissions and noise. One such ¶ procedure, Continuous Descent Arrivals (CDA), allows aircraft to remain ¶ at cruise altitudes longer as they approach destination airports, use lower ¶ power levels, and thereby lower emissions and noise during landings. ¶ Figure 3 shows how CDA compares with the current step-down approach¶ to landing, in which aircraft make alternate short descents and forward ¶ thrusts, which produce more emissions and noise than continuous ¶ descents. A limited number of airports have already incorporated CDA ¶ into their operations. For example, according to officials from Los Angeles ¶ International Airport, nearly 25 percent of landings at their airport use ¶ CDA procedures in one of the airport’s standard terminal approaches. In ¶ addition, United Parcel Service plans to begin using a nighttime CDA ¶ procedure, designed and tested at the Louisville International Airport, for ¶ its hub operations. Two closely associated NextGen initiatives, Area Navigation (RNAV) and ¶ Required Navigation Performance (RNP), have the potential to modify the¶ environmental impact of aviation by providing enhanced navigational ¶ capability to the pilot. RNAV equipment can compute an airplane’s ¶ position, actual track, and ground speed, and then provide meaningful ¶ information on the route of flight selected by the pilot. RNP will permit the ¶ airplane to descend on a precise route that will allow it to avoid populated ¶ areas, reduce its consumption of fuel, and lower its emissions of carbon ¶ dioxide and nitrogen oxides.¶ 18¶ See figure 4. Currently, over 350 RNAV/RNP ¶ procedures are available at 54 airports, including Dallas/Fort Worth, Miami ¶ International, Washington Dulles, and Atlanta Hartsfield.Still another NextGen initiative, High-Density Terminal and Airport ¶ Operations, is intended to improve the efficiency of aircraft operations at ¶ busy airports, and, in the process, reduce emissions. At high-density ¶ airports, the demand for access to runways is high, and arrivals and ¶ departures take place on multiple runways. The combination of arrivals, ¶ departures, and taxiing operations may result in congestion, which in turn ¶ produces delays, emissions, and noise as aircraft wait to take off and land. ¶ Under the High-Density Terminal and Airport Operations initiative, which ¶ FAA has just begun to implement, aircraft arriving and departing from ¶ different directions would be assigned to multiple runways and safely ¶ merged into continuous flows despite bad weather and low visibility. To ¶ guarantee safe separation, these airports would need enhanced navigation¶ capabilities and controllers with access to increased automation. Under ¶ this initiative, aircraft would also move more efficiently on the ground, ¶ using procedures that are under development to reduce spacing and ¶ separation requirements and improve the flow of air traffic into and out ofbusy metropolitan airspace. More efficient aircraft movement would ¶ increase fuel efficiency and reduce emissions and noise. Although the ¶ implementation of this initiative is in the early stages, FAA has identified ¶ the R&D needed to move it forward. ¶ Technologies and procedures planned for NextGen should also help ¶ improve the efficiency of flights between the United States and other ¶ nations, further reducing emissions, particularly of greenhouse gases. A ¶ test program scheduled to begin in the fall of 2008, known as the Atlantic ¶ Interoperability Initiative to Reduce Emissions (AIRE), sponsored by FAA ¶ and the European Commission, Boeing, and Airbus, will involve gate-togate testing of improved procedures on the airport surface, during ¶ departures and arrivals, and while cruising over the ocean. Some of the ¶ procedures to be tested will use technologies such as ADS-B. A similar ¶ effort—the Asia and South Pacific Initiative to Reduce Emissions ¶ (ASPIRE)—was launched earlier this year, involving the United States, ¶ Australia, and New Zealand.

#### **Solves warming—GHG emissions, streamlining, and alternative fuels**

States News Service 11(forefront of news reporting, 2/28/11, “AVIATION NOISE AND AIR QUALITY SYMPOSIUM” Lexis nexus)

Our NextGen strategy relies not on a single solution but a five- pillar comprehensive and integrated approach building on aviations traditional strengths of technological and operational innovation.¶ The first pillar is to improve scientific knowledge and modeling. Environmental analyses, impact determinations, and strategies to lessen the impact must be based on a solid scientific foundation. This is important with respect to aviations effects on climate, but also to gain a more nuanced and multi-faceted understanding of noise impacts. The development and use of advanced decision-support tools that look at the possible trade-offs of noise, air quality, and fuel burn, and the costs of these trade-offs, are critical for well-informed decision-making. Yesterday, you heard about the advances we are making in modeling. Our new models are quite real and viable. They provide users with new capabilities that sharpen environmental analyses and decisions.¶ With respect to the second pillar, Air Traffic Management Modernization, I shared earlier how NextGen is already getting it done and how many of the new procedures will contribute to mitigating environmental impacts and improving energy efficiency. NextGen will increase the efficiency of aircraft operations, both in the air and on the airport surface. When you improve efficiency, you save time and fuel. Reducing fuel consumption reduces CO2 emissions that affect climate and other emissions that contribute to poor air quality. Weve seen already that fuel burn, emissions, noise, and flight times can be cut by RNAV/RNP routes and approaches.¶ In addition, weve set up a special effort were calling NAV Lean to streamline the operations approval and certification processes for all instrument flight procedures, more specifically performance-based RNAV and RNP procedures. We know it works; we know we need to get it to the table faster. The group consisted of six teams that crossed various areas of FAA to identify areas where there were redundancies, inefficiencies or unnecessary delays in other words to make the process lean. The group worked for almost 6 months and made 21 recommendations for streamlining both the operations approval and instrument flight procedures process to ensure the maximum number of users gets navigation benefits as quickly as possible while maintaining the highest levels of safety. When theyre fully implemented, we estimate well have a 40 percent reduction of the processing time required. For those of you keeping track, we expect to issue the plan by June 1. Not only will this mean users of the system will see the benefits of the navigation technology sooner, but the FAA will improve the efficiency of our processes.¶ The third pillar addresses new aircraft technologies. Historically, most of the success in reducing aviations impacts has come from new technologies. New engine and airframe technologies will need to play key roles in achieving aviation environment and energy goals. The U.S. will support advances in engine technology and airframe configurations to lay the foundation for the next generation of aircraft. Our technological strategy envisions a fleet of quieter, cleaner aircraft that operate more efficiently with less energy. We are focusing on maturing technologies for near term application through its Continuous Lower Energy, Emissions, and Noise effort called CLEEN. Youll hear more about CLEEN later this week.¶ The fourth pillar looks at sustainable alternative fuels. The development and deployment here offers prospects for enabling enormous environmental improvements, energy security, and economic stability for aviation. Were working with industry under the auspices of the Commercial Aviation Alternative Fuels Initiative. The acronym there is CAAFI. Writers get paid by the word, and then there are those among us who apparently get paid by the acronym. Hey, its a living.¶ The near terms efforts in this area include adding new classes of fuels that adhere to recently adopted international standards. In addition, we will be conducting aircraft flight tests using new alternative fuels, ascertaining their emissions characteristics, lifecycle greenhouse gases, and sustainability. There remain a number of challenges to sustainable alternative fuel deployment, including financing for commercial production. Thats a much larger subject youll be hearing about in greater detail later this week.¶ Finally, the last pillar addresses policies, environmental standards, and market-based measures. In many ways, starting from a point we all can agree may be the biggest hurdle to overcome

#### Growing aviation industry threatens warming—NextGen solves in the short and long term through reduced emissions and tech spin-off

Dillingham 8 Gerald, Director of Physical Infrastructure Issues for the GAO, “NextGen and Research ¶ and Development Are Keys ¶ to Reducing Emissions and ¶ Their Impact on Health ¶ and Climate”, <http://www.gao.gov/new.items/d08706t.pdf>

Aviation contributes a modest but growing proportion of total U.S. emissions, and ¶ these emissions contribute to adverse health and environmental effects. Aircraft ¶ and airport operations, including those of service and passenger vehicles, emit ¶ ozoneand other substances that contribute to local air pollution, as well as carbon ¶ dioxide and other greenhouse gases that contribute to climate change. EPA¶ estimates that aviation emissions account for less than 1 percent of local air¶ pollution nationwide and about 2.7 percent of U.S. greenhouse gas emissions, but ¶ these emissions are expected to grow as air traffic increases. ¶ Two key federal efforts, if implemented effectively, can help to reduce aviation ¶ emissions—NextGen initiatives in the near term and research and development ¶ over the longer term. For example, NextGen technologies and procedures, such as ¶ satellite-based navigation systems, should allow for more direct routing, which ¶ could improve fuel efficiency and reduce carbon dioxide emissions. Federal ¶ research and development efforts—led by FAA and NASA in collaboration with¶ industry and academia—have achieved significant reductions in aircraft emissions ¶ through improved aircraft and engine technologies, and federal officials and ¶ aviation experts agree that such efforts are the most effective means of achieving¶ further reductions in the longer term. Federal R&D on aviation emissions also¶ focuses on improving the scientific understanding of aviation emissions and¶ developing lower-emitting aviation fuels.¶

#### Decreased congestion through NextGen solves the environment—automobile tradeoff, air pollution, and GHGs

Nexa Advisors 11 “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues”, April, <http://www.nextgenfund.com/files/downloads/NEF_Economic_Study.pdf>

In 2008 GAO advocated accelerated deployment of NextGen to realize environmental benefits. xv More efficient operations will lower unit emissions per passenger through lower fuel burn per passenger. Aviation emissions, like other combustible emissions, include pollutants that affect public health. The FAA estimates that NextGen could reduce aircraft greenhouse emissions by as much as 12 percent, which is equivalent to removing 2.2 million cars from the roads. xvi Additionally, improved air transportation will reduce the number of passengers diverted to their cars on the U.S. roadways and thereby reduce air pollution from cars and reduce congestion on the highways. NextGen procedures will reduce communities’ exposure to noise through better air traffic management. For example, Continuous Descent Arrivals will allow aircraft to remain at cruise longer as they approach destination airports, use lower power levels, and thereby lower noise and emissions during landing. These environmental benefits will also improve international flight efficiencies, further reducing emissions and greenhouse gasses.

#### NextGen key to an industry shift to sustainability

Sebastian and Piltz 7 Thea and Rick, Research Associate and Director @ Climate Watch Science, “NextGen Air Transportation¶ System Progress Reports Ignore¶ Climate Change”, <http://www.climatesciencewatch.org/file-uploads/NextGen_final_18jul07.pdf>

The Next Generation Air Transportation System is a blueprint for aviation’s

future – and that future must take climate change into consideration. Recent IPCC

projections demonstrate that climate change caused by human emissions will likely

subject the world to significant societal and environmental stresses even before

NextGen’s long-range planning comes to fruition. If the Joint Planning and Development

Office continues to ignore this issue by relegating global warming to a minor or

nonexistent role in strategic planning and development, it will put both our convenience

and the future of American aviation in jeopardy.

#### NextGen decreases GHG emissions by increasing fuel use efficiency

McCarthy 10 (Joseph, Specialist in environmental policy, “Aviation and Climate Change”, 1/27, <http://www.fas.org/sgp/crs/misc/R40090.pdf>)

In addition to improving the efficiency of individual aircraft, there is a general consensus that fuel use could be reduced by modernizing the Federal Aviation Administration (FAA)’s air traffic control system. The FAA is in the process of transforming air traffic control from a ground-based system of radars to a satellite-based system, dubbed the Next Generation (NextGen) Air Transportation System. The primary objective is to enable the air traffic control system to handle a projected doubling of current passenger loads by 2025. But, when fully implemented, NextGen is also expected to cut the GHG emissions of individual aircraft 10% to 15%, by allowing more direct routing, reducing delays, and through such features as Continuous Descent Approach. 16 According to the FAA, United Parcel Service aircraft equipped with some of the NextGen technologies have reduced emissions as much as 34%.

#### NextGen good for the environment

FAA 11 “NextGen Implementation Plan”, March, <http://www.faa.gov/nextgen/media/ng2011_implementation_plan.pdf>

As with safety, our work to enhance aviation’s influence on the environment also benefits – and is a beneficiary of – NextGen. The operational improvements that reduce noise, carbon dioxide and other greenhouse-gas emissions from aircraft are the tip of the FAA’s environmental iceberg. Equally important are the other four-fifths of the agency’s environmental approach – aircraft and engine technology advances, sustainable fuels, policy initiatives and advances in science and modeling.

#### NexGen reduces fuel consumption—congestion and descent

Schank 12 Joshua, President of the Eno Center for Transportation, “Next Generation Air Traffic Control: Looking at the Big Picture”, 4/14, <http://www.enotrans.org/eno-brief/next-generation-air-traffic-control-looking-at-the-big-picture>

Most of the projected fuel savings and environmental benefits from NextGen would be as a result of congestion reduction, already discussed above. Reduced congestion could leave fewer planes burning fuel on the tarmac or circling airports. But some fuel savings would occur independent of what happens with congestion, because NextGen is likely to make aircraft approaches more efficient. Aircraft currently use a “stepped” descent whereby they descend quickly and then maintain altitude several times. This uses more engine power than a constant descent, which would be possible to do safely under NextGen.

#### Decreased congestion through NextGen solves the environment—automobile tradeoff, air pollution, and GHGs

Nexa Advisors 11 “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues”, April, <http://www.nextgenfund.com/files/downloads/NEF_Economic_Study.pdf>

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### US Leadership Key

#### All major emitters are moving towards climate change reduction—US commitment motivates global cooperation to solve

World Resources Institute 8 “International Negotiations on¶ Climate Change: ¶ Key Questions & Answers”, Dec, <http://pdf.wri.org/factsheets/factsheet_interational_climate_change_negotiations.pdf>

Why is U.S. leadership critical?¶ No single country can solve the climate change ¶ problem alone. As the largest per capita ¶ greenhouse gas emitter, U.S. participation and ¶ leadership is needed to achieve meaningful ¶ global action. The type of actions taken by ¶ other countries will be inﬂ uenced by the level ¶ and type of commitments taken by the United ¶ States As the world’s technological powerhouse, the ¶ U.S. can offer innovative energy and technology ¶ solutions to help address the climate change ¶ problem. A clean energy technology revolution ¶ led by the U.S. will create opportunities for U.S. ¶ businesses in times of economic challenges, ¶ and a global climate change agreement would ¶ create new markets for U.S. products and ¶ energy solutions around the world. ¶ Driven by increased energy consumption, China, ¶ India and Brazil are among the top 10 emitters ¶ of greenhouse gas emissions (see graph). By ¶ 2050, developing countries will account for ¶ around eight billion of the world’s projected ¶ nine billion people. An effective global climate ¶ change agreement will contribute to more sustainable development for billions of people.¶ Why should the U.S. act when other ¶ major polluters are not?¶ There is a common misconception that emerging countries, including China – whose total ¶ greenhouse gas emissions are now beginning ¶ to mirror those of the U.S. – and India, are ¶ not concerned about climate change and are ¶ unwilling to curb their domestic emissions. In ¶ fact: • Despite the fact that it is a rapidly growing country with substantial poverty, China ¶ reduced energy use per unit of GDP by 20% ¶ from 2006-2011 and almost reached its ¶ goal of 10% renewable energy by 2011. In ¶ 2007, China shut down around 1000 cement ¶ plants and many other polluting factories. ¶ • India and Brazil published national climate ¶ plans in 2008, and Brazil has also enacted ¶ an oil tax. ¶ • Mexico initiated a program on climate ¶ change in 2008 and South Korea will set a ¶ greenhouse gas reduction goal in 2009.

#### Federal support for NextGen key to access environmental benefits

AIA 12 “NextGen: The Future of Flying”, 4/9, <http://www.aia-aerospace.org/assets/brochure_aia_nextgen.pdf>

In 2008, the U.S. Government Accountability Office advocated ¶ deployment of NextGen as soon as practicable to realize ¶ environmental benefits. NextGen’s efficiencies will reduce noise, ¶ fuel consumption and carbon dioxide emissions, as well as other ¶ air pollutants. The FAA estimates that full implementation of ¶ NextGen could reduce aircraft greenhouse emissions by as much ¶ as 12 percent by 2025 — a carbon dioxide reduction equivalent to ¶ removing 2.2 million cars from the roads for one year.¶ How To Accelerate NextGen¶ NextGen is a national transportation infrastructure priority. The ¶ Transportation Department and the White House are looking at ¶ ways to accelerate NextGen implementation by up to eight years. ¶ This will only be possible with robust federal funding support — ¶ not just for FAA programs and infrastructure, but also for avionics ¶ equipment in the aircraft that will transport passengers and cargo ¶ around the United States and the world.¶ The civil aviation industry — both commercial and general aviation ¶ — is experiencing the worst economic period in its history. For less ¶ than the cost of one high-speed rail project, every aircraft that flies ¶ into and out of the 35 busiest airports in the United States could be ¶ equipped with the avionics needed to transition to NextGen. And ¶ many NextGen capabilities, such as performance-based navigation, ¶ can be implemented in the short term while the full array of services ¶ and technologies of the air traffic system of the future are certified ¶ and produced. Timely implementation of these capabilities will not ¶ only improve the business case for operators’ investment, but will ¶ vastly improve the overall flying experience for the public.¶ Here are just a few NextGen¶ environmental benefits:¶  Satellite-enabled direct routing ¶ by En Route Automation ¶ Modernization for a coast-tocoast flight would save about six ¶ million tons of carbon dioxide ¶ emissions annually and reduce ¶ flight time by three percent.¶  Continuous Descent Arrivals to ¶ airports would save 3.75 million ¶ tons of carbon dioxide emissions ¶ annually at the top 10 U.S. airport ¶ communities.¶  Performance-based navigation ¶ procedures at airports would ¶ save two million tons of carbon ¶ dioxide annually at the top 10 ¶ U.S. airport communities.

### Tech Diffusion—Aviation

#### International aerospace subcontracting creates rapid global tech diffusion

Pritchard 10 David, adjunct professor in the College of Business at Rochester Institute of Technology, “A Case for Repayable Launch Aid: Implications for the US Commercial Aircraft Supply Chain”, September, <http://www.custac.buffalo.edu/documents/CUSTAC-OccasionalPaper39-Pritchard.pdf>

During the past thirty years international subcontracting has been increasing between the industrializing nations and emerging airframe companies thru governmental offset polices. The established western duopoly plays a major role in the diffusion of knowledge for building commercial aircraft in the developing regions of the world. The selling of large commercial aircraft has many facets including the increasing number of carriers whose governments want to share in the production of the aircraft they are buying. 1 The airlines that are government-owned are motivated as much by political consideration as economic. 2 This has resulted in the offset agreements (initiated by McDonnell Douglas and 3 Yugoslavia in 1972), which evolved into guarantees of aircraft purchase in exchange for participation in production. The offset requirements in the sale of large commercial aircraft to overseas customers are resulting in the diffusion of aerospace technology and manufacturing processes especially the tacit knowledge within and across the aerospace industry sector. These reciprocal agreements for the sale of large commercial aircraft often involve a transfer of technical knowledge in the areas product processes, engineering data, and the integration of managerial systems for the aircraft. 3 These arrangements are made in exchange for large orders from foreign carriers that can amount to billions of dollars, in effect spreading the major capital outlay for a new aircraft launch. Boeing has been using these agreements as negotiating techniques since the 1970’s to gain market presence in developing regions. Below in Table 1 is a comparison of the domestic and international airframe content between Boeing aircraft models that were launched from the 1960s through 2000s.

#### US aviation technology spills over globally—export-based industry requires tech-sharing

Pritchard 10 David, adjunct professor in the College of Business at Rochester Institute of Technology, “A Case for Repayable Launch Aid: Implications for the US Commercial Aircraft Supply Chain”, September, <http://www.custac.buffalo.edu/documents/CUSTAC-OccasionalPaper39-Pritchard.pdf>

The U.S. commercial aircraft industry is one of the nation’s most successful export sectors. Many foreign governments that have influence over the aircraft purchases of their carriers are concerned with knowledge diffusion from aircraft manufacturers. The high technology required in developing aircraft generates potential spillover effects to other industries and acts as a catalyst for new technologies. 8 In 2008, aerospace firms in the U.S. employed 657,000 persons. This was a decline from previous employment levels in 1989 of 1,331,000 workers in the U.S. The U.S. aircraft manufacturers have been driven by foreign competition to reduce costs in order to compete in the global aircraft market. 9 Developing reciprocal agreements with foreign partners gives the US manufacturer a short-term competitive edge in order closures. This is especially true on a new aircraft launch. But the long-term effect is the continued erosion of the U.S. workforce and the lack of investment in the building and upgrading of the U.S. infrastructure.

#### Aerospace industry disseminates new technologies globally

Rashed and Manarvi 8 Asif and Irfan, student of MS at Department of Engineering ¶ Management, Center of Advanced Studies in Engineering, Islamabad and ¶ faculty member at Department of Aeronautics ¶ and Astronautics, Institute of Space Technology, Islamabad, Pakistan, “A Framework of Technology Diffusion in Aircraft Manufacturing Industry Environment”, March, Iternational coference of Engineers and Computer Scientists, <http://www.iaeng.org/publication/IMECS2008/IMECS2008_pp1649-1654.pdf>

Advancements in computing systems, software, ¶ materials, management techniques, supply chain management, ¶ communications, outsourcing and concurrent engineering has ¶ changed the dynamics of shop-floor. The use of smart ¶ materials, advanced manufacturing processes and ¶ psychometric testing of highly skilled labor in a target focused, ¶ team environment has enhanced the performance expectations ¶ from Man, Machine and Resources. Global competitiveness ¶ demands that dissemination and absorption of knowledge by ¶ managers and workers need to be achieved through ¶ extraordinary effort. A number of working principles and ¶ guidelines have been developed and employed in industries for ¶ diffusion of knowledge from one level to another. Aircraft ¶ industry has also been a source of immense research in various ¶ areas of technology. The overall research in area of technology ¶ diffusion has added phenomenal knowledge to industry ¶ working practices. At this stage, its ia also major consideration ¶ in aircraft manufacturing industry. Whereas; the literature on ¶ diffusion of technologies in aircraft manufacturing ¶ environment is very limited. This paper reviews the techniques ¶ developed and adopted in other industries for technology ¶ diffusion. The same knowledge has is used to develop ¶ framework of technology diffusion in aircraft manufacturing ¶ environment. Later, the frame work was applied in a typical ¶ aircraft manufacturing industry to evaluate its validity, ¶ limitations.

## \*\*Solvency\*\*

### XT – PPP’s Solve

#### NextGen funding cuts threaten program—expanding PPPs spur private investment and saves $20 billion in delays

DiMascio 11 Jen, Defense writer @ POLITICO, “NextGen Salvation?”, 7/30/11, Aviation Week & Space Technology, EBSCO

Partnerships Could Smooth Budget Turbulence Facing NextGen¶ Public-private partnerships could ease sting of potential budget cuts¶ The FAA's NextGen air traffic modernization plan may not have slews of enemies on Capitol Hill, but to become a reality, it will still need the right kind of friends.¶ Republicans are targeting domestic discretionary spending to deflate the deficit, and plan to roll back the Transportation Department's budget to 2007 levels. Since the FAA still needs to maintain the salaries of air traffic controllers and other essential personnel, even without lawmakers calling for NextGen's demise, the amount left over for the effort is under serious pressure.¶ Aerospace advocates have worked tirelessly to save NextGen funding. If their efforts are not enough to sway Congress, a proponent of a $1.5 billion public-private partnership to help buy NextGen equipment indicates the fund could be expanded to help the FAA out of its fix.¶ This week, the House Appropriations transportation and housing and urban development subcommittee will craft its bill for spending in fiscal 2012. The event marks the House's first crack at the fiscal 2012 budget, which will need to be reconciled with what the Senate, controlled by the Democratic Party, decides.¶ This year, President Barack Obama presented a $1.2 billion NextGen portfolio enmeshed largely in the FAA's facilities and equipment request to support deployment of the Automatic Dependent Surveillance-Broadcast (ADS-B) program, and roll forward with a contract for data-link communications services. The budget also asked for more than $120 million to develop En-Route Automation Modernization (ERAM) software.¶ Early in the budget process, aides were skeptical that with the $47.6 billion available for transportation and housing funding in fiscal 2012, along with development issues have long faced ERAM, NextGen would escape unscathed.¶ With that in mind, the case for backing the system that aims to save airlines, airports and passengers both time and money is gaining traction even outside the Beltway. The FAA has enthusiastically endorsed NextGen funding, outlining the risks of hesitation. "Delaying infrastructure investments today means that the long-term cost to our nation--to our passengers and our environment--will far exceed the cost of going forward with the technology," Administrator Randy Babbitt told lawmakers in May.¶ The Beacon-Journal from cash-strapped Akron, Ohio, featured an editorial last week latching on to a buy-now, save-later approach detailed in a report by Deloitte LLC. "If anything, further delay invites higher costs, one estimate holding that a delay of five years would add $20 billion to the price tag," the newspaper wrote.¶ And one of the program's most outspoken advocates, Aerospace Industries Association President Marion Blakey, has been sounding the alarm.¶ "We as an industry have failed to commit as we should have to NextGen. We've differed on its benefits and the means of paying for it, particularly the onboard equipment that aircraft will need to use it," Blakey said during an Aero Club luncheon July 1. "Now, NextGen, like every other federal program, faces the knife."¶ Despite the outcry from supporters and a lack of a concerted opposition to NextGen, the outlook for funding in the appropriations bill next week looks grim.¶ But Michael Dyment, founder of NEXA Capital Partners, the group that with ITT Corp. is leading an effort to launch a public-private equipage fund that could help buy gear for NextGen over seven years, is more sanguine about the potential disaster. Another path may lie ahead, he says.¶ "It's not really the end of the world," Dyment says, adding the "silk lining" to the budget consternation is that the equipage fund should be able to absorb the costs of ground infrastructure--even if the FAA cannot.¶ For example, the current fund is supposed to help airlines pay for cockpit equipage for ADS-B and other technologies. But the fund could finance other ground infrastructure, Dyment says, including the data communications program.¶ And in the event of budget cuts, the financing model could be extended to other areas--as long as Congress approves the structure, or the low-cost loan guarantees, so that private investors can step in to guard against funding deficiencies.¶ The fund still hinges on passage of the FAA reauthorization bill that is on its 20th extension, but Dyment says the fund is willing to wait. "It's too good an idea to let go," he says.¶ In fact, if more members of Congress latched on to it, they would use the public-private partnership more aggressively to allow them to supplement FAA and other transportation and infrastructure budgets in a time of financial contraction, he adds.¶ "Even the Tea Party understands the government doesn't have to own everything that has to do with transportation," Dyment says.

#### NextGen tech and system ready—PPPs for equipment are the final step

Schofield 12 Adrian, Senior Air Transport Editor at Aviation Week, “NextGen Emerges”, 5/14, Aviation Week & Space Technology, EBSCO

Almost **from the beginning, the FAA's NextGen initiative has been dogged by accusations of slow progress.** But now **there is growing evidence that the grand air traffic management vision is moving off the drawing board and closer to reality.**¶ **Significant headway is being made on key operational, technical and financial issues**. The cornerstone **satellite-based surveillance network is being rolled out,** and work is about to begin on a transformative air-ground data communication system. The first benefits are emerging from an airspace redesign effort in large metropolitan areas and--perhaps most importantly--a novel plan for funding aircraft equipage is gathering momentum.¶ There is undoubtedly still a long way to go, and debate will continue about whether NextGen should move faster. However, this does not negate the fact that **the initial pieces are falling into place**-- with major ramifications for the U.S. aviation industry.¶ NextGen was launched in 2004, the result of an ambitious call to transform the U.S. air transport system by 2025. **Potential threats to the FAA's budget are an ever-present concern, but an even bigger question mark has been how aircraft operators will pay for the equipment** needed to operate in the modernized environment. U.S. airlines are strapped for cash and are reluctant to invest in new avionics unless they can see a compelling business case.¶ The FAA is showing signs that it is prepared to help airlines pay for at least some equipment. As part of its data communications program, it intends to set aside $80 million to help carriers make the necessary upgrades to their aircraft.¶ On a broader scale, **the equipage funding solution with the most potential is public-private partnerships, where government loan guarantees would help unlock private equity at reasonable rates**.¶ One such initiative, called **the NextGen Fund, has been proposed** by Nexa Capital Partners, with the backing of ITT Exelis. The plan is **for participating airlines to pay back equipage costs as the financial benefits of NextGen emerge**.¶ While the outline of this plan was unveiled more than a year ago, there has been little movement since then. **The NextGen Fund's managers have been waiting for the government to provide the commitments required for the program to work.**

#### NextGen is unachievable without public private partnership

ICF 12 (ICF International (NASDAQ:ICFI) partners with government and commercial clients to deliver professional services and technology solutions in the energy, environment, and infrastructure; health, social programs, and consumer/financial; and public safety and defense markets)

**ICF International was tasked by the Federal Aviation Administration (FAA) to develop a high-level study that evaluated public-private partnership alternatives to improve the business case for airlines’ investment in NextGen avionics. The FAA is preparing for future air traffic control needs through NextGen, a program that represents the evolution from a radar and voice communication-based air traffic control system to a data link and satellite-based system of air traffic management. Recognizing that a significant portion of airline fleets must be appropriately equipped to take advantage of NextGen improvements, FAA asked ICF to examine public-private partnership financing alternatives that would incentivize air carriers to equip with NextGen avionics. Alternatives evaluated included grants, loans, loan guarantees, and tax rebates to avionics manufacturers. NextGen will require investment by government and the private sector to successfully deliver the desired National Airspace System (NAS) performance improvements through upgrades in in ground- and satellite-based air traffic control equipment as well as aircraft avionics**.

### PPP’s = Best Mech

#### Private public cooperation has proved the best form of funding airports and managing them efficiently

**Vasigh et al 12** (Bijan, PhD in Economics from SUNY Binghamton, Professor of Economics, Finance, & Information Systems at Embry-Riddle Aeronautical University, “Evaluating airport and seaport privatization: a synthesis of the effects of the forms of ownership on performance” Journal of Transport Literature Vol. 6, n. 1, pp. 10, Jan 2012, [www.transport-literature.org/open-access](http://www.transport-literature.org/open-access))

**Studies conducted on airports have shown different results as to whether privatization increased efficiency, productivity and/or consumer welfare. The results show, that a mixture of private and public ownership, with strong intra-port competition, leads to the best results. The presence of strong regional effects, the relatively short history of privatization, the necessity for regulation given natural monopoly tendencies, and the impact of external factors such as economic downturns, the 2009 H1N1 flu pandemic, and the financial crisis of 2007, have significantly complicated the analysis.** Further complications are added by the long-term nature of capital investments. For example, construction of a new runway may take several years, and the presence of very high capital expenditures during this period, complicate operational inefficiency.3

### XT – Fed Key

#### No NextGen progress possible without equipage—increased federal aid reduces risks and motivates operator investment

Eno Center for Transportation 12  [“NextGen: Aligning Costs, Benefits, and Political Leadership”, April, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf](file:///C%3A%5CUsers%5CAppData%5CRoaming%5CMicrosoft%5CWord%5C)

In additional to the infrastructure side of NextGen, operators will also have to install the appropriate on-board equipment to reap the benefits of the modernized infrastructure. ¶ This entails further equipage costs. It is difficult to accurately estimate the cost of equipage to operators for a number ¶ of reasons. There could be different levels of equipage ¶ depending on the aircraft and airline policy. According to industry sources, ADS-B may cost at least $100,000 per jet and ¶ at least $10,000 per small aircraft, affecting up to 240,000 ¶ aircraft including general aviation depending on FAA regula-tions.¶ 30¶ About 90 percent of current commercial aircraft are ¶ already equipped with RNAV, while about half are equipped ¶ with Required Navigation Performance (RNP),¶ 31¶ which ¶ reduces their equipage costs compared to their completely ¶ unequipped counterparts. Table 8 is a summary of the current size of passenger and cargo fleet that would require ¶ NextGen equipage. ¶ If we look only at the commercial airlines, using CBO’s ¶ industry estimates of $100,000/ large and regional passenger jets and cargo, and $10,000 per small aircraft, total cost ¶ of ADSB equipage over the entire modernization process ¶ is about $637 million.¶ 32¶ Including general aviation would ¶ of course substantially increase this total, possibly as much ¶ as $2.3 billion.¶ 33¶ Note that the $637 million above only ¶ includes ADS-B equipage. The total equipage cost would ¶ cover other on-board NextGen equipment. Since it is not ¶ certain what these other equipment might be or their market ¶ price, we have not attempted to include them in our analysis. ¶ The FAA has estimated that total equipage could cost $19 billion through 2030, although it has not made its methodology public. ¶ Most US operators have been less than enthusiastic about ¶ paying for NextGen equipage because the technology does ¶ not provide benefits unless the infrastructure and ATC ¶ procedures are in place to use it. Investing in new technology for which the infrastructure is not yet in place poses a ¶ significant financial risk operators are not incentivized to ¶ bear. Equipage is at a standstill due to concerns of rapid ¶ technological obsolescence and uncertainty. “If I go first, ¶ I’ll have to bear the cost of updating the software, and when ¶ NextGen is turned on, I’ll have the oldest, most obsolete ¶ systems out there”,¶ 34¶ is an oft-expressed concern, according to Russell Chew of Nexa Capital, a private financing ¶ firm for NextGen equipage. Operators have also expressed ¶ concerns regarding the lack of control over benefits arising ¶ from NextGen, which can only be reaped if a majority of ¶ operators decide to equip. If only some operators equip, that ¶ may lead to freeriding by other operators. ¶ Low profitability due to increasing fuel costs and post-9/11 ¶ recessionary demand-side shocks is another reason why ¶ commercial carriers have been reluctant to pay for NextGen ¶ equipage. Some carriers have lobbied in vain for federal ¶ stimulus funding for NextGen equipage during this period.¶ 35¶ ¶ Operators would have an incentive to invest in NextGen if ¶ they can be sure it will generate profits by reducing operating costs. As discussed earlier, NextGen could significantly ¶ reduce operating costs by reducing delay and fuel consumption. Whether this would increase airline profits depends to ¶ some extent on the intensity of competition between operators.¶ 36¶ However, assuming that the underlying assumptions ¶ and analyses are correct and annual airline benefits exceed ¶ the total equipage cost, there is a sensible business case for ¶ the industry as a whole to invest in NextGen, meaning there ¶ is a reason for operators to pay for their own equipage. ¶ From a policy side, a strong set of incentives needs to be ¶ provided to facilitate this equipage. The FAA has already ¶ begun to provide some aid to airlines for equipage, but it has ¶ not been enough to counter the continuing risk across the ¶ larger industry.¶ 37

### ADS-B Key

#### ADS-B key to NextGen

Gibbons 11, Glen. editor and publisher of Inside GNSS and the managing partner of Gibbons Media & Research LLC, internationally-known expert and commentator on the development, policies and programs of the global navigation satellite systems, Air Traffic Control Modernization: FAA, NextGen, GNSS, and Avionics Equipage. April 30, 2011. http://www.insidegnss.com/node/2582

In the words of the FAA, the “backbone of the NextGen system” and “the future of air traffic control,” is the ADS-B system. ADS-B uses GPS satellite signals to provide air traffic controllers a pilots with much more accurate information to help keep aircraft safely separated in the sky and on runways. Aircraft transponders receive GPS signals and use them to determine the aircraft’s precise position in the sky, which is combined with other data and broadcast out to other aircraft and air traffic control facilities. When properly equipped with ADS-B, both pilots and controllers will, for the first time, see the same real-time displays of air traffic, substantially improving safety. ADS-B has two avionics elements, ADS-B Out and ADS-B In. The first enables the broadcast of ADS-B transmissions from aircraft, without the installation of complementary receiving equipment to process and display ADS-B data on cockpit displays to pilots. This complementary processing is called ADS-B In. ADS-B Out is required before cockpit displays will be able to directly observe traffic and so, consequently, can be deployed first, because ATCcontrollers can still use the data. FAA has committed to fielding initial NextGen system operating capability with key technologies including ADS-B and data communications by 2018. An FAA Adcisory Circular (AC) 20-165 issued May 21, 2010, provides guidance for the installation and airworthiness approval of ADS-B Out systems in aircraft and mandates that they broadcast ADS-B information in most airspace by Jan. 1,2020.

### FAA Funded by Trust Fund

#### The FAA is funded through the Airport and Airway Trust Fund

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 10-11 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, enacted in April of 2000, substantially increased the annual funding for the Airport Improvement Program (AIP). It was intended to ensure that all revenue from aviation related taxes was spent on aviation programs through 2003**. It allowed airports to raise passenger facility charges up to $4.50 and increased both the minimum and maximum annual funding available to large airports as well as raising the state apportionment and guaranteeing funding to general aviation airports for the first time. **The Trust Fund provides 100% of the funding for FAA airport grants (AIP), facilities and equipment, and research, engineering and development.** Resources from the Trust Fund, as well as an appropriation from the general fund, support FAA Operations. **The percentage of Federal Aviation Administration operations that has been funded from Trust Fund revenue has fluctuated from year to year from 0% to 100% depending on Congressional Action.7 Trust Fund revenue is currently supported by ten dedicated excise taxes: 􀂌 7.5% tax on the price of domestic airline tickets 􀂌 7.5% tax on the value of awards or reduced-rate airfares (frequent flyer tickets) 􀂌 7.5% tax on the price of domestic airline tickets to "qualified rural airports" (flight segment fees do not apply if this tax is levied) 􀂌 $3 on each flight segment, indexed to inflation starting in 20038 􀂌 6.25% tax on the price charged for transporting cargo by air 􀂌 $0.043 per gallon tax on commercial aviation jet fuel 􀂌 $0.193 per gallon tax on general aviation gasoline 􀂌 $0.218 per gallon tax on general aviation jet fuel 􀂌 $13.40 tax on international arrivals, indexed to inflation9 􀂌 $13.40 tax on international departures, indexed to inflation**

### Trust Fund = No Deficit Spending

#### We don't deficit spend- when the Trust runs out of money, General Fund resources are allocated to the Trust

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 13-14 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

In November of 2004**, Chief Operating Officer of the FAA Air Traffic Organization Russ Chew stated that the amount available from the Aviation Trust Fund is falling, and increasing pressure on the General Fund means top-up money will be harder to justify**.12 **This treatment of a General Fund contribution as "top-up" or extra funding for operations illustrates a new philosophical view of how the Trust Fund is to be treated with regard to operations funding. Further evidence of this philosophical shift is seen in press coverage of FAA funding issues in late 2004.** Ken Mead, Department of Transportation Inspector General, said, "**When trust-fund revenues are less than the FAA budget, the President's proposal and Congress' appropriation can make up the gap with money from the general fund, allocation of trust-fund surpluses built up in previous years, or a combination of both."**13 Russ Chew was reported as saying that in order to match revenue predictions the ATO operating budget would have to be reduced by 21 percent by 2009.14

#### The Trust fund is the primary resource used when the federal government has a deficit

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 15 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**The division of funding between the Trust Fund and the general fund is more than a question of availability of resources, although the traditional surpluses in the aviation trust fund have provided an attractive option during periods of federal deficits.** Rather this is a question of appropriate allocation of costs. This poses a more complicated set of issues revolving around the fundamental question, "who are the users of the system?" An overly simplistic view would consider the users to be limited to the aviation industry. Clearly a closer examination is warranted; the air traveler (or shipper in the case of air cargo) is more appropriately defined as the consumer of the airspace services, while the airline or operator provides the traveler with the means by which he is able to consume the service.

#### Trust funds backed by the general fund keep the money flow stable

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 23 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

There is no escaping the conclusion that the expiration of the Trust Fund authority in 1996 followed by the sudden decline post September 11, 2001, and the associated increase in security related spending in 2001 and 2002 has caused a reduction in the uncommitted balance of the Aviation Trust Fund. However, **it is the existence of that surplus that allowed the aviation system to continue to operate without raising aviation fees or taxes. The structure of the US system that combines a trust fund contribution with a public sector (general fund) contribution has provided the FAA with a stable source of funding through policy changes, economic fluctuations, and catastrophic events.**

#### Revenue exceeds allocations, creating a surplus in funding

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 12 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**Throughout the Trust Fund's history the revenues have routinely exceeded allocations from the fund, creating large surpluses causing the administrations and lawmakers to consider options available for reducing the aviation trust fund balance as reflected in GAO studies in 1988 and as recently as 2003.**

### Trust Fund funds Airport Infrastructure

#### Airport infrastructure improvements get money from the Trust Fund

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 12 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**The percentage of the FAA operations that is funded from Trust Fund revenue (and consequently the amount of Trust Fund revenue that is expended) is determined by Congress and has been subject to a number of policy and statutory restraints. From 1982 to 2000, Trust Fund based funding of operations was limited by tying it to levels of capital investment funding.** Under the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR 21), **specific limitations were put on distribution of Trust Fund revenues specifically requiring that the Airport Improvement Program (AIP) and Facilities and Equipment (F&E) receive Trust Fund allocations under a formula before an allocation for operations is made, and data from 2004 to 2012 (projections) are based on the FY05 President's budget**. The projected percentage of funding from the general fund is limited by the President's proposed cap of 13% of operations, which represents historically low levels.

## \*\*Add-Ons\*\*

### Terrorism

#### NextGen increases security against terrorism

JPDO 11 (Joint Planning Development Office, November, “Integrated Air Surveillance Concept of Operations”, <http://www.jpdo.gov/library/20120215_Integrated_Air_Surveillance_ConOps_Endorsed.pdf>)

**A combination of newly developed, deployed, or planned procedures and technological advances for the NAS make NextGen goals attainable**. The Next Generation Air Transportation System’s Integrated Plan (2004) and Next Generation Air Transportation System 2005 Progress Report detail problems facing the NAS and identified six goals and 19 objectives to achieve the NextGen vision. The following objectives are particularly germane to this document: Reduce transit time and increase predictability Provide for common defense while minimizing civilian constraints Mitigate new and varied threats Ensure security efficiently serves demand Tailor strategies to threats, balancing costs and privacy issues Minimize impact of weather and other disruptions **The United States must continue to use the full range of its assets and capabilities to prevent the Air Domain from being used to commit acts of terrorism and other unlawful or hostile acts against the United States, its people, property, territory and allies and friends. The United States must strive to minimize the impact of its security interdiction efforts on the Aviation Transportation System (ATS) 6 and continue to facilitate the free flow and growth of trade and commerce in the Air Domain. These efforts are critical to global stability and economic growth, and are vital to United States interests.** 7

**A guiding principle of NextGen is that safety and security of the NAS must be of primary concern: ―Safety needs to be embedded at the core of all procedures, products, policies, or technologies associated with aviation.‖ 8 Further, a collaborative, cooperative approach among United States Government aviation security agencies is required to ensure coordinated planning for and response to threats in the Air Domain. This dual emphasis on safety and security means that completeness of sensor coverage to improve Air Domain situational awareness will be crucial to the success of integrated air surveillance.** Both the National Strategy for Aviation Security (NSAS) and the supporting Air Domain Surveillance and Intelligence Integration (ADSII) Plan offer guidance for improving Air Domain awareness: ―To maximize domain awareness **the Nation must have the ability to integrate surveillance data, all-source intelligence, law enforcement information and relevant open-source data from public and private sectors, including international partners.‖ 9 These documents provide that surveillance mission partners should synchronize surveillance efforts and integrate capabilities to monitor, detect, identify and track aerial objects persistently, within and outside of the United States.**

#### Nuclear terrorism at an airport is likely and devastating

McLay, Assistant Professor Department of Statistical Sciences and Operations Research, et al., 11

Laura A. McLay, Assistant Professor Department of Statistical Sciences and Operations Research, et al., Rebecca A. Dreiding· Garrett L. Howe, 11, [“Rethinking the encounter probability for direct-to-target nuclear attacks for aviation security,” J Transp Secur (2011) 4:247–280, http://rd.springer.com/article/10.1007/s12198-011-0070-7]

**A nuclear attack** within the United States **is** one of the most **pressing** terrorism threats, **due to the** immediate **destructive consequences for** human **life as well as the economic** and psychological **consequences** (El Baradi 2007). The International Atomic Energy Agency (IAEA) reports that terrorist groups have the desire to obtain and use unconventional weapons such as nuclear and radiological dispersal devices. From 1993 to 2007, **there have been 18 confirmed cases of weapons-grade** nuclear **material being trafficked** worldwide and over 1,300 confirmed cases of other nuclear material being traded (International Atomic Energy Agency 2007). News that international terrorist groups have tried to buy nuclear and other radioactive materials have been reported in several countries (International Atomic Energy Agency 2007). In 2008, $700M US was appropriated to plan for the aftermath of a potential nuclear terrorist attack on the United States (Schwartz and Choubey 2009). If a terrorist group acquires weapons-grade nuclear material abroad, it can be used to make a nuclear weapon and then be transported to the United States, where it will be presumably used to launch an attack. There are many ways to transport nuclear material or a nuclear weapon into the United States, including air, sea, and land border crossings. A weapon can be transported in a cargo container, in a small vessel, on a general aviation aircraft, on a train, or on a large cargo ship, for example. Much research has focused on screening for nuclear material in cargo containers at domestic and foreign ports and at land border crossings (Wein et al. 2007; Dimitrov et al. 2011; McLay et al. 2011). **Little attention has been paid to the critical role of commercial aviation security in** nuclear **attacks**. Sweet (2009) claims that, “[f]rom a terrorist’s viewpoint, **aircraft are a preferable target** because of their international flavor and the likelihood the press will focus on the incident.” Due to the terrorist attacks and plots involving conventional weapons and commercial aviation, aviation security has evolved to include new procedures and technologies. These changes in aviation security have been designed to prevent or detect hijackings and explosions occurring, rather than to prevent a nuclear attack. However, commercial aircraft remain attractive targets for terrorists, as evidenced by the plan to detonate a bomb on an international commercial flight on December 24, 2009. While **flights** are routinely screened for conventional explosives, they **are not routinely screened for nuclear material.** To address the threat of a nuclear attack, some baggage on incoming international flights are screened after they arrive at a U.S. hub airport, although most screening efforts are focused on international general aviation flights (rather than international commercial aviation flights) (Vojtech 2009; Sammon 2009). Thus, there are some current security procedures are in place to detect nuclear weapons through intended security checkpoints once passenger flights have entered the United States. However, the system is vulnerable to modes of attack that breach the normal security procedures. This paper focuses exclusively on the incoming international commercial aviation flights in preventing a nuclear attack, since it has been hypothesized that a nuclear attack would involve smuggling in a nuclear weapon from abroad (Allison 2004)

Extinction

Hellman 8(Martin E, emeritus prof of engineering @ Stanford, “Risk Analysis of Nuclear Deterrence” SPRING, THE BENT OF TAU BETA PI, http://www.nuclearrisk.org/paper.pdf)

The threat of nuclear terrorism looms much larger in the public’s mind than the threat of a full-scale nuclear war, yet this article focuses primarily on the latter. An explanation is therefore in order before proceeding. A terrorist attack involving a nuclear weapon would be a catastrophe of immense proportions: “A 10-kiloton bomb detonated at Grand Central Station on a typical work day would likely kill some half a million people, and inflict over a trillion dollars in direct economic damage. America and its way of life would be changed forever.” [Bunn 2003, pages viii-ix]. The likelihood of such an attack is also significant. Former Secretary of Defense William Perry has estimated the chance of a nuclear terrorist incident within the next decade to be roughly 50 percent [Bunn 2007, page 15]. David Albright, a former weapons inspector in Iraq, estimates those odds at less than one percent, but notes, “We would never accept a situation where the chance of a major nuclear accident like Chernobyl would be anywhere near 1% .... A nuclear terrorism attack is a low-probability event, but we can’t live in a world where it’s anything but extremely low-probability.” [Hegland 2005]. In a survey of 85 national security experts, Senator Richard Lugar found a median estimate of 20 percent for the “probability of an attack involving a nuclear explosion occurring somewhere in the world in the next 10 years,” with 79 percent of the respondents believing “it more likely to be carried out by terrorists” than by a government [Lugar 2005, pp. 14-15]. I support increased efforts to reduce the threat of nuclear terrorism, but that is not inconsistent with the approach of this article. Because terrorism is one of the potential trigger mechanisms for a full-scale nuclear war, the risk analyses proposed herein will include estimating the risk of nuclear terrorism as one component of the overall risk. If that risk, the overall risk, or both are found to be unacceptable, then the proposed remedies would be directed to reduce which- ever risk(s) warrant attention. Similar remarks apply to a number of other threats (e.g., nuclear war between the U.S. and China over Taiwan). his article would be incomplete if it only dealt with the threat of nuclear terrorism and neglected the threat of full- scale nuclear war. If both risks are unacceptable, an effort to reduce only the terrorist component would leave humanity in great peril. In fact, society’s almost total neglect of the threat of full-scale nuclear war makes studying that risk all the more important. The cosT of World War iii The danger associated with nuclear deterrence depends on both the cost of a failure and the failure rate.3 This section explores the cost of a failure of nuclear deterrence, and the next section is concerned with the failure rate. While other definitions are possible, this article defines a failure of deterrence to mean a full-scale exchange of all nuclear weapons available to the U.S. and Russia, an event that will be termed World War III. Approximately 20 million people died as a result of the first World War. World War II’s fatalities were double or triple that number—chaos prevented a more precise deter- mination. In both cases humanity recovered, and the world today bears few scars that attest to the horror of those two wars. Many people therefore implicitly believe that a third World War would be horrible but survivable, an extrapola- tion of the effects of the first two global wars. In that view, World War III, while horrible, is something that humanity may just have to face and from which it will then have to recover. In contrast, some of those most qualified to assess the situation hold a very different view. In a 1961 speech to a joint session of the Philippine Con- gress, General Douglas MacArthur, stated, “Global war has become a Frankenstein to destroy both sides. … If you lose, you are annihilated. If you win, you stand only to lose. No longer does it possess even the chance of the winner of a duel. It contains now only the germs of double suicide.” Former Secretary of Defense Robert McNamara ex- pressed a similar view: “If deterrence fails and conflict develops, the present U.S. and NATO strategy carries with it a high risk that Western civilization will be destroyed” [McNamara 1986, page 6]. More recently, George Shultz, William Perry, Henry Kissinger, and Sam Nunn4 echoed those concerns when they quoted President Reagan’s belief that nuclear weapons were “totally irrational, totally inhu- mane, good for nothing but killing, possibly destructive of life on earth and civilization.” [Shultz 2007] Official studies, while couched in less emotional terms, still convey the horrendous toll that World War III would exact: “The resulting deaths would be far beyond any precedent. Executive branch calculations show a range of U.S. deaths from 35 to 77 percent (i.e., 79-160 million dead) … a change in targeting could kill somewhere between 20 million and 30 million additional people on each side .... These calculations reflect only deaths during the first 30 days. Additional millions would be injured, and many would eventually die from lack of adequate medical care … millions of people might starve or freeze during the follow- ing winter, but it is not possible to estimate how many. … further millions … might eventually die of latent radiation effects.” [OTA 1979, page 8] This OTA report also noted the possibility of serious ecological damage [OTA 1979, page 9], a concern that as- sumed a new potentiality when the TTAPS report [TTAPS 1983] proposed that the ash and dust from so many nearly simultaneous nuclear explosions and their resultant fire- storms could usher in a nuclear winter that might erase homo sapiens from the face of the earth, much as many scientists now believe the K-T Extinction that wiped out the dinosaurs resulted from an impact winter caused by ash and dust from a large asteroid or comet striking Earth. The TTAPS report produced a heated debate, and there is still no scientific consensus on whether a nuclear winter would follow a full-scale nuclear war. Recent work [Robock 2007, Toon 2007] suggests that even a limited nuclear exchange or one between newer nuclear-weapon states, such as India and Pakistan, could have devastating long-lasting climatic consequences due to the large volumes of smoke that would be generated by fires in modern megacities. While it is uncertain how destructive World War III would be, prudence dictates that we apply the same engi- neering conservatism that saved the Golden Gate Bridge from collapsing on its 50th anniversary and assume that preventing World War III is a necessity—not an option.

### Terrorism by 2013

#### Terrorism will happen by 2013

Aleksanteri Institute 11 (part of the University of Helsinki, Timo Hellenberg, Pekka Visuri and Lars Nicander, November 2011, “SECURING AIR TRAFFIC Case CBRN Terrorism” http://www.helsinki.fi/aleksanteri/julkaisut/tiedostot/SecuringAirTraffic.pdf)

As the country most regularly mentioned as a prioritized target by international terrorists, the United States of America is one of the world’s governments that has expressed ¶ most concern of the threat from terrorist acquisition and use of CBRN-weapons. This has been ¶ highlighted by a range of threat assessments from the US intelligence community and one ¶ of the latest is the Annual Threat Assessment by the Director of National Intelligence (DNI), ¶ Dennis C. Blair, released 3 February 2010. These annual threat assessments are shaped and ¶ tuned from one year to the other by recent experiences like, for instance, outbreaks of pandemics, financial crises, and cyber threats, but the threat from terrorists has remained one of ¶ the biggest challenges to US homeland security and safety. In this recent statement the DNI ¶ acknowledged that the traditional WMD use by most nation states has been constrained by ¶ various countermeasures, but at the same time the threat of proliferation is growing due to ¶ the difficulties in using these countermeasures to prevent the use of “mass-effect weapons” ¶ by terrorist groups. Despite the statement that there are no corroborated reports indicating ¶ that any terrorist group has advanced its CBRN-capabilities, the DNI expresses the continued concern over the potential for terrorists to gain access to WMD-related materials or ¶ technology.¶ 6¶ “We cannot rule out that al-Qa’ida’s interest in damaging the US economy might ¶ lead the group to opt for more modest, even “low-tech,” but still high-impact, attacks affecting key economic sectors.”¶ 7¶ Another American expression of the CBRN-terrorism threat is highlighted by the report ¶ World at Risk, released in December 2008 by the Commission on the Prevention of Weapons of ¶ Mass Destruction Proliferation and Terrorism. This commission, which was created in accordance ¶ with the implementing recommendations from the 9/11 Commission Act of 2007, had a mandate to examine the threats posed to the United States by WMD proliferation and terrorism in a ¶ world that has been changed forever by the forces of globalization.¶ 8¶ This report states that it is ¶ more likely than not that WMD will be used in a terror-attack somewhere in the world before the ¶ end of 2013 and that the threat from CBRN-terrorism is increasing at a faster pace than all efforts ¶ made in the US and internationally to counter it, leading to the net assessment that the margin ¶ of safety is shrinking, not growing.

### Drones Add-On

#### NextGen is vital to the growth of the unmanned drones industry

Taggart 12 (Doug, Chair of Committee on Transportation and Aerospace Policy for IEEE-USA, the Institute of Electrical and Electronics Engineering, President of Overlook System Technologies, Past AAAS Congressional Fellow, 2/1, “Upgrading the National Airspace System”, <http://ieeeusa.org/volunteers/committees/grc/EAgenda/2012Feb/tab3c.pdf>)

Growth in air traffic is stressing our nation’s Air Traffic Control system that has not kept pace with available, modernized technology in communications, navigation, surveillance (CNS), and air traffic management automation. Maintaining the status quo will result in gridlock and significant losses to the nation's economy, if airspace demand triples by 2025, as projected. IEEE-USA calls for the full funding of legislation to modernize this nation’s air traffic control system to maintain safety, avoid costly delays, and meet the growing demands of the NAS in the years ahead.

IEEE-USA believes that focusing on technological investments will achieve long-term economic benefits. According to an FAA 2009 economic impact survey, civil aviation contributes $1.3 trillion annually to the U.S. economy; it generates nearly 12 million jobs; and finally, the U.S. civil aviation manufacturing industry remains the single largest positive contributor to the nation’s balance of trade. Stakeholder involvement and cooperation, government working with private industry, will prepare the NAS for continued growth in air traffic, and IEEE-USA recommends the following:

 **Implementation of** the Next Generation Air Transportation System (**NextGen**). Provide FY2012 FAA funding to ensure that critical upgrades are made to existing NAS facilities and equipment, and to enable implementation of new technologies that will better define routes within the NAS, allowing more aircraft to travel within the airspace. Benefits of this technology will help minimize the impact on the environment, due to aircraft flying more direct routes, improving fuel efficiency, and reducing carbon dioxide emissions.

 Approve increased funding for Automatic Dependent Surveillance- Broadcast (ADS-B) technology. ADS-B provides benefits to both pilots and air traffic controllers. Pilots flying aircraft equipped with ADS-B know precisely where they are, and are able to see other aircraft. ADS-B gives pilots a greater situational awareness when they are near bad weather, and also allows them to receive updated flight information including Notices to Airmen and Temporary Flight Restrictions. ADS-B is a core technology under NextGen.

 Support adequate funding for the FAA budget to accelerate applied research, advance development, and implement engineering solutions for NextGen technologies.

 Upgrade the Air Traffic Control (ATC) Centers. Accelerate replacement of outdated ATC systems in the Terminal Control centers. The lack of system automation imposes limits on U.S. airspace and airline efficiencies, and constrains technological advances. The absence of systems automation imposes heavy workloads on air-traffic controllers; potentially increases the risk of accidents in heavy traffic situations; and stifles the infusion of additional air-traffic management technologies.

 Upgrade computer language technology to reduce extraneous and dangerous complexity in safety sensitive software systems. Currently, all safety-related software has been developed using computer language technology that has poor simplicity of expression, compared to what was designed in the early 1970s, and implemented in the early 1980s, by leading computer vendors [1]. It seems there are no credentialed software safety experts anywhere who have working familiarity with comparably advanced language technology. The resulting deficiencies have probably already led to a few hundred deaths in aircraft mishaps. The prospective introduction of Unmanned Aircraft Systems into the National Airspace increases the risks.

 Support **NextGen** to handle new and emerging technologies, such as Unmanned Aircraft Systems (UAS). The Next Generation Air Transportation System must be able to **support routine access by Unmanned Aircraft Systems** in the NAS; **this access is vital for the growth of this industry.**

#### UAVs successfully monitor agriculture and make domestic production more effective

**Darnall 11** Bart Darnall, “Unmanned Aircraft Systems: A Logical Choice for Homeland Security Support”, Naval Postgraduate School thesis, Dec. 2011, <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA556271>

**Agriculture and food infrastructure comprises of production, processing, and delivery systems. A disaster caused by an attack on this infrastructure could disrupt the food supply and pose a serious threat to public health, safety, welfare, or to the national economy**.129 According to DHS, **food and agriculture infrastructure** “is almost entirely under private ownership and is composed of an estimated 2.1 million farms, approximately 880,500 firms and over one million facilities.”130 It **accounts for approximately one-fifth of the nation's economic activity. The capabilities provided by UAS can facilitate the monitoring of farm and agriculture related features, such as the spread of crop destroying pests, status of crop production, identification of crop varieties, and loss of timber in areas threatened by timber theft**. **Using UAS for crop spraying and dusting greatly reduces the exposure of people to hazards associated with chemical contamination**. The **U.S. energy infrastructure fuels the nation’s economy.** More than 80 percent of the country's energy infrastructure is owned by the private sector.131 It consists of three interrelated segments: electricity, petroleum, and natural gas. The electricity segment consists of a generating element consisting of more than 5,300 power plants and a distribution segment that uses over 211,000 miles of high-voltage transmission lines.132 **The electricity infrastructure is highly automated and controlled by a regional grid system. Petroleum and natural gas segments consist of exploration, production, storage, transport, and refinement (in the case of oil**). There are over 400,000 petroleum and gas wells within the U.S. and within its territorial waters, in addition to hundreds of refineries and processing plants. These electricity, petroleum, and natural gas areas and installations are difficult to guard. **Damage caused by a terrorist attack or natural disaster can lead to enormous ecological damage and revenue losses, such as that experienced in the Deepwater Horizon oil spil**l in 2010. This critical infrastructure is dispersed throughout the U.S. and its territorial waters leaving it vulnerable in many locations. **Unmanned aircraft systems are a formidable capability that can be used to patrol critical infrastructure on a regular basis**. Their FLIR camera can detect the presence of attackers who may be trying to penetrate its vulnerabilities. experienced in the Deepwater Horizon oil spill in 2010. This **critical infrastructure is dispersed throughout the U.S. and its territorial waters leaving it vulnerable in many locations**. Unmanned aircraft systems are a formidable capability that can be used to patrol critical infrastructure on a regular basis. Their FLIR camera can detect the presence of attackers who may be trying to penetrate its vulnerabilities.

#### Extinction

Lugar 4 (Richard G., U.S. Senator – Indiana and Former Chair – Senate Foreign Relations Committee, “Plant Power”, Our Planet, 14(3), http://www.unep.org/ourplanet/imgversn/143/lugar.html)

In a world confronted by global terrorism, turmoil in the Middle East, burgeoning nuclear threats and other crises, it is easy to lose sight of the long-range challenges. But we do so at our peril. One of the most daunting of them is meeting the world’s need for food and energy in this century. At stake is not only preventing starvation and saving the environment, but also world peace and security. History tells us that states may go to war over access to resources, and that poverty and famine have often bred fanaticism and terrorism. Working to feed the world will minimize factors that contribute to global instability and the proliferation of weapons of mass destruction.
With the world population expected to grow from 6 billion people today to 9 billion by mid-century, the demand for affordable food will increase well beyond current international production levels. People in rapidly developing nations will have the means greatly to improve their standard of living and caloric intake. Inevitably, that means eating more meat. This will raise demand for feed grain at the same time that the growing world population will need vastly more basic food to eat.

Complicating a solution to this problem is a dynamic that must be better understood in the West: developing countries often use limited arable land to expand cities to house their growing populations. As good land disappears, people destroy timber resources and even rainforests as they try to create more arable land to feed themselves. The long-term environmental consequences could be disastrous for the entire globe.
Productivity revolution
To meet the expected demand for food over the next 50 years, we in the United States will have to grow roughly three times more food on the land we have. That’s a tall order. My farm in Marion County, Indiana, for example, yields on average 8.3 to 8.6 tonnes of corn per hectare – typical for a farm in central Indiana. To triple our production by 2050, we will have to produce an annual average of 25 tonnes per hectare.

Can we possibly boost output that much? Well, it’s been done before. Advances in the use of fertilizer and water, improved machinery and better tilling techniques combined to generate a threefold increase in yields since 1935 – on our farm back then, my dad produced 2.8 to 3 tonnes per hectare. Much US agriculture has seen similar increases.

But of course there is no guarantee that we can achieve those results again. Given the urgency of expanding food production to meet world demand, we must invest much more in scientific research and target that money toward projects that promise to have significant national and global impact. For the United States, that will mean a major shift in the way we conduct and fund agricultural science. Fundamental research will generate the innovations that will be necessary to feed the world.

The United States can take a leading position in a productivity revolution. And our success at increasing food production may play a decisive humanitarian role in the survival of billions of people and the health of our planet.

### XT – NextGen KT Drones

#### UAS will benefit from improved ATC

**Toner 12** (Karlin, Director of the Joint Planning and Development Office (JPDO), “Unmanned Aircraft Systems (UAS) in a NextGen Environment”, 4/18, http://www.jpdo.gov/library/2012\_0409\_Dayton\_UAS\_Speech\_v5.pdf)

As longer-term NextGen capabilities are deployed, **UAS** flights **will benefit from the added capacity and increased flexibility through precision performance** against agreed to **and predictable flight paths**. Automation will monitor aircraft performance against a known flight path and detect and resolve potential conflicts, freeing the human from some of these situations. Many of the long-term research priorities for NextGen, including human systems integration, air/ground automation, software verification and validation, and cybersecurity must be solved to enable safe and efficient UAS integration in the National Airspace System. Quoting from the FAA’s NextGen Web site, “It started with bonfires: immense torches waving from the horizons guided the first pilots from grass runway to grass runway as they delivered the most important commodity of the day: mail.” The days of the barnstormers are long gone, with bonfires replaced by beacons and radar towers. **With NextGen, satellites will guide** manned and **unmanned aircraft along their routes.** Knowing that even the technology path for UAS integration is not complete, the JPDO will bring our future-focus and collaborative methodologies together with our modeling 4 and simulation of alternative NextGen architectures to propose the means to identify and fill the R&D gaps. The UAS Research, Development and Demonstration Roadmap will serve as our launch pad.

#### Without improved aerospace, UAS will degrade

**Forbes 12** (Forbes, 6/26, “Process Used To Fly Drones In U.S. Airspace Too Burdensome”, Lexis)

The current process requiring the Defense Department to get approval from the Federal Aviation Administration to fly drones in U.S. airspace is unsustainable, burdensome and inefficient, said Rep. Randy Forbes (R-VA), the chairman of the House Armed Services readiness subcommittee. Congress, DOD and the FAA need to move toward a situation that enables greater integration of unmanned aerial vehicles into the national airspace, he told Inside the Pentagon in a June 19 interview. "We have to give a comprehensive plan to look at what we're doing and how we're doing it, to make sure that we have the manning capabilities that we need and that we have the processes that are efficient and able to get us where we want to go," Forbes said. "And **we're not there now**." The FAA is in the midst of developing a comprehensive plan to accelerate the integration of civil unmanned aircraft systems into the national airspace system, as required by Congress in the FAA Reauthorization Act signed earlier this year. The plan should provide for this integration to occur by September 2015. Forbes said lawmakers must ensure that the plan is developed with DOD participation. The need for greater airspace access was corroborated in a recent report DOD acquisition chief Frank Kendall sent to lawmakers, he said, noting that the report largely confirmed what Congress already knew. The April report looking at future UAS training, operations and sustainability notes that the Air Force needs greater access to the national airspace to support its developmental sense-and-avoid objectives and projected training requirements for drones. **Without improved national-airspace access** and improved access to special-use airspace, **the capabilities of the Air Force UAS force "will stagnate or degrade**," reducing the Air Force's "overall mission effectiveness," the report states (ITP, June 14).

#### NextGen effectiveness will boost unmanned aircraft development

Culler 12 (Jessica, Public Affairs specialist for NASA’s Ames Research Center, previously part of the Ames New Media Innovation Team and a NASA-ISU Assistant Project Manager, “8 Questions about NextGen”, 1/18, http://www.nasa.gov/topics/aeronautics/features/8q\_nextgen.html)

The United States is undertaking the largest transformation of air traffic control ever attempted. Known as the Next Generation Air Transportation System, or NextGen, it is a multi-billion-dollar technology modernization effort that **will make air travel safer, more flexible and more efficient. As the system gets better, its capacity will grow and the demand for different types of air transportation – even unmanned aircraft – will increase**. NASA is one of several U.S. government agencies that play a crucial role in helping to plan, develop and implement NextGen. NASA's role is research and development of new ideas and technologies that will make NextGen a reality. We're working on software that reduces airport runway and surface congestion, new landing techniques that save fuel and time, computer models that predict more accurately the influence of weather on flight paths, and air traffic control solutions that allow more takeoffs and landings in the same amount of time. Because NextGen is not just about air traffic management, we're also working on the tools and scientific knowledge needed to advance engine and airframe technology for today's aircraft, and develop unconventional new vehicles that will fly faster, cleaner and quieter, and use less fuel.

#### NextGen solves – congested airspace and lackluster technology are largest hurdles to civilian drone usage

Conniff 11 (Richard, a frequent contributor to Smithsonian, “Drones are Ready for Takeoff”, June, Smithsonian Magazine, http://www.smithsonianmag.com/science-nature/Drones-are-Ready-for-Takeoff.html?c=y&story=fullstory)

The problem, says John Allen, the FAA’s director of flight standards, is that “there are too many lost [communications] links now. Some would say it’s not that big a deal—‘The aircraft continues to fly, it’s not going to come plummeting to earth.’ ” Drones are typically programmed to go into a holding pattern—or return to base—when they lose contact with ground control. “Well, that might be fine in a combat environment,” Allen says, “**but in a civil environment, with a very congested national airspace, that creates a problem**.”

Under current FAA rules, operators of unmanned aircraft must have a certificate of authorization; only 264 such certificates are active, most for research and development in remote areas. “What they would like,” says Allen, “is to not have to go for that permission every time,” and simply file a flight plan and take off, like manned aircraft. But human pilots can see and avoid small planes flying by visual flight rules. Many drones, he says, lack the technology to “sense and avoid.”

The FAA is considering rules that would continue to separate unmanned aircraft from conventional air traffic but relax restrictions on drones weighing less than 50 pounds and flying below 400 feet. Allen predicts the change, likely to take effect late next year, will spur entrepreneurs and government agencies to launch thousands of new drone applications**. But opening the national airspace to larger drones**—some with the wingspan of a passenger jet—**will be more complicated**, he says, **requiring** “a lot of cultural change” and **more reliable technology**.

### Impact – Pipeline/Crop Monitoring/Pollution

#### Civilian UAVs solve pipeline and crop monitoring as well as pollution

Conniff 11 (Richard, a frequent contributor to Smithsonian, “Drones are Ready for Takeoff”, June, Smithsonian Magazine, http://www.smithsonianmag.com/science-nature/Drones-are-Ready-for-Takeoff.html?c=y&story=fullstory)

The question everyone asks is how quickly unmanned technology can make the leap into the civilian market**. The potential seems limitless**—handling routine monitoring of **pipelines** and **power lines**, for instance, or gathering geomagnetic data about natural **resources** (a job that entails flying hundreds of miles in a straight line, at low altitude, then moving 50 yards over and flying straight back). Drones could help farmers **monitor crops** in distant fields, allow real estate developers to perform simple **construction** jobs in remote or difficult locations or enable **environmentalists to spot polluters**.

## \*\*2AC Topicality\*\*

### 2AC T – Transportation Infrastructure

#### We meet – NextGen is transportation infrastructure

**NCAT 7** – National Center for Advanced Technologies, Next Generation Advanced Technologies Institute, http://www.ncat.com/ngats/wg\_airports.html

The Airport Infrastructure WG is responsible for the NextGen strategy to develop airport infrastructure to meet future demand by empowering local communities and regions to create alternative concepts of how airports will be used and managed in the future.

#### C/I – transportation infrastructure includes airport and air traffic control improvements

AJA 11 (“American Jobs Act”, 9/12/11, <http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/american-jobs-act.pdf>)

(9) INFRASTRUCTURE PROJECT-

(A) IN GENERAL- The term `eligible infrastructure project' means any non-Federal transportation, water, or energy infrastructure project, or an aggregation of such infrastructure projects, as provided in this Act.

(B) TRANSPORTATION INFRASTRUCTURE PROJECT- The term `transportation infrastructure project' means the construction, alteration, or repair, including the facilitation of intermodal transit, of the following subsectors:

(i) Highway or road.

(ii) Bridge.

(iii) Mass transit.

(iv) Inland waterways.

(v) Commercial ports.

(vi) Airports.

(vii) Air traffic control systems.

(viii) Passenger rail, including high-speed rail.

(ix) Freight rail systems.

#### Prefer our interpretation:

#### a) Precision – our interpretation comes from a federal law which should be preferred on a topic about federal government policy making

#### b) Education – NextGen is the future of air traffic control – debating about it is important

Governing FedWatch 12 — Governing FedWatch—a blog by Governing Magazine that covers federal transportation policy and its effects on states and localities, 2012 (“The $40B Infrastructure Project You Haven't Heard Of,” Byline Ryan Holeywell, April 4th, Available Online at http://www.governing.com/blogs/fedwatch/the-40-billion-project-you-havent-heard-of.html)

Earlier this month, Governing named NextGen – the federal government’s high-tech plan to upgrade the country’s flight system from one based on radar to satellites – as one of its top five “in limbo” transportation projects.

The project has huge benefits. That switch, along with other technological improvements, would allow for more efficient flight paths, reduced fuel consumption, smaller carbon emissions, and less flight delays. But it comes with a high price tag: FAA estimates that the infrastructure cost of NextGen through 2025 is $15 billion to $20 billion, plus another $19 billion for the cost of equipping airplanes with the requisite technology.

That instantly makes it one of the country's most expensive infrastructure projects, and it's one many people, in a world where the debate about transportation often focuses on highways and transit, often overlook.

#### Default to reasonability – C/I creates a race to the bottom

### XT – W/M NextGen = TI

**We Meet, NextGen is Transportation Infrastructure**

**AOPA 10**, Aircraft Owners and Pilots Association, September 6, 2010, http://www.aopa.org/advocacy/articles/2010/100906obama.html

President Barack Obama announced Sept. 6 that his administration will press for a major investment in the nation’s transportation infrastructure, including at airports and in the Next Generation air transportation system (NextGen). The president made the announcement during a Labor Day speech in Milwaukee, Wis.

**AIA 12**, Aerospace Industries Association Aerospace and Defense: The Strength to Lift America. Feature: NextGen, http://www.aia-aerospace.org/issues\_policies/civil\_aviation/feature\_nextgen/

NextGen is a national transportation infrastructure priority. The Transportation Department and the White House are looking at ways to accelerate NextGen implementation by up to eight years. This will only be possible with robust federal funding support — not just for FAA programs and infrastructure, but also for avionics equipment in the aircraft that will transport passengers and cargo around the United States and the world. For less than the cost of one high-speed rail project, every aircraft that flies into and out of the 35 busiest airports in the United States could be equipped with the avionics needed to transition to NextGen. And many NextGen capabilities, such as performance-based navigation, can be implemented in the short term while the full array of services and technologies of the air traffic system of the future are certified and produced.

**Airports are transportation infrastructure**

**DOHS 7**, Department of Homeland Security Transportation Systems Critical Infrastructure and Key Resources Sector-Specific Plan as input to the National Infrastructure Protection Plan, May 2007, http://www.hsdl.org/?view&did=474328

The Transportation Systems Sector is segmented into six key subsectors, or modes, which operate independently within both a regulated and non-regulated environment, yet are also highly interdependent. Such interdependence is a defining characteristic of the transportation system. The six modes—Aviation, Maritime, Mass Transit, Highway, Freight Rail, and Pipeline—all contribute to transporting people, food, water, medicines, fuel, and other commodities.

**^alternative cites available from the DOHS, TSA, and Jarret Brachman of the Rural Transportation Safety and Security Center Upper Great Plains Transportation Institute North Dakota State Institute**

**NRCAN 9**, Natural Resources Canada Air Transportation Infrastructure, March 18, 2009, http://atlas.nrcan.gc.ca/auth/english/maps/economic/transportation/pm\_air/1

The air transportation infrastructure consists of airports, aerodromes and the civilian Air Navigation System (ANS). There are approximately 1775 aerodromes in Canada. Aerodromes are facilities where aircraft can take-off and land. On the map, they are categorized into three types of aerodromes: land airports and aerodromes (for rotary-wing or fixed-wing aircraft); water bases (for float planes); and heliports (for helicopters). The National Airport System (NAS) is comprised of 26 airports with an annual traffic of 200 000 passengers or more as well as airports serving national, provincial or territorial capitals.

### 2AC T – Investment

#### Investment includes public-private partnerships --- narrower interpretations distort the topic

Heller 9 (Peter S., Former Deputy Director of the Fiscal Affairs Department – International Monetary Fund and Currently Senior Adjunct Professor of International Economics – Paul H. Nitze School of Advanced International Studies at The Johns Hopkins University, “Public Investment: Vital for Growth and Renewal, But Should it be a Countercyclical Weapon?”, http://www.unctad.org/en/Docs/webdiae20091\_en.pdf)

While any capital outlay of a government would be defined as “public investment” in normal budgetary classification terms, this approach sidesteps a number of important conceptual issues. First, from a normative public finance perspective, the reason that governments spend on public assets is because some form of market failure is present that either leads to inefficient provision by the private sector or entails excess rents to a private producer. Specifically, the asset gives off externalities, positive or negative, or the asset is a “public good,” whose services are subject to “nonrivalness” in consumption or where it is difficult to exclude potential consumers. Or, there are economies of scale involved, such that a natural monopoly situation would be entailed, justifying either public provision or regulation of a private monopoly. Many kinds of infrastructural networks are subject to such natural monopoly conditions.

Moreover, the public sector’s role in public investment is not limited to its own budgetary spending. A simple focus on government outlays may yield too narrow a picture of the level of public investments and more importantly, a too restricted perspective on the potential role played by governments with regard to the provision of public infrastructure. Most obviously, when the government collaborates in a public-private partnership (PPP), most outlays will normally be made by private sector entities. Yet the purpose of these outlays would be to provide goods or services for which there is justified public involvement. And the government’s role in relation to the PPP arrangement—in terms of monitoring, regulation, risk bearing, and ultimately purchaser of the asset (long in the future perhaps but part of the PPP contractual terms)—will still remain prominent.

Similarly, in cases where the private sector invests in the production of goods characterized by natural monopoly conditions, government regulatory involvement is called for. In other spheres of private investment, a government regulatory or planning role may also be fundamental in order to take account of public policy objectives (in the case of externalities), though such investments would still be recognized as private.

The challenge of classifying public investment is rendered even more complex in the context of privatization efforts, where the sale of a government asset is classified, in budgetary terms, as a “negative investment,” though in fact the transaction simply represents a reclassification of ownership. The complexities of measuring public investment and the changes in the definitions that have occurred over time has led the OECD, in its recent effort to analyze the linkage between public investment and growth, to rely on indicators of physical stock rather than measures of the financial value of public investment or the net value of its capital stock. Rather than being misled by a narrow budgetary classification, what is important to recognize are the ways in which governments have a responsibility in the creation of capital goods and their need to intervene, particularly when market failure leads to underspending on goods vital for the realization of public policy objectives.

## \*\*2AC CPs\*\*

### 2AC States CP

#### Aviation infrastructure is a federal responsibility

**NASAO 12** (NASAO is one of the most senior aviation organizations in the United States, National Association of State Aviation Officials, NASAO NATIONAL LEGISLATIVE AGENDA, 2012, http://www.nasao.org/Advocacy/NASAOAgenda.aspx)

NASAO fully recognizes the importance of national deficit reduction, but notes that the Airport Improvement Program (AIP) and its associated Aviation Trust Fund have always been the recipients of a series of dedicated federal excise taxes, paid by aviation users. AIP and its trust fund should not be viewed as a potential source of deficit reduction funds. To do so will inevitably lead to a decrease in safety, an unacceptable reduction in the current pace of NextGen implementation, and a decrease in efficiency resulting in increased airline delays. NASAO firmly believes that our national aviation infrastructure has always been and should always be a federal responsibility. While the states are ready and willing to assist, as they always have, the leadership of financing our national aviation system rightly rests with the Administration, Congress, the U.S. Department of Transportation andthe Federal Aviation Administration (FAA).

#### State action would be struck down – airport infrastructure is under federal purview

**FAA/OST 99** - Task Force study (“Airport Business Practices and Their Impact”, October 1999, http://ostpxweb.dot.gov/aviation/Data/airportsbuspract.htm)

**The Airline Deregulation Act of 1978 placed “**maximum **reliance on competitive market forces and on actual and potential competition” consistent with the public safety, for the provision of the national air transportation system. 49 U.S.C. 40101(a)(6). To prevent state and local governments from impeding competitive market forces in the airline industry, the act prohibited a state or political subdivision from enacting or enforcing any law, rule, regulation, standard, or other provision having the force and effect of law relating to rates, routes, or services of air carriers providing air transportation**. 49 U.S.C. 41713(b)(1); 49 CFR 399.110(a) (1997). **Additionally, it is the policy of the United States to carry out the airport and airway program to foster competition, consistent with the Airline Deregulation Act’s reliance on the marketplace to provide the needed air transportation system and to encourage new carrier entry into air transportation markets to ensure a more effective and competitive airline industry**

**States fail --- FAA oversight and resources make it the key actor**

**Herdman 94** (Roger C., United States Office of Technology Assessment, “Institutional and Management Issues for Civil Aviation Research and Technology”, Federal Research and Technology for Aviation, p. 35-36)

**The federal government is involved in most aspects of a typical aircraft flight in the U**nited **S**tates. **The aircraft design, its flight and maintenance crew, and the public airport it operates out of must all be certified by the** Federal Aviation Administration (**FAA**), under the U.S. Department of Transportation (DOT). **On the infrastructure side,** most of the pavement, lights, and **navigation devices** at the airport **are financed with federal funds, and** air traffic control (**ATC**) and airspace **systems** through which the aircraft flies **are owned and operated by FAA**.

**The** tremendous size of the air transportation system and its importance **to the U.S. economy, the** federal responsibility for ATC, and the lack of commercial market or profit potential for certain **safety, environmental, and air traffic management research have** propelled the federal government into the role of major provider of aviation research and development (**R&D**). **Within the U**nited **S**tates, **only the federal government has the resources to support large-scale, applied R&D programs for aviation safety and infrastructure**. This chapter describes the present organizational framework for aviation R&D and discusses management and technology issues of concern to Congress.

ORGANIZATIONAL FRAMEWORK

Federal involvement in aviation began shortly after the inception of powered flight. At the end of World War I, Congress created the National Advisory Committee for Aeronautics (NACA) as an advisory group for aviation research, thus intertwining the federal government’s interest in aviation for military and civil purposes from early on.

Many organizations hold prominent roles in U.S. civil aviation, especially in the areas of policy, regulation, and research and technology. This section looks at the roles of FAA, the National Aeronautics and Space Administration (NASA), and other organizations in providing the technical underpinnings for civil aviation. Federal Aviation Administration FAA promotes safety and fosters air commerce in three key areas—safety regulation, infrastructure development, and ATC system operation—and in the research and technology development to support them. **FAA’s regulatory authority covers virtually every aspect of aviation, from airports and airways to aircraft and the people who work in and around them. The agency is responsible for the nation’s ATC system**, a complex amalgam of people and equipment that must run 24 hours a day, every day of the year, in numerous locations across the United States and its territories.

#### Federal funding key to reciprocal state funding

**Cohen 2** (Associate Professor of Economics; Ph.D., University of Maryland, College Park, December 1998 Jeffrey, P. “Reciprocal State and Local Airport Spending Spillovers and Symmetric Responses to Cuts and Increases in Federal Airport Grants”. January. SAGE)

Recently, **the U.S. Congress has debated whether to reauthorize funding for the** Federal Aviation Administration’s (**FAA’s**) intergovernmental grants program, the Airport Improvement Program (**AIP). This debate has been revived** on more than one occasion over the past several years, **bringing to the forefront the importance of examining the state and local airport spending responses to changes in AIP grants**. Furthermore, the value of AIP cash outlays awarded in individual states has varied over the course of the AIP. Although in some years total AIP cash outlays to some states have risen, total AIP cash outlays to other states have fallen at the same time. Similarly, for many states, there is individual variability over time in total AIP cash outlays awarded in the sense that in some years, total AIP cash outlays to a given state rise, whereas in other years, total AIP cash outlays fall. This variability is demonstrated for a selection of states in Table 1. The variability in the AIP grants also leads to the question of whether states and localities exhibit symmetric spending responses to both increases and decreases in these grants. **There is an extensive literature on the effects of changes in intergovernmental grants on spending responses of state and local governments receiving federal aid**. The public finance literature has shown that in general, an increase in lump-sum intergovernmental grants to a state or locality should lead to an expenditure response by the recipient government equivalent to that from a lump-sum increase in income of the median voter (Bradford and Oates 1971).The theory similarly predicts a symmetric response in state and local spending for a decrease in intergovernmental grants. For the most part, the empirical evidence has not supported this theory. **Many studies** (discussed by Gramlich 1977) **have found that increases in various types of intergovernmental grants to states and localities have led to spending increases somewhat greater than the marginal propensity to spend out of an increase in private income**. This phenomenon has been described as the flypaper effect because these empirical results have implied that the grant money “sticks where it hits.” There have been many attempts to explain such empirical findings, including criticisms of econometric specifications and allegations of the presence of price effects arising due to the matching rates present in some grants programs. How states and localities respond to general forms of diminished federal aid has become a question of increasing interest (see Quigley and Rubinfeld 1996 for a discussion of this issue). **A more recent empirical literature has examined the spending responses of states and localities to cuts in intergovernmental grants**. Overall, the empirical evidence is mixed as to whether states and localities exhibit symmetric expenditure responses to both cuts and increases in grants. Furthermore, when asymmetric spending responses are found, there is the ad- ditional question of whether states and localities pick up the slack and spend more in response to cuts in intergovernmental grants (fiscal replacement) or spend less in response to cuts in intergovernmental grant receipts (fiscal restraint). Stine (1994) studied 66 Pennsylvania county governments and found that own-source revenue fell in response to a cut in aid from the federal government. But county spending rose in response to decreases in grants from state governments. Gamkhar and Oates (1996) used aggregate time series data for state and local expenditures and found symmetric state expenditure response to cuts and increases in grants. Volden (1999) studied the asymmetry question by analyzing specific data on state welfare expenditures. He found that when the state matching level rose (implying a cut in welfare grants to the states), states did not change their welfare payments. But when the matching level fell, states increased their welfare payments. **Gamkhar** (2000) examined asymmetries related to federal highway grants. She **found that** cuts in grants resulted in an asymmetric highway spending response by state and local governments in the period the cut occurred. **States and localities spent less** on highways **at the time of the cut**, whereas the contemporaneous effect on highway spending of an increase in grants was insignificant. But she did find a symmetric highway spending response to changes in lagged highway obligations. It is postulated here that **AIP grants from the federal government are an important determinant of state and local airport spending**. It is also reasonable to postulate that airport spending in a particular state depends not only on its own economic variables (such as grants from the federal government and disposable income) but on the level of airport spending in other states. The theory elaborating on the possibility of individuals’ receiving benefits from public spending in other states can be traced back to Oates (1972). In the present case, this seems plausible due to the “hub and spoke” (Morrison and Winston 1985) structure of the U.S. air transportation system. Namely, cross-country passengers may fly from a spoke in a state in one end of the country to a central hub in another state, change planes, and fly on to a state in the other end of the country. Often, passengers wait in an airport in a particular state for a plane that has been delayed on its previous leg due to congestion at an airport in another state. A delay resulting from congestion at one node in the air transportation system often results in further delays for connecting passengers throughout the entire system. Thus, spending increases at airports that are proverbially riddled with time delays confer spillover benefits on individuals in other states who travel through the airport in question. These benefits are in the form of travel time savings. This could make it socially optimal for an individual state to increase its airport spending when other states spend more on airports. Moreover, these benefits are reciprocal in nature as described by Oates (1972). It will be important to incorporate this potential interdependency into an empirical framework that examines asymmetric state and local airport expenditure responses to changes in AIP grants.

**FAA credibility ---**

**A) Only federal action and upfront investment boosts FAA credibility**

**DiMascio 11** (Jen, Reporter – Aviation Daily, “Babbitt: Administration Still Open To Cooperative Fund For NextGen”, Aviation Daily, 4-29, Lexis)

Administrator Randy Babbitt believes that while **the administration is open to a public-private partnership to help finance the NextGen air traffic control modernization program**, putting the structure in place is no simple undertaking, he told the U.S. Chamber of Commerce on April 27.

ITT and Nexa Capital are creating a $1.5 billion **loan guarantee** fund to help **speed development of NextGen** and bolster the business case for buying into the massive infrastructure investment. **That kind of upfront investment is critical to get NextGen off the ground**, Russell Chew, managing partner of Nexa Capital Partners, said during the day-long civil aviation discussion before the Chamber. «**The key to any of these programs is the** skin in the game,» Chew said, **referring to a term coined by** investor **Warren Buffett to describe individuals who** share a stake in a venture and are therefore equally concerned **about its outcome, just like outside investors**. Chew added that the fund will require enabling legislation on Capitol Hill as well.

**B) FAA credibility is key to NextGen**

**Dillingham 11** (Gerald L., Ph.D. and Director of Physical Infrastructure Issues – United States Government Accountability Office, Testimony Before the Subcommittee on Aviation, Committee on Transportation and

Infrastructure, House of Representatives, 10-5, http://www.gao.gov/assets/590/585589.html)

FAA Faces Several Ongoing Issues That Will Affect NextGen Implementation:

**To maintain credibility with aircraft operators that NextGen will be implemented, FAA must deliver systems and capabilities on time so that operators have incentives to invest in the avionics that will enable NextGen to operate as planned**. As we have previously reported, **a past FAA program's cancellation contributed to skepticism about FAA's commitment to follow through with its plans. That industry skepticism**, which we have found lingers today, **could delay the time when significant NextGen benefits**--such as increased capacity and more direct, fuel-saving routing--**are realized**. A number of NextGen benefits depend upon having a critical mass of properly equipped aircraft. **Reaching that critical mass is a significant challenge because the first aircraft operators to equip will not obtain a return on their investment until many other operators also equip**.

#### Federal funding key for the CP

**Vogt 99** (Frederick H. Vogt director, aeronautics division, tennessee department of transportation and chairman of NASAO legislative affairs committee Frederick H. Vogt, “Prepared Statement by Frederick H. Vogt director, aeronautics division, tennessee department of transportation and chairman of NASAO legislative affairs committee on behalf of the national association of state aviation officials before the house committee on transportation and infrastructure subcommittee on aviation subject - the airport improvement program”. February 11. Lexis)

I would like to note that NASAO, based upon its research of airport needs nationwide published in its State Aviation Database Report, has recommended an annual $2 billion AIP funding level for several years. The National Civil Aviation Review Commission and the Air Transport Association agree with us. And as stated before, the Southern Governors Association, the National Governors' Association, the National Conference of State Legislatures and the American Association of State Highway and Transportation Officials concur in recommending a $2 billion annual AIP. Mr. Chairman and Members of the Subcommittee, I would suggest that when **all 50 States**, the airlines, a congressionally mandated, non-partisan commission, and those previously mentioned associations all **confirm that a $2 billion annual AIP is necessary** for the health of this nation...then $2 billion ought to be the minimum that Congress is willing to fund. As you know, the Aviation Trust Fund, designed to provide AIP with a stable source of funding, is predicted to enjoy an uncommitted significant balance at the end of this fiscal year. The aviation taxpayers have put the money in the system, we hope Congress will now spend it where it is most needed. Congress, in its great wisdom, has provided our nation with the first five-year term for the FAA Administrator. We at NASAO applaud this action and ask that you now grant us a five-year AIP bill. This five- year AIP authorization would also be in line with the Administration's budget proposal.

As one of the newest State Block Grant states, Tennessee has developed a comprehensive airport Capital Improvement Plan (CIP) with nearly $150 million in requirements to meet FAA airport standards. I can personally assure you that a five-year, $2 billion annual **AIP will allow us to plan and spend federal dollars more efficiently**. "Efficiently" means saving dollars and applying them to the most beneficial projects - to increase safety and meet the needs of our state's business interest. **We would be able to avoid the disorderly, start-and-stop nature of the development and construction of our nation's airports due**

#### Links to politics – the CP needs to go through a formal federal determination process

**FAA 2K** – Federal Aviation Administration (“AIRPORTS CAPITAL IMPROVEMENT PLAN”, April 22, <http://www.faa.gov/airports/resources/publications/orders/media/aip_5100_39a.pdf>)

**The FAA Reauthorization Act of 1996 amended Title 49 of the USC to require the FAA to permit block grant States to use their priority systems if such systems are not inconsistent with the national priority system**. If a block grant State is interested in using its priority system, **the State must submit the proposed priority system** to APP-510 **for a determination**. APP-510, in coordination with APP-520, will review the State’s priority system and determine whether it is inconsistent with the national priority system. **A block grant State cannot use its priority system if different from the NPS until a formal determination has been made**.

### State Funding Bad – Budgets

#### Weak state budgets mean the CP will blow up our economy

**Pollack 11** - Economic Policy Institute; Office of Management and Budget and the George Washington Institute of Public Policy; staff member for President Obama’s National Commission on Fiscal Responsibility and Reform; M.P.P. The George Washington University (Ethan, “Two years into austerity and counting…”, October 19, <http://www.epi.org/blog/years-austerity-counting/>)

**It’s popular to criticize Keynesian economics by alleging that the Recovery Act was an experiment in fiscal expansion, and because two-and-a-half years later the economy still hasn’t roared back to life, it must have failed**. **What this criticism forgets is that the federal government isn’t the only government setting fiscal policy. While the federal government did conduct Keynesian expansionary fiscal policy over the last few years, the states have been doing the reverse, acting, as Paul Krugman put it, like “**50 Herbert Hoovers**” as they cut budgets and raise taxes**. **They’re forced to do this because the cratering of private-sector spending which threw the economy into recession blew huge holes in their budgets** (in particular with a huge fall in income, sales, and property taxes, and increases in demands on safety-net programs), **and just about all of them are required to balance their budgets** each year. Overall, **states have had to close over $400 billion in shortfalls** over the last few years – **this is spending power siphoned off from the economy and acts as a** significant “anti-stimulus**.”** This means that just looking at the amount of federal stimulus that’s been enacted significantly overestimates how much fiscal support has actually been pumped into the economy. In fact, as the Goldman Sachs graph below shows, the net fiscal expansion across all levels of government only lasted through the third quarter of 2009. For the last two years, **state and local cuts have been overwhelming the federal fiscal expansion, making overall fiscal policy across all levels of government actually contractionary and creating a net drag on economic growth**. **What’s needed to reverse this drag of public-sector austerity on growth?** The $35 billion for **state and local aid** that’s part of the American Jobs Act is a good start, as it **would help keep states and local governments from being forced to cut further.** As the last two years of **austerity** have shown, this **would only serve to further weaken the economy**. And if we’re going to get out of this economic hole, we first need to stop digging down further.

### 2AC Privatization CP

**Industry and airports hate the CP**

**Poole 10** (Robert W. Jr., Director of Transportation Policy and Searle Freedom Trust Transportation Fellow – Reason Foundation, and Chris Edwards, Director of Tax Policy Studies – Cato Institute, “Airports and Air Traffic Control”, June, http://www.downsizinggovernment.org/transportation/airports-atc)

**Why has the U**nited **S**tates **resisted** these types of **airport reforms** occurring around the world?15 **One reason is that** U.S. state and local **airports have** for decades **received federal aid** for development and construction. **Federal law** generally **provides that governments that have received** federal **aid** for an infrastructure facility **have to repay** previous federal **grants if** the facility is **privatized**. Moreover, the FAA has interpreted a legal provision requiring that all "airport revenues" be used solely for airport purposes to apply to any lease or sale proceeds, which prevents a city from selling its airport and using the proceeds for its general fund.

**Another important factor is that state and local governments can issue tax-exempt bonds to finance airports because they are government-owned facilities**. Thus, borrowing can be done at a lower cost than borrowing by private airport owners issuing taxable debt. However, this bias against private ownership can be overcome. The federal government could pursue tax reforms to reduce or eliminate the tax exemption on municipal bond interest. Alternatively, the government could permit private airport operators to make use of tax-exempt revenue bonds ("private activity bonds"), as it has done for companies involved in the toll road business.

**A final hurdle** to airport privatization in the United States **has** often **been the airlines. For various structural reasons, they worry that their costs may be higher or they may face more airline competition if airports were privatized.** Typically, major airlines are like an anchor tenant in a shopping mall. At U.S. airports, major airlines generally have long-term lease-and-use agreements, which often give them control over terminals or concourses and the right to approve or veto capital spending plans. **That gives them the power to oppose airport expansion if it would mean more airline competition in that location**.

**Perm do both – best way to solve NextGen**

**JPDO 4**

(Joint Planning and Development Office, 2004, Congress created the Joint Planning and Development Office (JPDO) to manage the partnerships designed to bring NextGen online. These partnerships include private-sector organizations, academia, and the following government departments and agencies: Department of Transportation (DOT) Department of Commerce (DOC) Department of Defense (DOD) Department of Homeland Security (DHS) Federal Aviation Administration (FAA) National Aeronautics and Space Administration (NASA) White House Office of Science and Technology Policy (OSTP) Office of the Director of National Intelligence (ODNI) – (Ex Officio), <http://www.jpdo.gov/library/ngats_v1_1204r.pdf>) MJA

The role of **Government must shift to allow industry to provide the most cost eﬀective solutions within a performance-based set of security, safety, and environmental rules.** This understanding will **be reﬂected in planning, decision-making, and implementing institutional reform that is mandatory for successful transformation**. There is also **a need to improve incentives to produce air traﬃc and airport services eﬃciently - to make sure that these services are put to their highest and best use.** This roadmap in no way implies that government can solve all the problems facing aviation. The goal is not to create an industrial policy by which the **government tries to pick winning technologies**, but instead to **provide a framework to utilize the creative forces of the market**. Market forces should play a role wherever possible. Sparked by **this leadership, these agencies, working closely with the private sector, have deﬁned eight strategies for transformation, each individually signiﬁcant yet interdependent on the other seven**. The eight strategies are the ﬁrst steps toward a roadmap to provide a credible and stable path forward. As the term implies, this roadmap can **guide our eﬀorts to arrive at our destination if the paths and connections are clearly identiﬁed.** With this roadmap, **both public and private sectors can develop long-term investment plans and activities that result in the Next Generation Air Transportation System.**

**Government based action is a prerequisite**

**Sebastian and Piltz 07**, Thea Sebastian, Director Climate Science Watch Rick Piltz, Director Climate Science Watch, July 2007, “NextGen Air Transportation System Progress Reports Ignore Climate Change”, <http://www.climatesciencewatch.org/file-uploads/NextGen_final_18jul07.pdf>

**Furthermore, America is missing a key opportunity to vitalize its private sector**. The **aviation industry commands a substantial portion of the U.S. economy, generating 5.4% of the GDP** – **and more than 9% when aviation-related industries are also included. This figure encompasses 11 million jobs and $640 billion in revenues**.29 If the **government were to support a drive for cleaner, climate-friendly technologies, this could stimulate a massive upswing in private sector participation**. Unlike things like “flat taxes on passengers or flat taxes on aircraft movements, aviation fuel taxes” (which are directly intended to “**reduce the amount of flying we do but don't provide any incentives to make flying more efficient”), emissions caps could spark an economically energizing influx of private investment.30**

### AT: Privatize ATC/Airports

#### Privatization of airports has little effect on the success of airports

Vasigh et al 12 (Bijan, PhD in Economics from SUNY Binghamton, Professor of Economics, Finance, & Information Systems at Embry-Riddle Aeronautical University, “Evaluating airport and seaport privatization: a synthesis of the effects of the forms of ownership on performance” Journal of Transport Literature Vol. 6, n. 1, pp. 33, Jan 2012, [www.transport-literature.org/open-access](http://www.transport-literature.org/open-access))

**The case of U.S. Airport Authorities makes an argument for efficient publicly-owned enterprises. One of the conclusions that can be drawn from this study is that while U.S. airports would not see enormous benefits to privatization,** U.S. seaports, which are more centralized in their management, would see significant benefits through privatization. **Fundamentally, these results suggest that ownership may be a less significant factor than management and competition in an airport/seaport region in determining efficiency.** However, in the context of an industry without high degrees of corporatization or competition, privatization may be one method to introduce such factors into the system and thereby enhance efficiency.

#### Private bureaucracy is no better than government action

Sclar 3 (Elliott Sclar, Director of graduate programs in Urban Planning at Columbia, the Louis Brownlow Award for the Best Book of 2002 from the National Academy of Public Administration and the 2001 Charles Levine Prize from the International Political Science, 03, “Pitfalls of Air Traffic Control Privatization,” National Air Traffic Controllers Association http://www.inthepublicinterest.org/sites/default/files/PitfallsofATCPrivatization.pdf)

The general argument on all three of these rationales is that the FAA, as a top-heavy bureaucracy, is incapable of making the desired improvements itself, and that the private sector is the best substitute. While it is true, as is the case for any public agency, or private ones for that matter, that there is room for improvement, it is not clear why a private replacement bureaucracy will be an improvement over an experienced public one. At the most basic level, there is simply no clear cut explanation for the claim that the FAA’s bureaucratic behavior is sufficiently egregious as compared to that of the Federal Bureau of Investigation (FBI), for example, to explain why removing it from direct responsibility will markedly address the three problems listed above. In order to sustain the case for as drastic a change as privatization, it is first necessary to clearly demonstrate that inept public management is either the source of the problem or at least that it is a significant factor in its creation. Then it is necessary to demonstrate why the establishment of a new private entity, as the successor to the FAA would solve the problem. This is especially true if the successor agency is itself envisioned as a 6 unique corporate entity. It is not immediately obvious why the problems of one (public) bureaucracy will not reassert themselves in another (private) bureaucracy. From our review of the reports of existing privatizations and analyses done to date on the potential of a U.S. privatization, it is clear that neither of these has been demonstrated. They have merely been asserted.

### Privatization Bad – Terrorism DA

#### Privatization degrades security, cohesion and responsibility and risks Cyberattacks that turn solvency

Sclar 3 (Elliott Sclar, Director of graduate programs in Urban Planning at Columbia, the Louis Brownlow Award for the Best Book of 2002 from the National Academy of Public Administration and the 2001 Charles Levine Prize from the International Political Science, 03, “Pitfalls of Air Traffic Control Privatization,” National Air Traffic Controllers Association http://www.inthepublicinterest.org/sites/default/files/PitfallsofATCPrivatization.pdf)

Secondly and more importantly, because of safety and security considerations, **it would be risky in terms of public safety** **to have private operators**, either singly or multiply, **each responding to their own** internal **profit imperatives, acting on their own** operational **protocols** moving air traffic through the national air space. Review of the two recent examples in which the cost savings measures employed by private operators of public transportation services were directly or indirectly blamed for the May 10, 2002 "Potters Barn Derailment" in London, England13and July 1, 2002 mid air collision on the Swiss-German border14further substantiate the significance of safety considerations when considering privatization. However, further **investigation indicates a systemic breakdown, including inadequate staffing**, the fact that the **communications link** with German air traffic controllers **operating on a degraded mode**, that the collision alarm system had been taken out of service for maintenance, **and general lack of clarity about** the lines of **responsibility** and authority. 13 **This** operational risk **is only compounded by** the security **risk associated with private operators and their employees having** **unabridged access to** the nation's **air traffic control** systems. In an address to the Senate Subcommittee hearing, US Senator Chuck Schumer stated: "**I don't need to spell out the** absolute **havoc** and devastation **that would result if cyber terrorists** suddenly **shut down our** air traffic control **system with thousands of planes in** mid-**flight**."15With the increasing push for ATC privatization, **access to sensitive information is** further **compromised** without the necessary protocols and procedures in place to protect the public's interest.

#### Nuclear terrorism at an airport is likely and devastating

McLay, Assistant Professor Department of Statistical Sciences and Operations Research, et al., 11

Laura A. McLay, Assistant Professor Department of Statistical Sciences and Operations Research, et al., Rebecca A. Dreiding· Garrett L. Howe, 11, [“Rethinking the encounter probability for direct-to-target nuclear attacks for aviation security,” J Transp Secur (2011) 4:247–280, http://rd.springer.com/article/10.1007/s12198-011-0070-7]

**A nuclear attack** within the United States **is** one of the most **pressing** terrorism threats, **due to the** immediate **destructive consequences for** human **life as well as the economic** and psychological **consequences** (El Baradi 2007). The International Atomic Energy Agency (IAEA) reports that terrorist groups have the desire to obtain and use unconventional weapons such as nuclear and radiological dispersal devices. From 1993 to 2007, **there have been 18 confirmed cases of weapons-grade** nuclear **material being trafficked** worldwide and over 1,300 confirmed cases of other nuclear material being traded (International Atomic Energy Agency 2007). News that international terrorist groups have tried to buy nuclear and other radioactive materials have been reported in several countries (International Atomic Energy Agency 2007). In 2008, $700M US was appropriated to plan for the aftermath of a potential nuclear terrorist attack on the United States (Schwartz and Choubey 2009). If a terrorist group acquires weapons-grade nuclear material abroad, it can be used to make a nuclear weapon and then be transported to the United States, where it will be presumably used to launch an attack. There are many ways to transport nuclear material or a nuclear weapon into the United States, including air, sea, and land border crossings. A weapon can be transported in a cargo container, in a small vessel, on a general aviation aircraft, on a train, or on a large cargo ship, for example. Much research has focused on screening for nuclear material in cargo containers at domestic and foreign ports and at land border crossings (Wein et al. 2007; Dimitrov et al. 2011; McLay et al. 2011). **Little attention has been paid to the critical role of commercial aviation security in** nuclear **attacks**. Sweet (2009) claims that, “[f]rom a terrorist’s viewpoint, **aircraft are a preferable target** because of their international flavor and the likelihood the press will focus on the incident.” Due to the terrorist attacks and plots involving conventional weapons and commercial aviation, aviation security has evolved to include new procedures and technologies. These changes in aviation security have been designed to prevent or detect hijackings and explosions occurring, rather than to prevent a nuclear attack. However, commercial aircraft remain attractive targets for terrorists, as evidenced by the plan to detonate a bomb on an international commercial flight on December 24, 2009. While **flights** are routinely screened for conventional explosives, they **are not routinely screened for nuclear material.** To address the threat of a nuclear attack, some baggage on incoming international flights are screened after they arrive at a U.S. hub airport, although most screening efforts are focused on international general aviation flights (rather than international commercial aviation flights) (Vojtech 2009; Sammon 2009). Thus, there are some current security procedures are in place to detect nuclear weapons through intended security checkpoints once passenger flights have entered the United States. However, the system is vulnerable to modes of attack that breach the normal security procedures. This paper focuses exclusively on the incoming international commercial aviation flights in preventing a nuclear attack, since it has been hypothesized that a nuclear attack would involve smuggling in a nuclear weapon from abroad (Allison 2004)

#### Prefer our evidence---it cites an independent study

**Sclar** **03** (Elliott Sclar, Director of graduate programs in Urban Planning at Columbia, the Louis Brownlow Award for the Best Book of 2002 from the National Academy of Public Administration and the 2001 Charles Levine Prize from the International Political Science, 03, “Pitfalls of Air Traffic Control Privatization,” National Air Traffic Controllers Association http://www.inthepublicinterest.org/sites/default/files/PitfallsofATCPrivatization.pdf)

**The purpose of this White Paper is to provide** the National Air Traffic Controllers Association (NATCA) with an **independent analysis of the claim that service** performance **improvements** and long-term operational savings **can be achieved through** the **privatization** of U.S. Air Traffic Control operations. NATCA has an abiding responsibility for helping to maintain safe and efficient working conditions for its membership as they fulfill their individual obligations for maintaining safe and efficient flying conditions for the American people. The Project Team assembled to conduct this was led by noted author Elliot Sclar,1Professor of Urban Planning and Public Affairs at Columbia University, and HDR’s Management Consulting Group.2

### Privatization Bad – Instability

#### User fees introduce instability and cause bankruptcy in times of crisis- Canada proves

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 40 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**User fee based systems, regardless of corporate governance, introduce considerable**

**instability into the funding structure for air traffic control. Some structures have**

**mechanisms in place, like Canada's rate stabilization fund, to mitigate the effects of**

**traffic fluctuations. However, this mechanism proved inadequate when the provider**

**encountered multiple externalities**. Traffic decline following September 11, 2001,

followed by **the SARS scare in Toronto compounded by the bankruptcy filing of the**

**nation's largest air carrier depleted the reserve fund, forcing a series of rate increases.**

#### Privatization cannot handle a market downturn because private entities jack up prices and waste capital on debt alleviation programs

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 40-41 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

**The instability of user fee based systems is compounded as experience shows that Air Traffic Service providers have opted to increase fees when their users can least afford it.** In this way, **the Air Traffic Service provider is in competition with the aviation industry during periods of economic downturn. That is not to say that the providers will not be in competition with the industry during times of strong growth. History has shown that during periods of industry strength, airlines tend to regard providers as over collecting fees and the pressure for rate reductions rather than infrastructure investment is as aggressive as the cry for rate cuts during a decline**. In its 2003 report, the Regulatory Policy Institute found: One of the most contentious issues in ATM is the allocation of risk, particularly of financial risk associated with traffic volatility. Current arrangements are manifestly deficient in this regard, and can give rise to significant short-term movements in charges that bear no relationship at all to movements in the cost of service provision.51 **Privatization or corporatization of air traffic control services is frequently marketed as providing stable sources of funding, as the providers have access to commercial markets, and as a means to introduce market based incentives to increase system efficiency.** Experience has shown that the structures are primarily designed for continued traffic growth and cannot be sustained in a market downturn, and there is considerable risk that providers will become overburdened with debt**. Costs associated with debt servicing can divert resources away from both service provision and infrastructure investment**. Further, the EUROCONTROL Performance Review Commission found: The present full cost recovery regime does not provide incentives to deliver performance and to be responsive to user needs beyond levers normally available in the public sector. With the current system, airspace users are bearing most if not all, of the business risks. **On the one hand, if demand is higher than expected or if the planned capacity is not delivered, airspace users will incur higher delays. On the other hand, if demand is lower than expected or actual costs are higher than planned, the airspace users will incur higher charges.52**

### Privatization Bad – Monopolies

#### Privatization has no effect on efficiency- only increases user fees and forms monopolies

Vasigh et al 12 (Bijan, PhD in Economics from SUNY Binghamton, Professor of Economics, Finance, & Information Systems at Embry-Riddle Aeronautical University, “Evaluating airport and seaport privatization: a synthesis of the effects of the forms of ownership on performance” Journal of Transport Literature Vol. 6, n. 1, pp. 10, Jan 2012, [www.transport-literature.org/open-access](http://www.transport-literature.org/open-access))

Parker (1999) explicitly examines the impact of privatization on airport performance, using a DEA model.4 **The study examined the performance of 22 airports in the United Kingdom before and after the creation of BAA. The ownership is divided between full privatization and full public ownership, and DEA analysis is applied to assess Technical Efficiency of the airports**. **Technical efficiency is defined as an airport’s success in producing maximum output from a given set of inputs**.5 Parker (1999) concludes that **there were no clear differences in airport performance before and after privatization. A subsequent study by Vasigh and Haririan (2003) uses a similar dichotomous ownership indicator, and conducts a cross-sectional analysis of 7 airports the U.K., and 8 airports in the United States.** They use a series of efficiency ratios (revenues cost ratio, revenue per passenger, passenger per runway, and cost per runway) to assess performance, and conclude that **while the fully private airports experience a greater level of profitability, the cost per landing and cost per passenger are higher at private airports.6 Therefore, while private airports may be efficient from an operational standpoint, they compare less well in terms of consumer surplus. Generally, in the absence of regulation, monopoly pricing would result in fees above the levels that would prevail in a competitive market and could also lead to super normal profits**. Subsequent studies that have incorporated a three-tier ownership system (100% public, mixed private-public, or 100% private) have found similarly results. Among these, are Oum, Yu and Fu (2003) and Lin and Hong (2006). Oum et al. (2003) analyze 50 airports in the Asian Pacific, European and North American regions using a three-tier ownership system. Outputs include the number of passengers, cargo movements and non-aeronautical revenue. **The results show no significant difference between airport ownership categories. Lin and Hing (2006) use a sample of 20 airports and a three level ownership structure (private, mixed private-public, and public) to analyze the effects of ownership on performance.7 The methodology is based on DEA, with the number of passengers and the volume of cargo movements as output. The result show that private airports are no more efficient than mixed private-public or full publicly owned.**

### Privatization Links to Politics

#### Links to politics --- airlines backlash

**Poole 10** (Robert W. Jr., Director of Transportation Policy and Searle Freedom Trust Transportation Fellow – Reason Foundation, and Chris Edwards, Director of Tax Policy Studies – Cato Institute, “Airports and Air Traffic Control”, June, http://www.downsizinggovernment.org/transportation/airports-atc)

In the 1990s, numerous state and local officials saw what Margaret Thatcher had done in Britain and were inspired to sell or lease their own airports. But the airlines and federal administrators objected for the reasons cited. So privatization proponents went to Congress, and it passed the very modest reform in 1996: the Airport Privatization Pilot Program. This program allows exemptions from the most onerous provisions of airport grant agreements for up to five U.S. airports. Cities whose airports are accepted for the pilot program do not have to repay previous grants and they are allowed to keep any airport sale or lease proceeds.16 However, the airlines lobbied hard to include a provision specifying that to keep sale or lease proceeds a city had to get the approval of 65 percent of the airlines serving an airport, which created a substantial hurdle to reform.

As a result, progress toward privatization has been very slow over the last decade. The only airport privatized under the 1996 Pilot Program—Stewart International Airport north of New York City—did not get the local airline's approval. Therefore, New York State was required to use its lease revenues for improvements to Stewart and other state-owned airports. The airport operated under a 99-year lease to the U.S. subsidiary of the U.K.-based National Express Group.17 But that lease was later terminated by mutual consent due to National Express's change in corporate strategy to focus on its intercity bus and rail business. The Port Authority of New York and New Jersey, a government agency, took over the remaining years of the lease. This change freed up that slot in the Pilot Program, making all five available as of 2010.

#### Congress hates the CP

**Barkowski 10** (Justin T., J.D. Candidate – Pepperdine University, B.A. in Economics – University of California, Berkeley and Instrument-Rated Private Pilot Certificate, “Managing Air Traffic Congestion Through the Next Generation Air Transportation System: Satellite-Based Technology, Trajectories, and - Privatization?”, Pepperdine Law Review, 37 Pepp. L. Rev. 247, Lexis)

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.

## \*\*2AC Disads\*\*

### 2AC Elections – Plan Helps Obama

#### Renewed airport infrastructure funding through Obama is the key to his re-election – data proves

Bilotkach 10 – Assistant Professor of Economics University of California, Irvine (Volodymyr, “Political Economy of Infrastructure Investment: Evidence from the Economic Stimulus Airport Grants “. October. http://www.socsci.uci.edu/~vbilotka/Draft\_September10.pdf)

The literature suggests three possible sources of political influence: the White House (President), the US Senate, and the Congressional Committees. We hypothesize that **the impact of the White House should be the strongest in this particular case** – **recall that passing the economic stimulus legislation was one of Barack Obama’s priorities as a candidate**. As for hypotheses related to the impact of the White House, we can suppose that ARRA grants might have been used to reward districts which showed support to Obama, as evidenced by the election results. An alternative explanation – grants could be used to sway voters in the districts where support for Obama was not sufficiently strong – is less plausible, as the grants have been appropriated after the election and almost four years before the next Presidential election is scheduled to take place. A priori, we can expect results of the US House of Representatives election to have less of an effect on grant appropriations. At the same time, we can also suppose that the ARRA **grants are more likely to be used as an instrument to sway the voters in this case** (see also Levitt and Snyder, 1997), as the US House of Representatives is re-elected every two years. Therefore, in addition to the percentage difference in votes, we will use the dummy variable for the districts in which the Democratic candidate lost the House election. To evaluate the extent of the committee power, we have identified congressional districts represented by the members of the US House of Representatives Committee on Transportation and Infrastructure, and created the corresponding indicator variable. To account for the possible impact of the US Senate, we will include percentage difference in votes received by the Democratic and the Republican Party contenders at the last Senate election held in a given State. Senate composition variables (dummies for States with both Senators represented by either political Party) are also used in some specifications. Regrettably, given the cross-sectional nature of our data, including Statelevel variables will not allow us to use State fixed effects in our regressions. Note however that we have run regressions including State fixed effect (and excluding variables measuring the impact of the Senate). Results, which are qualitatively similar to the ones reported here, are available from the author on request. We will analyze the data in the following ways. First, since many airports in our dataset did not receive the ARRA grants; censored normal regression (also known as Tobit) estimation is appropriate. **This regression will make use of the airport-level data.** Total amount of ARRA grant(s) received by the airport (in millions of dollars) will be the dependent variable; and Huber-White standard errors will be reported. Using the Tobit model, we will be able to evaluate the impact of political factors on the size of grant(s) received by the airport. To assess effect of politics on the likelihood of an airport receiving an ARRA grant, we will estimate the probit model, with the corresponding indicator as the dependent variable. Finally, we will perform analysis of the project-level data to evaluate whether any political effects we might have captured could be explained by the project-specific heterogeneity. 4.2 Results and discussion The following four tables present results of our data analysis. Table 4 reports the Tobit model results for several specifications. Results for the probit model are in Table 5. Table 6 includes results for the specifications taking into account the election results in the adjacent districts. Finally, Table 7 reports results of the project-level data analysis. Based on those tables, we can make the following general conclusions about the supposed impact of political factors on allocation of ARRA airport infrastructure grants. First, results of the presidential election appear to affect the amounts of grants, but do not have an impact on whether the airport receives the grant. Second, controlling for the State level composition of the Senate, we detect seemingly counterintuitive evidence for impact of the Senate on the grant allocation process. Namely, airports located in the States carried by a Republican at the latest Senate election show higher likelihood of obtaining the grant; the amounts involved are also higher. At the same time, airports located in the States represented by two Democratic Party senators are also more likely to obtain the grants, other things equal – an expected result. Third, we do not find strong evidence of impact of the House of Representatives election results or membership in Transportation and Infrastructure Committee. Let us examine these statements in more detail. **Conclusion about impact of the White House on the grant allocation process stems primarily from the Tobit regression results. These show positive association between the district level Presidential election results and the amount of funds allocated to the airport.** **We have suggested that such association is consistent with rewarding districts for their contribution to the election outcome**. Recall that elsewhere in the literature impact of the White House on allocation of federal funds has been detected by Garrett and Sobel (2003). Note we have checked for the existence of separate effects for the districts in which Obama won, or districts with small Obama-McCain vote differential, and did not find any. We of course need to note that the association between the airport infrastructure grants and the Presidential election results does break down once we factor in adjacent districts; however, such a result does not necessarily weaken our conclusion, it only shows rewards have been targeted to the specific districts. Impact of the Presidential election results shows more robustly in Tobit than in probit regressions (in probit, the association falls apart once we control for the State level composition of the Senate). This indicates Presidential election had impact on the amount of grants received by the airport rather than the likelihood of an airport receiving the money. As for the variables measuring role of the Senate in the appropriations process, we detect the following. First, impact of Senate election results only shows where we also control for the State level composition of the Senate. Second, we observe association of the Senate election results with both the likelihood of the airport receiving a grant, and the amount of the money involved. Third, unlike with the presidential election results; both likelihood of receiving a grant and the amount involved are larger the higher the share of votes received by the Republican Party candidate relative to his/her Democratic Party opponent in the latest Senate race. This result is somewhat surprising; yet, interaction between the Senators is clearly a repeated game, in which concessions in one area are given away in returns for reciprocal behavior at a later time. Note also that this effect (see Table 4) is about half the size of the impact of presidential election results. A result that is more expected is that, other things equal, an airport located in a State represented by two Democratic Party Senators is more likely to receive an ARRA grant. There is not much we can say about the supposed impact of the House of Representatives. Our data analysis failed to detect any. This might mean that members of the House of Representatives either failed to systematically reward their districts, or they rewarded them via some other programs. An alternative explanation could be that rewards for election performance could have been picked up by the Presidential results variable. While this is not infeasible, it pays to note that correlation between percentage differences measures for Presidential and House elections, while positive, is not exceptionally high – around 0.6. In our opinion, the suggestion that House members could have rewarded “their” districts via other ARRA programs appears the most plausible explanation. Looking at the results for control variables; they mostly confirm what the descriptive statistics presented in Table 2 suggested. Namely, busier airports (in terms of total number of operations) handling larger aircraft (as measured by average runway length) were more likely to be selected for ARRA grants, and received more money. It is somewhat strange that the relationship is reversed for the relatively more congested airports (as measured by the number of movements per runway). It is also counterintuitive that airports which received more AIP grants over the recent years were also the more likely recipients of ARRA grants, especially in light of FAA’s statement of prioritizing renovation and replacement of aging infrastructure. These two results could be simply the evidence of inefficiencies within the program. Project level results for the airport control variables largely mirror those of Tobit and probit models at the airport level; we also see that runway and apron projects are on average costlier. Interestingly, political factors we have introduced do not show as significant determinants of the size of particular grant, with the exception of presidential election results, averaged over the current and the immediately adjacent congressional districts. Overall, our results do indicate that political factors have played a role in ARRA airport grant appropriations. It also appears that the White House and the Senate have been more important players in the process than the House of Representatives. At the same time, our results do not suggest that the House did not have a role in distribution of hundreds of billions of federal grants under ARRA. Recall that our study deals with only $1.1 billion of funds in what is a $787 billion economic stimulus package. 5. Conclusions **This study offers the first look at the issue of the impact of political factors on the distribution of federal funds for the transportation related infrastructure investment in the USA**. We take advantage of the American Recovery and Reinvestment Act (ARRA) of 2009 (more broadly known as the Stimulus) to examine whether political factors played any role in allocation of the $1.1 billion worth of **Airport** Improvement Program (AIP) grants included into the package. The Stimulus provides an excellent case for studying the political economy of airport investment, at least as far as the Federal involvement is concerned. **The law was set up rather hastily** – Barack **Obama was elected** President **in** November of **2008, and ARRA became law** on February 17, **2009**; **and the criteria for the airport infrastructure projects to be funded under AIP as part of ARRA were rather vague**. **We can therefore suspect that the airport infrastructure grants could be used by the Administration or the Congress as a mechanism to** reward districts which brought more votes in the latest election. **The data structure allows easy matching of the airport characteristics, ARRA grant details, and election outcomes at the congressional district level**. **Moreover, study of aviation related infrastructure offers an attractive environment for examining the more general issue of political factors behind the allocation of federal funds**. Airports and airfields are ubiquitous, unlike, for instance, tornadoes or corn fields. Also, airports are generally viewed favorably by the public, unlike some other kinds of federally provided infrastructure (e.g., prisons).

### 2AC Agenda Politics DA

#### Plan’s popular

Gibbons 11 (Glen. editor and publisher of Inside GNSS and the managing partner of Gibbons Media & Research LLC, internationally-known expert and commentator on the development, policies and programs of the global navigation satellite systems, Air Traffic Control Modernization: FAA, NextGen, GNSS, and Avionics Equipage. April 30, <http://www.insidegnss.com/node/2582>)

For the time being, the fortunes of the equipage fund — and probably the NextGen program as a whole —¶ rests with Congress and the White House, all of which have differences of opinion about the FAA R&D¶ legislation, although none of them have to do directly with NextGen.¶ “I’m pretty confident that Congress will do the right thing,” Dyment says. “There’s a lot of support in the¶ House and Senate [for a PPP] It is a Tier 2 issue for Congress, which we prefer [because it’s not as subject¶ to partisan politics].”¶ Both versions of the FAA R&D reauthorization legislation have common language addressing the issue of¶ paying for equipage of aircraft:¶ “Not later than 120 days after the date of the enactment of this Act, the Administrator of the¶ Federal Aviation Administration shall submit to Congress a report that contains (1) a financing¶ proposal that (A) uses innovative methods to fully fund the development and implementation of¶ technology for the Next Generation Air Transportation System in a manner that does not increase¶ the Federal deficit; and (B) takes into consideration opportunities for involvement by public private¶ partnerships; and (C) recommends creative financing proposals other than user fees or¶ higher taxes.”¶ An additional incentive for Congress: “The [federal loan guarantee] money at risk has no impact to the¶ federal budget unless at the end FAA doesn’t perform,” Dyment says. Nonetheless, he adds, “We want the¶ federal government to have some skin in the game.”¶ Longer term, a successful PPP around avionics equipage could pave the way for additional efforts.¶ “If the NextGen Fund public-private partnership is set up,” says Dyment, “it could provide a model to help¶ bring more money into the FAA for other NextGen infrastructure needs.”

**Business lobbies support loan guarantees --- no spending concern**

**Lowe 11** (Paul, “Chamber of Commerce Makes The Case For NextGen”, Aviation International News Online, 5-24, http://www.ainonline.com/aviation-news/aviation-international-news/2011-05-24/chamber-commerce-makes-case-nextgen)

Former FAA Air Traffic Organization COO Russell Chew, now with Nexa Capital Partners, told those at the summit that **private investors would provide** some of the **initial funding for cockpit equipment** under a $1.5 billion loan-guarantee fund. He said the **airlines need to make a business case by lowering the cost of capital.** “Nobody is going to borrow at 10, 11 or 12 percent in the hope something good will happen,” Chew explained.

**When Blakey asked about the current political climate for NextGen, Chew said the federal government should allow aviation the same amount of stimulus that has already gone to railroads and maritime facilities. “Legislation is the key,”** he said. “I think **NextGen has the support of the [aviation] community at large**.” He added that an **advantage of loan guarantees is that they don’t score against the federal budget**.

**NextGen fund is popular – lots of traction in Congress**

**Carey 11** (Bill, Senior Editor – AIN Online, Former Editor in Chief – Avionics Magazine and Masters in Journalism and Public Affairs – American University, “Paris 2011: Private Captial Fund Raises $1.5 Billion To Help Kick-start NextGen ATM in U.S.”, Aviation International News Online, 6-23, <http://www.ainonline.com/aviation-news/paris-air-show/2011-06-23/paris-2011-private-captial-fund-raises-15-billion-help-kick-start-nextgen-atm-us>)

**The fund is negotiating “participation agreements” with several airlines**, which Chew declined to identify. He also declined to identify other participating aerospace investors beyond ITT.

John Kefaliotis, ITT vice president of Next Generation Transportation Systems, said the deployment of ADS-B ground stations in the U.S. is an example of a successful public/private partnership like that proposed for the NextGen fund. The company has met all milestones since winning the ADS-B ground infrastructure contract from FAA in August 2007, having invested $200 million in the effort, Kefaliotis said.

Chew said **language that would provide a government loan guarantee is** contained within long-delayed FAA reauthorization legislation, **moving closer to passage in** the U.S. **Congress**. While the government loan guarantee technically is not necessary, “in a public/private partnership the loan guarantee is a perfect place for government to say, ‘Given the right amount a risk, I could really kick start this by lowering the cost of capital,’” he said.

Panel moderator Marion Blakey, president and CEO of the Aerospace Industries Association and formerly FAA administrator, remarked that **the NextGen fund is “gaining a lot of traction in Washington.”**

**Broad Congressional support for the plan**

**DiMascio 12** (Jen, Reporter – Aviation Daily, “House Passes FAA Bill, Spurring NextGen Development”, Aviation Daily, 2-6, Lexis)

But a Senate aide contends that funding for NextGen is lower than previous recommendations because technical problems with elements of the program have slowed development.

Still, **the bill enables the FAA to work with private industry to ease government cash crunches. It opens the door to** public-private partnerships and **loan guarantees** that have been proposed by companies such as Nexa Capital Partners.

«Anything that allows the sharing of risk, that allows partnership between government agencies and the operator is helpful,» Elwell says, adding that the language by itself won’t speed up the process of equipage. «If you have the financing, plus the FAA commitment to implement on time, that’s the key.»

And while the details are yet to be figured out on the margins, **the bill as a package is winning support both in industry and on Capitol Hill**.

«The bill’s **overall focus on acceleration of NextGen** technologies and streamlined certification processes **will help expedite implementation of key programs like** Automatic Dependent Surveillance Broadcast (**ADS-B**), Required Navigation Performance (RNP), data communications and other technologies which will reduce congestion and delays, save fuel and, most importantly, increase safety,» says Bobby Sturgell, Rockwell Collins’ senior VP for Washington operations.

**Bipartisan support for NextGen PPP’s**

**Michaels 11** (Dave, Reporter – Dallas Morning News, “Private Fund Bids to Supply Costly Air-Traffic Gear to Airlines”, The Dallas Morning News (Texas), 6-8, Lexis)

Chew hopes **a suddenly frugal Congress will like the idea of a public-private partnership**.

The House's FAA bill, approved in April, contains a provision that would allow the plan, but Nexa and ITT are seeking more specific language that would compel it, Chew said.

The Senate's bill authorizes grants to fund the airlines' NextGen avionics. But analysts say that provision is unlikely to be accepted by the Republican-controlled House, which is trying to hold down the cost of the legislation.

**Loan guarantees are an alternative to grant funding that could be acceptable to both parties**, analysts say. Sen. Jay Rockefeller, chairman of the Senate Commerce, Science and Transportation Committee, supports financial incentives for carriers' NextGen needs, a Senate aide said.

"Obviously **loan guarantees can cost taxpayers nothing if the underlying investment is sound**," said Sen. Kay Bailey Hutchison, R-Texas, the top Republican on the transportation panel. "I would want to look at the risks and rewards to taxpayers in this proposal."

#### The FAA is insulated from politics

**Marlin 5** (Ruth, executive vice president of the National Air Traffic Controllers

Association, Masters in Public Administration University of Baltimore and a Doctoral Candidate in Public Administration, “Understanding Air Traffic Control Financing”, April 2005, pg 9 aviation.stg.win.dotnet.panth.com/uploadedFiles/Issues/Studies\_and\_Reports/NATCA\_-\_Understanding\_Air\_Traffic\_Control\_Financing\_-\_April\_2005.pdf)

In 2000, The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century sought to ensure that all revenue from aviation related taxes were expended for aviation purposes, rather than allowing large surpluses to continue to build up. These surpluses had traditionally been retained as an accounting device to reduce the appearance of the federal deficit. **The Act also created the position of Chief Operating Officer (COO) within the FAA, for the air traffic control system. Later that year, the President issued Executive Order 13180 creating the Air Traffic Organization under the Chief Operating Officer. The COO is appointed to a fiveyear term to promote continuity of leadership, even though the term does not necessarily coincide with that of the Administrator.4** Rather than separate air traffic control services, the ATO consolidated the functions previously performed by separate lines of business within FAA. By consolidating Air Traffic Services, Research and Acquisitions, and Free Flight organizations, the ATO is able to manage both resources and decision-making related to air traffic service provision and investment. **The COO reports directly to the FAA Administrator.**

### Plan = Cheap

#### Plan would be cheap

Gibbons 11 (Glen. editor and publisher of Inside GNSS and the managing partner of Gibbons Media & Research LLC, internationally-known expert and commentator on the development, policies and programs of the global navigation satellite systems, Air Traffic Control Modernization: FAA, NextGen, GNSS, and Avionics Equipage. April 30, <http://www.insidegnss.com/node/2582>)

Considering the associated costs, the quandary for the aviation community is making the business case for¶ early installation of NextGen avionics, given the uncertainties — such as those raised by the GAO — as to¶ whether the FAA can actually get the NextGen system in place in time for airlines to save money on¶ operations in time to pay for the equipment.¶ Adding to the uncertainty and risk is the fact that an individual airline equipping its fleet — even with¶ FAA’s NextGen infrastructure, ATC procedures, and trained controllers in place — doesn’t guarantee¶ significant cost savings. The NextGen concept won’t work without a substantial portion — at least 50 to 60¶ percent — of the nation’s aircraft being suitably equipped so that air traffic can be tracked with the new¶ system.¶ For instance, a 2002 study by the MITRE Corporation Center for Advanced Aviation System Development¶ projected detailed delay savings by individual airline for controller-pilot data link communications. Using¶ American Airlines as an example, the MITRE study showed an $8.7 million yearly savings for the airline at¶ its hubs if only American was equipped versus $80 million if all airlines were equipped.¶ Consequently, the temptation will be for strong for aircraft operators to delay purchase and installation of¶ equipment until much closer to the current deadline.¶ This is called the “NextGen Equipage Paradox” by principals with the NextGen Equipage Fund LLC, a¶ recently formed capital fund led by ITT Corporation, NEXA Capital Partners LLC, and leading aerospace¶ companies that believe it has an answer to getting NextGen on board America’s air fleet.¶ The paradox exists, they argue, “because as matters stand today, those operators who are last to equip with¶ NextGen avionics gain the greatest financial benefit, while those operators first to adopt the new¶ technologies will pay a much higher price at a far greater risk.”¶ Established last July, the NextGen Equipage Fund seeks to solve this paradox by establishing a $1.5 billion¶ capital pool (equity and debt), backed by federal loan guarantees securing 15-year non-recourse loans to¶ enable airlines to outfit their fleets. Under the fund’s plan, payments for the equipage would be deferred¶ until the FAA delivers specific NextGen services to aircraft operators, with interest not accruing for about¶ seven years, given the FAA’s current NextGen implementation timeline.¶ The $1.5 billion would provide enough funding to enable the retrofit of up to 75 percent of the U.S.¶ commercial air transport fleet – including airlines and some general aviation aircraft, according to Michael¶ Dyment, general partner of the NextGen Fund LLC, and managing partner at NEXA Capital Partners.¶ Noting the 50–60 percent penetration threshold for NextGen equipage before major benefits appear,¶ Dyment told Inside GNSS, “If you don’t get equipage, you don’t get NextGen.”¶ Dyment says “airlines are excited about NextGen benefits for the fuel savings and revenue bounce.”¶ No doubt — but that doesn’t mean that they are ready to make the investment any time soon absent a¶ strong incentive, not just a mandate, including lower risks and reassurance that they system benefits will be¶ there when the avionics are.

## \*\*2AC Kritiks\*\*

### Speaking about Infrastructure Good

#### Discussion over infrastructure is key to individual advocacy

Grizzle 11 (David, Chief Operating Officer Air Traffic Organization Federal Aviation Administration August 2011, <http://www.faa.gov/air_traffic/publications/media/FAA_Economic_Impact_Rpt_2011.pdf>)

As noted earlier in this paper, individual citizens know very little about the true nature of our nation’s underinvestment in our infrastructure and the impact it has today and on future generations. Further, individual citizens do not have a full understanding of how much they pay in relation to the true full costs of providing that infrastructure. One often hears, for instance, the argument that tolling is double taxation. That, however, suggests that the first type of funding (the gas tax) actually pays for the full cost of needed infrastructure projects. The lack of real information supporting the debate at all levels of government makes what is a difficult choice—to impose additional costs on system users—an impossible choice. The only way to get beyond the very large hurdle is to clearly present the facts to the American people and engage them in the debate over choices.