# NextGen Affirmative Core

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### Contention 1: Inherency/Solvency

#### Current NextGen funding non-uniques your DAs but isn’t sufficient to solve the case without FAA Loan Guarantees

Poole 2/24/12 (Robert, Dir. Of Trans. Policy and Searle Freedom Trust Transportation Fellow, “FAA Reauthorization, Aviation Emissions Trading War, ATC User Fees, Europe’s Next-Generation Milestones, ERAM Woes and FAA Shortcomings,” http://reason.org/news/printer/air-traffic-control-reform-news-90) KGH

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.) Given this dismal outlook, one of the few good elements of the bill is its approval of provisions aimed at facilitating equipage of aircraft to operate in a NextGen environment. For example, last year Nexa Capital Partners proposed an innovative NextGen Equipage Fund. This is a creative effort to resolve the conundrum faced by airlines when deciding when to make the capital expenditures to equip their planes with systems to interface with NextGen systems such as ADS-B, DataComm, etc. Airlines (and business jet operators) rightly fear that if they act too soon, FAA will fail to deliver operational programs that interface with their new onboard gear. So the Equipage Fund would buy the hardware from suppliers and get it installed on aircraft fleets, but the aircraft operators would not start making lease payments until the FAA capability was operational (i.e., they would start paying only when they started to get benefits from the new systems). That model would leave the Equipage Fund holding the bag in the event of FAA delays. Fortunately, the bill provides for equipage loan guarantees from the government. That should enable the Equipage Fund (and others) to get moving on NextGen equipage—assuming DOT and FAA make it a priority to get the loan guarantee provision up and running.

#### A system of sustainable and reliable Loan Guarantees is key to solving NextGen

Bin Salam 12 (Sakib, Eno Center for Transportation, *NextGen: Aligning Costs, Benefits and Political Leadership*, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf) LA

On the policy-side, there are several obstacles to NextGen that hinder progress and the likelihood of a timely and cost- efficient implementation. First of all, there are uncertainties regarding the extent of the benefits NextGen can potentially provide. It is difficult to make forecasts about how much congestion or fuel consumption can be reduced to make the infrastructure investment worthwhile. This makes it chal- lenging to create sustained political, financial, and industry support for the project. Secondly, there are doubts about costs and the FAA’s ability to deliver technology solutions of this magnitude. In the early 1980s, aviation modernization projects were pro- jected to cost $12 billion and be ready in 10 years. NextGen infrastructure and equipage is now estimated to cost about $40 billion with expected completion by 2025.1 Testimony by the US Department of Transportation Inspector Gen- eral and a recent report by the Government Accountability Office (GAO) have pointed out cost overruns and delays in several NextGen programs. This continued uncertainty regarding the total infrastructure and equipage cost figure of NextGen has planted seeds of doubt amongst stakeholders and potential NextGen beneficiaries. Third, the airlines and general aviation users have been hesi- tant to bear equipage costs due to low profitability, econom- ic turmoil, and a lack of clear incentives to justify investing in NextGen. Operators are unlikely to invest until, at a minimum, the FAA is ready to deliver the promised benefits. This leads to a stalemate: operators are uncertain whether investing in NextGen is worthwhile, when the infrastructure is not yet fully in place, and without equipage the infrastruc- ture by itself is ineffective. The FAA has mandated equi- page of Automated Dependent Surveillance-Broadcast Out (ADS-B) that allows the equipped aircraft to send transmis- sion to other equipped aircraft ADS-B ground stations for all operators by 2020. However, there is uncertainty over when other NextGen on-board equipment will be required, particularly ADS-B In which allows the equipped aircraft to receive transmission from other ADS-B ground stations and other aircraft. Fourth, NextGen faces funding issues that pose some very difficult policy decisions. Work on the ground infrastruc- ture aspect of NextGen is currently funded by the Facilities and Equipment account of the AATF and some progress, albeit slow, has been made on this project. However, recent reports by the Congressional Budget Office and the Gov- ernment Accountability Office show that current AATF revenues are inadequate to fund NextGen.2 Despite recent resolution over the long overdue FAA reauthorization bill, little progress has been regarding securing a full-fledged modernization funding plan. The current bill authorizes a flat amount of $2.731 billion over four years for Next- Gen and funding is still subject to annual appropriation. A project that is already endangered by uncertainties regarding its worth would benefit from a stable and adequate funding source. A fifth problem facing NextGen is lack of Congressional political leadership in prioritizing a project of such potential value. In July 2011 the House of Representatives passed a short-term extension bill that failed to pass the senate, resulting in a shutdown that lasted a fortnight. The AATF received no tax revenues during the shutdown. As Con- gressional leaders argued over the Essential Air Services program, the trust fund lost over $400 million in foregone tax revenues. Those are funds that could have potentially been used towards an investment like NextGen. Further- more, according to the FAA some of the NextGen program delays can be attributed to the furlough of some of the FAA employees in July 2011 and a freeze on contractor funding which resulted in work stoppage orders for several projects.3 This impact of the impasse on NextGen was also docu- mented on the GAO report on the FAA’s NextGen cost- management.4 In order for NextGen to succeed, there must be greater certainty about potential benefits and costs. In the highly competitive low profit-margin airline industry, few want to take on the burden of paying for something that spreads speculative benefits so widely. It will also be essential to have a mechanism that raises sufficient capital for NextGen infrastructure in a transparent and equitable manner, while imposing minimal burdens on those who pay for it. Without a sustainable, stable, and reliable strategy for both continued infrastructural improvements and incentives for equipage, there is no guarantee that NextGen can be implemented in a timely and cost-effective manner. Without strong politi- cal leadership, a clear and unbiased delineation of costs and benefits, a transparent source of funds, and incentives for operators to equip, it is unlikely that NextGen benefits can be delivered in a timely manner if at all.

#### Full commercial involvement is key to solving the case

Dyment 11 (Michael J., NextGen Equipage Fund, *Transitioning to Satellite-Based Air Traffic Control*, Geospacial Today 9/15/11, LexisNexis) LA

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.

#### Plan: The United States Federal Aviation Administration should make available long-term contract loan guarantees for commercial equipage of Next Generation Air Transportation System technology.

### Contention 2: Economy

#### Loan Guarantees for NextGen are key to civil aviation which is a cornerstone of the economy

Blakey 11 (Marion C., Reporter for The Hill, *The Future of NextGen*, 2/15/11, http://thehill.com/blogs/congress-blog/economy-a-budget/144119-the-future-of-nextgen) LA

The House and Senate have each declared passage of a new FAA Authorization bill a top legislative priority, very welcome news after more than three years of short-term extensions. Air transportation is a proven economic engine; passage of this bill is an investment in our nation’s economic recovery.  The U.S. air transportation system has been the world’s gold standard for more than half a century. But to remain so, we need to bring our system into the 21st Century. Air service demand will return to pre-recession levels, but along with the return of that demand will come the return of gridlock—you can count on it. The best means of addressing the gridlock to come is acceleration of the full deployment and implementation the Next Generation Air Transportation System. That makes funding NextGen a government investment, not government spending. Even in these tough economic times, it makes more sense to accelerate NextGen than slow it down. Cutting NextGen will ultimately cost the government and our economy much more than it will save.  One of the larger challenges facing our ability to realize NextGen’s enormous benefits is the issue of establishing a sound business case for equipping civil aircraft with upgraded avionics systems. Quite frankly, without equipage there is no NextGen.  Innovative and careful structuring of government support for equipage can help resolve the obstacles to full implementation of NextGen. However, with the nation’s need to address the growing federal deficit, it is important also to look at ways to leverage the available private-sector capital markets.  To this end, AIA recommends language in the FAA Reauthorization bill that encourages funding equipage with the participation of private-sector investment capital. FAA should have the authority to enter into government-guaranteed loan arrangements that can be used in innovative ways to incentivize the retrofitting of commercial and general aviation aircraft with NextGen avionics equipment.  Critical to leveraging available private-sector capital markets is reducing risk to stimulate investment. A key message from industry throughout the FAA Reauthorization deliberations is the need for government accountability for achieving progress. FAA must establish a set of progress metrics so that the administration, the Congress, industry stakeholders and the public can measure and track the operational improvement that is actually being achieved by the program. These metrics need to track performance outcomes, not just activity. Both industry and the regulators must be capable of determining whether efforts are actually improving safety, capacity and efficiency.  A big part of NextGen are the thousands of new satellite-based procedures that allow more efficient takeoffs and landings. All these airspace procedures must be designed and implemented, and most will require an environmental assessment. The National Environmental Policy Act process can be extremely protracted and time-consuming. Given the volume of expected airspace redesigns and the immediate economic and environmental benefits their implementation will provide, AIA recommends including NextGen-related airspace redesigns in the Airport Streamlining Approval Process as defined in Section304 of Vision 100 and an FAA-EPA interagency review to produce a more streamlined process.  With a streamlined NEPA process, new flight tracks and procedures will be implemented expeditiously. FAA estimates these satellite-guided procedures will be quieter, reduce delays and save fuel. By 2018, these procedures will save aircraft 1.4 billion gallons of fuel, which means they will emit 14 million fewer tons of CO2. To implement these procedures even quicker, AIA recommends the FAA certify third- party procedure development. Far more procedures could be put in place in less time and each would be checked and approved by FAA inspectors.  The civil aviation industry is an economic engine that contributes positively to the U.S. trade balance, creates high paying jobs, keeps just-in-time business models viable and connects all Americans to friends, family and business opportunities. All of that economic activity is funneled through the nation’s air traffic system. Full NextGen deployment requires the production and installation of hundreds of thousands of high-tech avionics products assembled by skilled workers in U.S. factories and maintenance stations in every state.  Lack of an authorization bill has kept NextGen and other critical programs on life support. It’s time to give FAA the tools to keep our nation the leader in civil aviation.

#### NextGen solves the economy—mitigates inevitable collapse

Moak 11 (Cptn. Lee, Prez of Airline Pilot’s Association*, Statement before SUBCOMMITTEE ON AVIATION COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE UNITED STATES HOUSE OF REPRESENTATIVES*, 5/10/11, http://www.alpa.org/portals/alpa/pressroom/testimony/2011/MoakTM\_10-5-11-written.pdf) LA

As the budget debate rages in Washington, everyone, from our President to the most liberal and conservative members of Congress, should agree that we need to cut programs that are not providing an acceptable return on our investment and support the ones that bring back more than we put in—those that grow the economy and create jobs. These are decisions that businessmen and women make in companies large and small every day. It’s fundamental to long-term success. This basic measure of smart business spending—return on investment—should be the same in government and industry. The challenge often lies in determining where the waste is and what will bring a good return. There is no serious disagreement on the smart investment in NextGen—it’s plain that funding NextGen will bring enormous returns to the U.S. economy for years to come and equally clear that funding should commence immediately. We need to get our economy moving again. The civil aviation industry has a critical role to play. Civil aviation, directly and indirectly, contributes more than $1.3 trillion to the 2 U.S. economy each year—or 5.2 percent of gross domestic product. The value of air travel—leisure and business—is a critical pillar of the economy. Hotels and resorts, conference centers, rental car companies, tourist attractions, and just-in-time deliveries are not viable without reliable, efficient, affordable air travel. In today’s economy—and even more so in tomorrow’s—millions of jobs depend on keeping the air travel system healthy. NextGen will increase capacity and efficiency while generating growth in our nation’s airlines, aviation companies, and suppliers. This will lead to job growth at a time when our nation needs it the most.

#### **And, without NextGen system delays will become inevitable**

Williams 9 (Genevra, JD Candidate @ SMU, *GPS For the Sky: A Survey of Automatic Dependent Surveillance-Broadcast (ADS-B) and it’s Implementation in the United States*, Journal of Air Law and Commerce, 74 J. Air L. & Com., LexisNexis) LA

It is against this backdrop that radar technology from World War II currently manages flight traffic in U.S. airspace. 60 Radar works by line of sight and, consequently, an air traffic control center can only manage a plane for as long as it can see it. 61 Like a game of hot potato, air traffic controllers must pass an airplane from control station to control station across the country until it reaches its destination. 62 The technology is further limited in that it can take up to thirty-six seconds to accurately identify an aircraft's position, 63 and sometimes it is difficult to distinguish between planes and other "clutter" like birds or heavy weather. 64 Furthermore, pilots do not even possess the situational awareness, albeit flawed, that controllers have. 65 In general, pilots in radar-controlled airspace must be steered by air traffic control, both to the necessary navigational direction and to the required horizontal position in the airspace. 66 They must ask "Mother may I?" if they ever want to deviate from their prescribed path. 67 The uncertainty and limitations of radar mean that air traffic controllers must build in a wide cushion between aircraft in flight; a minimum of five miles must be maintained between planes flying at the same horizontal level. 68 These "wide safety buffers" 69 reduce the number of planes that are allowed to travel in a given section of air space and slow down the takeoff and landing process. 70 This also means that pilots are confined to a [\*481] network of "highways in the sky." 71 Rather than flying the most direct route between destinations, they must navigate our air space via a web of flight paths designed to keep airplanes separated, both vertically and horizontally. 72 Pilots generally must stick to these predetermined flight paths, and thus have little flexibility to fly a more direct route or to navigate around traffic jams. 73 These factors contribute to a flying environment which feels like it teeters at the brink of chaos every day. 74 For example, in August 2008, a computer breakdown at an FAA facility which processes flight plans caused hundreds of flights to be delayed, impacting all forty of the nation's major airports. 75 In another example from September 2007, the system that feeds radar data into the Air Route Traffic Control Center in Memphis, TN, brought a halt to all air traffic within a 250-mile radius, causing a "ripple effect in several airports" including Dallas, TX, and Nashville, TN, among others. 76 In July 2006, a vehicle crashing into a power pole caused a power outage at the Palmdale, CA, air traffic control facility, whose backup generator then malfunctioned, silencing the center for eighty minutes. 77 This caused an hour long delay of flights into and out of Southern California and triggered flight delays throughout the western United States and Canada. 78

#### System delays kill economic growth

AIA 11 (Aerospace Industries Association, *Civil Aviation*, http://www.aia-aerospace.org/assets/ip\_civil\_2011.pdf) LA

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 gross domestic product 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, generate jobs, save fuel, reduce CO2 emissions and, most importantly, improve system safety. To do this most effectively, AIA recommends that:

#### Independently, NextGen solves fuel prices which are key to airline competitiveness

Bin Salam 12 (Sakib, Eno Center for Transportation, *NextGen: Aligning Costs, Benefits and Political Leadership*, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf) LA

The FAA maintains that NextGen will benefit operators by increasing fuel efficiency and reducing congestion, poten- tially saving the industry billions of dollars in the process. First the direct fuel savings are calculated, followed by the congestion savings to operators.  The current aviation system uses radar to scan through an area periodically and reports any nearby operating aircraft to ATC. The lack of continuous precise detection means that aircrafts must maintain a minimum separation distance of at least five miles in the en route airspace and three miles in the terminal airspace for safety. Moreover, airplanes are required to fly through predetermined air corridors similar to imaginary highways in the air, limiting en route flex- ibility, though this is a procedural requirement by the FAA and not necessarily due to the limits of existing technology. The precision of GPS would allow reduction in the aircraft separation standard, which would greatly enhance air traffic management and flow. NextGen’s Area Navigation (RNAV) would allow pilots to choose more direct and shorter routes, to their destination, assuming FAA develops appropriate procedures to allow direct navigation. This could result in substantial fuel savings. Another procedure through which NextGen would save fuel is during aircraft landing. Under the current system, an air- craft follows a fuel-intensive stepped descending approach where it descends to a lower altitude, levels off to a constant altitude, and then descends further by periodically altering engine power. Optimal Profile Descent (OPD) would allow the aircraft to glide continuously prior to landing instead of using additional engine power.9 By reducing fuel consumption, NextGen could provide relief to the airline industry’s fuel costs, one of the largest components of total operating cost. Airline profitability in recent years has been stifled in part due to substantial increases in fuel prices: from under $1/gallon between 2000- 2004 to over $2.20/gallon in 2010, including record prices of about $3/gallon in 2008 (Figure 8, Appendix A). Prior to jet fuel price hikes starting in 2004, fuel expenses accounted for about a quarter of total operating expenses. Since 2004, about half of total operating expenses are from fuel costs (Figure 1). Fuel Cost Savings to Airlines The burden of increased fuel expenses is further exacer- bated by airport congestion and existing inefficiencies in an aviation system that uses outdated technologies and proto- cols. Congestion is a problem, particularly at certain busy airports where the congestion is caused by capacity con- straints, and will likely get worse as the economy recovers from the recession and travel demand rises.10 In 2010 major airlines reported that about 40 percent of arrivals and departures are delayed.11 Every additional minute spent by operators sitting on the tarmac or circling an airport awaiting clearance means additional fuel, equip- ment depreciation and maintenance, increased labor costs, employee fatigue, and a possible loss of customers. According to the latest FAA estimate, NextGen could save about 1.4 billion gallons of fuel through 2018.12 This estimate assumes continued benefits of some of the Next- Gen capabilities already in place at some airports and timely implementation of the FAA’s mid-term goals. This amounts to, on average, about 200 million gallons annually assuming full implementation of NextGen. Using the current jet fuel price of about $2.86/gallon in 2011, total fuel savings to operators would be about $600 million annually.

#### The aviation industry is key to the economy

AIA 11 (Aerospace Industries Association, *Economic Policy*, http://www.aia-aerospace.org/about\_aia/strategic\_plan/economic\_policy/) LA

FOCUS 1: Support Strong U.S. Economic Aerospace Policy AIA strongly supports government policies and legislation that protect and expand the industry and foster a more competitive U.S. economy. Support Federal Budgets that Advance Defense, Aviation and Space Challenging Budget Environment and the Need for Continued Strong Advocacy AIA supports federal budget priorities that advance defense, aviation infrastructure and space programs. In 2012, we must focus on maintaining robust funding levels as Congress and the administration decide how to allocate reductions in the Budget Control Act and sequester targets. At a time when the entire nation and our leaders are focused on job creation - a key element of all candidates’ platforms in 2012 - AIA is working hard to ensure that budget cuts do not jeopardize our aerospace and defense workforce or the hundreds of thousands of jobs our industry indirectly supports. AIA’s Second to None federal budget campaign is well underway and will continue to ensure the industry’s message is heard by lawmakers and other officials. Defense  AIA supports a defense budget of four percent of GDP as a sensible floor and a metric that can act as a “warning light” of potentially inadequate investment in the security of our nation and the industrial base that supports the American warfighter. Growth in the U.S. defense budget and the procurement account peaked in 2010 and has now begun to decline. Many aerospace companies have already begun layoffs, consolidation and buyouts. This downturn was initiated in 2010 by DOD’s “streamlining” initiative, and was accelerated when the first phase of the Budget Control Act reduced the defense budget. While the administration believes these reductions are manageable, the national security leadership within the administration has been emphasizing that further reductions would harm our critical military capabilities and lead to a “hollow force” in the future. The failure of the super committee under the Budget Control Act and a mandate to save $1.2 trillion pose unique challenges to AIA and the industry. AIA is continuing its dialogue with the Secretary of Defense, House and Senate leadership, and members of Congress at large to ensure that industry’s voice is heard in funding decisions that affect the aerospace and defense industrial base. We will advocate that the defense budget must not fall below a critical floor. In summary, the industry’s position was made clear during Hill and press activities during National Aerospace Week in 2011 – “no more cuts.” Civil Aviation and Space As the federal budget tightens, it is vital to convey to Congress the importance of robust investment in FAA’s NextGen air traffic control system. AIA will work closely with the administration and congressional committees to promote adequate levels of funding for systems, air navigation procedures, and environmental analyses related to NextGen. In addition, AIA continues to support innovative ways to fund airborne civil aviation infrastructure (NextGen avionics), and the development of commercially viable sustainable alternative aviation fuels. All of our efforts at securing adequate funding levels will be muted if Congress doesn’t pass a long-term FAA authorization bill. AIA is working at the highest levels within the Department of Transportation and talking frequently with members of Congress and their staff to urge passage of legislation before 2012.

#### Economic decline causes protectionism and war

Royal 10 (Jedediah Royal, Director of Cooperative Threat Reduction at the U.S. Department of Defense, 2010, “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 defense behavior 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 crisis 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). Seperately, 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 behavious 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. Crisis could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states. 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 favor. Moreover, the presence of a recession tends to amplify the extent to which international and external conflict self-reinforce each other. (Blomberg & Hess, 2002. P. 89) Economic decline has 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 increase 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 correlated 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. This implied connection between integration, crisis and armed conflict has not featured prominently in the economic-security debate and deserves more attention.

### Contention 3: Terrorism

#### Scenario 1 is Al Qaeda—Despite government security efforts, terrorism threats are high

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

Despite the strenuous efforts by governments to harden commercial aviation in the post-9/11 era, the number of plots illustrates that al-Qa`ida core, its affiliates, and numerous other Islamist extremist groups and self-radicalized individuals maintain a high level of interest in attacking aviation. Despite the organizational disruptions caused by the deaths of numerous senior al-Qa`ida leaders in 2011, and the current preoccupation of several al-Qa`ida affiliates with local conflicts, this ongoing interest in attacking aviation is unlikely to dissipate in the long-term. Furthermore, the evolving tactics utilized in these various plots lend weight to AQAP’s contention that government regulators suffer from a lack of imagination in anticipating and mitigating emergent and existing threats. As indicated by numerous accounts, including the description of the cargo plot contained in Inspire, terrorists constantly seek to analyze existing aviation security measures to probe for weaknesses and develop countermeasures. Terrorists’ ongoing efforts to study and defeat security are further exemplified by the arrest of Rajib Karim, a former information technology employee at British Airways; prior to his arrest, Karim maintained an ongoing dialogue with AQAP operative Anwar al-`Awlaqi and attempted to provide al-`Awlaqi with information on aviation security procedures.[1] Therefore, despite government efforts to improve aviation security, a number of critical tactical threats remain.

#### Specifically, Al-Qaeda is planning a strike for this August

YNet News 7/1 (Israel News, "Report: Al-Qaeda plans to bomb plane in Olympics" http://www.ynetnews.com/articles/0,7340,L-4249568,00.html) BSB

Intelligence sources reveal that al-Qaeda is plotting a terrorist attack on an American airliner in the run-up to the Olympics, the Sunday Times reported Sunday. According to the Sunday Times, al-Qaeda in the Arabian Peninsula (AQAP) has recruited a Norwegian convert at a training camp in Yemen. The group is understood to have selected a target, believed to be a US passenger jet. The intelligence officials said the latest plot was not specifically targeted at the Olympics and should be seen in the context of al-Qaeda’s continuing ambitions to blow up US planes. “There is terrorist plotting going on irrespective of the Olympics. The only thing that connects this to the Olympics is the fact that they are about to happen,” said a Whitehall official to the Sunday Times. The Norwegian recruit goes under the Islamic name of Abu Abdurrahman. He is understood to be in his 30s and with no previous criminal record. He converted in 2008 and quickly became radicalized. He later travelled to Yemen for training, the Sunday Times reported. This is the fourth terrorist attempt of the group since 2009, when AQAP sent a Nigerian-born British student on a plane with an underpants bomb. The bomb failed to detonate over Detroit and the man was arrested and jailed. In 2010, al-Qaeda sent two bombs hidden in printer cartridges on cargo planes destined for Chicago. They were intercepted and defused in Dubai and Britain. A third plot was averted in early 2012, when a British undercover agent managed to infiltrated AQAP, and volunteered to be a suicide bomber. He smuggled out the latest version of the underpants bomb to US authorities.

#### NextGen increases security measures for aviation

FAA 11 (Federal Aviation Administration, “Why NextGen Matters”, <http://www.faa.gov/nextgen/why_nextgen_matters/>) KA

NextGen is a comprehensive overhaul of our National Airspace System to make air travel more convenient and dependable, while ensuring your flight is as safe, secure and hassle-free as possible. In a continuous roll-out of improvements and upgrades, the FAA is building the capability to guide and track air traffic more precisely and efficiently to save fuel and reduce noise and pollution. NextGen is better for our environment, and better for our economy. NextGen will be a better way of doing business. Travel will be more predictable because there will be fewer delays, less time sitting on the ground and holding in the air, with more flexibility to get around weather problems. NextGen will reduce aviation’s impact on the environment. Flying will be quieter, cleaner and more fuel-efficient. We’ll use alternative fuels, new equipment and operational procedures, lessening our impact on the climate. More precise flight paths help us limit the amount of noise that communities experience. NextGen will help us be even more proactive about preventing accidents with advanced safety management to enable us, with other government agencies and aviation partners, to better predict risks and then identify and resolve hazards. NextGen boils down to getting the right information to the right person at the right time. It will help controllers and operators make better decisions. This data will assist operators in keeping employees and passengers better informed. 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. NextGen will allow us to meet our increasing national security needs and ensure that travelers benefit from the highest levels of safety.

#### And, it solves terrorism

Toner 12 (Dr. Karlin, Director and Senior Staff Advisor to the Secretary of Transportation for NextGen, Joint Planning and Development Office, “NextGen Topics”, http://www.jpdo.gov/Nextgen\_Topics.asp)

Securing America’s Air Transportation System The Next Generation Air Transportation System (NextGen) technologies will substantially improve our nation’s ability to manage, monitor, and secure the nation’s air transportation system. NextGen will give those charged with this essential mission the tools to work in real time while relying on the same operational picture. This will create an entirely new paradigm for the way America manages the security of its airspace. The benefits will be substantial. For example, with NextGen, it will be possible to immediately view data on the current operation and intent of any aircraft in the system. In the event an aircraft deviates from its flight plan or begins to operate in a suspicious manner, this information will be instantly available. NextGen’s rapid exchange of information and an integrated approach to security will make it possible to identify aviation workers, travelers, and cargo that pose a potential threat and prevent them from gaining access to the air transportation system through pre-screening/credentialing, on-site screening.

#### Terrorist strikes on the US cause rapid miscalculation and nuclear war

Corsi 2005 (Jerome, Ph.D. from Harvard, Atomic Iran, 176-178)BSB

In the span of less than one hour, the nation’s largest city will have been virtually wiped off the map. Removal of debris will take several years, and recovery may never fully happen. The damage to the nation’s economy will be measured in the trillions of dollars, and the loss of the country’s major financial and business center may reduce America immediately to a second-class status. The resulting psychological impact will bring paralysis throughout the land for an indefinite period of time. The president may not be able to communicate with the nation for days, even weeks, as television and radio systems struggle to come back on line. No natural or man-made disaster in history will compare with the magnitude of damage that has been done to New York City in this one horrible day. THE UNITED STATES RETAILATES: “END OF THE WORLD” SCENARIOS The combination of horror and outrage that will surge upon the nation will demand that the president retaliate for the incomprehensible damage done by the attack. The problem will be that the president will not immediately know how to respond or against whom. The perpetrators will have been incinerated by the explosion that destroyed New York City. Unlike 9/11, there will have been no interval during the attack when those hijacked could make phone calls to loved ones telling them before they died that the hijackers were radical Islamic extremists. There will be no such phone calls when the attack will not have been anticipated until the instant the terrorists detonate their improvised nuclear device inside the truck parked on a curb at the Empire State Building. Nor will there be any possibility of finding any clues, which either were vaporized instantly or are now lying physically inaccessible under tons of radioactive rubble. Still, the president, members of Congress, the military, and the public at large will suspect another attack by our known enemy—Islamic terrorists. The first impulse will be to launch a nuclear strike on Mecca, to destroy the whole religion of Islam. Medina could possibly be added to the target list just to make the point with crystal clarity. Yet what would we gain? The moment Mecca and Medina were wiped off the map, the Islamic world—more than one billion human beings in countless different nations—would feel attacked. Nothing would emerge intact after a war between the United States and Islam. The apocalypse would be upon us. Then, too, we would face an immediate threat from our long-term enemy, the former Soviet Union. Many in the Kremlin would see this as an opportunity to grasp the victory that had been snatched from them by Ronald Reagan, when the Berlin Wall came down. A missile strike by the Russians on a score of American cities could possibly be preemptive. Would the U.S. strategic defense system be so in shock that immediate retaliation would not be possible? Hard-liners in Moscow might argue that there was never a better opportunity to destroy America. In China, our newer Communist enemies might not care if we could retaliate. With a population already over 1.3 billion people and with their population not concentrated in a few major cities, the Chinese might calculate to initiate a nuclear blow on the United States. What if the United States retaliated with a nuclear counterattack upon China? The Chinese might be able to absorb the blow and recover. The North Koreans might calculate even more recklessly. Why not launch upon America the few missiles they have that could reach our soil? More confusion and chaos might only advance their position. If Russia, China, and the United States could be drawn into attacking one another, North Korea might emerge stronger just because it was overlooked while the great nations focus on attacking one another. So, too, our supposed allies in Europe might relish the immediate reduction in power suddenly inflicted upon America. Many of the great egos in Europe have never fully recovered from the disgrace of World War II, when in the last century the Americans a second time in just over two decades have been forced to come to their rescue. If the French did not start launching nuclear weapons themselves, they might be happy to fan the diplomatic fire beginning to burn under the Russians and the Chinese. Or the president might decide simply to launch a limited nuclear strike on Tehran itself. This might be the most rational option in the attempt to retaliate but still communicate restraint. The problem is that a strike on Tehran would add more nuclear devastation to the world calculation. Muslims around the world would still see the retaliation as an attack on Islam, especially when the United States had no positive proof that the destruction of New York City had been triggered by radical Islamic extremists with assistance from Iran. But for the president not to retaliate might be unacceptable to the American people. So weakened by the loss of New York, Americans would feel vulnerable in every city in the nation. “Who is going to be next?” would be the question on everyone’s mind. For this there would be no effective answer. That the president might think politically at this instant seems almost petty, yet every president is by nature a politician. The political party in power at the time of the attack would be destroyed unless the president retaliated with a nuclear strike against somebody. The American people would feel a price had to be paid while the country was still capable of exacting revenge.

#### Scenario 2 is Cyber-terror: Air-traffic control is vulnerable to cyber attacks now—causes US retaliation

The Boston Globe 12 (The Boston Globe, "The military alone can’t protect against increasing cyberattacks,"http://www.boston.com/bostonglobe/editorial\_opinion/editorials/articles/2011/06/12/the\_military\_alone\_cant\_protect\_against\_increasing\_cyberattacks/, accessed 6/25/12, CNM)

Against this backdrop, the Defense Department recently updated its own strategy on cyberattacks. Over 100 foreign intelligence agencies have already attempted to hack the department’s networks, so the Pentagon’s intensified focus on cybersecurity seems long overdue — and a reminder to private businesses whose networks may be vulnerable that they should be taking greater precautions of their own. The Pentagon’s new policy makes clear that any cyberattack that damages US critical infrastructure or US military readiness could be considered an “act of war.’’ A cyberattack on a non-military target — against civilian air-traffic control, for example — could in itself cause enough destruction, death, or significant disruption to justify the use of force.

#### And, NextGen is key to solving cyber terror

Tobruk Refinery 11 (Tobruk Refinery, “2011 FAA Budget Debate and NextGen Air Traffic Control Systems”, <http://tobrukrefinery.org/tag/nextgen/>) KA

In fact there was an interesting article the other day in the Wall Street Journal titled; “House Bill Seeks Cuts to FAA,” by Josh Mitchell and Any Pasztor on April 2, 2011. In the article amongst many other interesting facts the article noted that if the bill were to be passed it would push back the FAA budget to that of 2008s budget, but this also at a time when the FAA is working on seriously updating its Air Traffic Control System for efficiency and safety. On the safety front would be prevention of cyber terrorism, midair collisions, runway incursions, and regular terrorism using aircraft as weapons. For efficiency it could provide less wait times, more direct routes, and thus, drastically reduce fuel consumption which is on everyone’s mind, especially the airlines with the increase costs of jet fuel. The article stated; “Republicans aim to cut about $4 billion from the projected spending through 2015,” and Democrats are screaming air-safety, and carbon footprint of aviation. Northrop and Lockheed, and Boeing as well, see lucrative contracts along with other contractors for the installation of NextGen Air Traffic Control Systems, even going 3D or partial holographic for ATC personnel displays. I’d advise anyone looking into this topic to go to the GAO Website and search “ATC Modernization” and “NextGen Air Traffic FAA” – and I think what you’ll quickly discover is that in these references and archived GAO Reports are tons of information on why we need ATC Modernization and the challenges faced in the turbulent skies ahead, along with Historical Perspectives – including the ongoing problem and the blob of bureaucracy.

#### NextGen increases cyber security measures

National Science and Technology Council 6, ("Federal Plan for Cyber Security and information assurance research and development" http://www.pdfdocspace.com/docs/40649/available-online-(pdf-document).html) BSB

The mission of the FAA is to provide the safest, most efficient aerospace system in the world. In securing the national airspace system, the FAA supports DHS programs in emergency preparedness, crisis management, and continuity of government planning. The FAA is a member of the Joint Planning and Development Office (JPDO), which is chartered by Congress to develop a vision of the aviation system in the year 2025 and a Next Generation Air Transportation System (NGATS) Implementation Plan. The JPDO includes DHS, DOC, DoD, DOT, NASA, and OSTP. Close partnerships with other Federal agencies on integration of security technologies and management of over-flight programs help ensure continuous operation of the national airspace system. FAA cyber security and information assurance research activities seek to maximize budget effectiveness and leverage developments by other agencies. FAA’s unique requirements are based on identification of security measures that provide for the safety and security of the FAA workforce, facilities, and critical infrastructure. Cyber-defense concept modeling plays a significant role in improving the security of FAA’s information infrastructure. The agency’s cyber security goal is mission survivability by achieving zero cyber events that disable or significantly degrade FAA services. The Director of Information Technology Research and Development (Chief Technology Officer) is responsible for developing, managing, and executing FAA’s IT and information systems security R&D programs.

#### Cyber warfare risks escalation and global war

**Fritz 9 (Jason, researcher for International Commission on Nuclear Nonproliferation and Disarmament, former Army officer and consultant, “Hacking Nuclear Command and Control,” July, http://www.icnnd.org/latest/research/Jason\_Fritz\_Hacking\_NC2.pdf)**

This paper will analyse the threat of cyber terrorism in regard to nuclear weapons. Specifically, this research will use open source knowledge to identify the structure of nuclear command and control centres, how those structures might be compromised through computer network operations, and how doing so would fit within established cyber terrorists’ capabilities, strategies, and tactics. If access to command and control centres is obtained, terrorists could fake or actually cause one nuclear-armed state to attack another, thus provoking a nuclear response from another nuclear power. This may be an easier alternative for terrorist groups than building or acquiring a nuclear weapon or dirty bomb themselves. This would also act as a force equaliser, and provide terrorists with the asymmetric benefits of high speed, removal of geographical distance, and a relatively low cost. Continuing difficulties in developing computer tracking technologies which could trace the identity of intruders, and difficulties in establishing an internationally agreed upon legal framework to guide responses to computer network operations, point towards an inherent weakness in using computer networks to manage nuclear weaponry. This is particularly relevant to reducing the hair trigger posture of existing nuclear arsenals. All computers which are connected to the internet are susceptible to infiltration and remote control. Computers which operate on a closed network may also be compromised by various hacker methods, such as privilege escalation, roaming notebooks, wireless access points, embedded exploits in software and hardware, and maintenance entry points. For example, e-mail spoofing targeted at individuals who have access to a closed network, could lead to the installation of a virus on an open network. This virus could then be carelessly transported on removable data storage between the open and closed network. Information found on the internet may also reveal how to access these closed networks directly. Efforts by militaries to place increasing reliance on computer networks, including experimental technology such as autonomous systems, and their desire to have multiple launch options, such as nuclear triad capability, enables multiple entry points for terrorists. For example, if a terrestrial command centre is impenetrable, perhaps isolating one nuclear armed submarine would prove an easier task. There is evidence to suggest multiple attempts have been made by hackers to compromise the extremely low radio frequency once used by the US Navy to send nuclear launch approval to submerged submarines. Additionally, the alleged Soviet system known as Perimetr was designed to automatically launch nuclear weapons if it was unable to establish communications with Soviet leadership. This was intended as a retaliatory response in the event that nuclear weapons had decapitated Soviet leadership; however it did not account for the possibility of cyber terrorists blocking communications through computer network operations in an attempt to engage the system. Should a warhead be launched, damage could be further enhanced through additional computer network operations. By using proxies, multi-layered attacks could be engineered. Terrorists could remotely commandeer computers in China and use them to launch a US nuclear attack against Russia. Thus Russia would believe it was under attack from the US and the US would believe China was responsible. Further, emergency response communications could be disrupted, transportation could be shut down, and disinformation, such as misdirection, could be planted, thereby hindering the disaster relief effort and maximizing destruction. Disruptions in communication and the use of disinformation could also be used to provoke uninformed responses. For example, a nuclear strike between India and Pakistan could be coordinated with Distributed Denial of Service attacks against key networks, so they would have further difficulty in identifying what happened and be forced to respond quickly. Terrorists could also knock out communications between these states so they cannot discuss the situation. Alternatively, amidst the confusion of a traditional large-scale terrorist attack, claims of responsibility and declarations of war could be falsified in an attempt to instigate a hasty military response. These false claims could be posted directly on Presidential, military, and government websites. E-mails could also be sent to the media and foreign governments using the IP addresses and e-mail accounts of government officials. A sophisticated and all encompassing combination of traditional terrorism and cyber terrorism could be enough to launch nuclear weapons on its own, without the need for compromising command and control centres directly.

### Contention 4: Warming

#### Airline emissions are the greatest contributor to climate change

Hodgkinson et al 7 (Associate Professor in the Law School at UWA, "STRATEGIES FOR AIRLINES ON AIRCRAFT EMISSIONS AND CLIMATE CHANGE: SUSTAINABLE, LONG - TERM SOLUTIONS" http://www.hodgkinsongroup.com/documents/Hodgkinson\_airline\_emissions.bak.pdf) BSB

A number of organisations such as the Intergovernmental Panel on Climate Change (IPCC), Oxford University, the Massachusetts Institute of Technology (MIT) and the Tyndall Centre, for example, have studied the impacts of aviation on the global atmosphere. These studies, together with reports from Royal Commissions and other inquiries, make the following points clear: 􀁸 the climate change impacts of aviation are significantly worse than those of its carbon dioxide emissions alone. Further, reference to aviation being responsible for 2% of global carbon dioxide emissions is misleading as the figure (a) is based on total anthropogenic carbon dioxide emissions in 1992 (as determined by the IPCC), not 2007; (b) does not take into account aviation’s non-CO2 greenhouse gas (GHG) emissions which significantly contribute to the climate change impacts of aviation; and (c) ignores growth in air travel; 􀁸 air travel demand is growing at unprecedented rates, yet substantial reductions of aviation GHG emissions are not possible in the short to medium term; 􀁸 not only are emissions from air travel increasing significantly in absolute terms but, against a background of emissions reductions from many other sources, their relative rate of increase is even greater. Put another way, “if the [recommended] reductions in carbon dioxide emissions from groundlevel activities … are achieved, and the growth in air transport projected by the IPCC materialises, then air travel will become one of the major sources of anthropogenic climate change by 2050;” 5 􀁸 development of alternative jet fuels and aircraft technological developments, together with the development of more efficient operational practices and more efficient air traffic management systems and processes, will only partially offset the growth in aviation emissions; 􀁸 there is presently no systematic or compulsory incentive to reduce international aviation emissions; 􀁸 without government action to significantly reduce aviation growth within the UK, for example, aviation emissions may be greater than those forecast for all other sectors of the economy. As a result, aviation may exceed the carbon target for all sectors by 2050;

#### Government reforms to the aviation industry are key to mitigate ozone depletion and warming

Capoccitti 10 (Sam, Aviation Consultant, et al., “Aviation Industry - Mitigating Climate Change Impacts through Technology and Policy”, Journal of Technology Management & Innovation, 5(2), http://www.scielo.cl/scielo.php?pid=S0718-27242010000200006&script=sci\_arttext)

Environmental impact of Flight The main environmental concerns associated with aircraft are climate change, stratospheric ozone reduction (leading to increased surface UV radiation, regional pollution, and local pollution. During flight, aircraft engines emit carbon dioxide, oxides of nitrogen oxides of sulphur, water vapour, hydrocarbons and particles - the particles consist mainly of sulphate from sulphur oxides, and soot. These emissions alter the chemical composition of the atmosphere in a variety of ways, both directly and indirectly (RCEP, 2002). While much of the CO2 is absorbed on Earth in plants and the ocean surface, a huge amount goes into the atmosphere, where it and other gases create a kind of lid around the globe --the so-called greenhouse effect. Heat that would normally escape into space is thus reflected back to Earth, raising global temperatures (Lehrer, 2001). Nitrogen oxides (NOx) and H2O vapor from aircraft increase the formation of cirrus clouds and create contrails, which are visible from the ground. The combination of " 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 (IPCC estimated that radiative forcing from all aircraft greenhouse gas emissions is a factor of 2 to 4 times higher than that from its CO2 emissions alone). Hence any strategy to reduce aircraft emissions will need to consider other gases and not just CO2" (GreenSkies, n.d.; pg.1). The environmental issues associated with flight are also correlated with the altitude at which the carbon dioxide is emitted, the higher the attitude the greater damage to the ozone layer. Research has shown that the majority of flights fly at an altitude between 29,500 ft and 39,400 ft (9-12 km). Figure 1 (Federal Aviation Administration, 2005; pg. 32 ) highlights the distribution to total fuel burn and emissions by 1 km altitudes for the year 2000. The lower spike in fuel burn and emissions in the 0-1 km range is attributed to aircraft emissions from the ground when aircraft are idling or taxiing. It was noticed after the events of 9/11 (when there was a temporary halt to all commercial flights) that the Earth's temperature was 1 to 2 degrees Celsius colder, which coincides with the theory that aircraft emissions do impact the environment. Figure 1. Altitude distribution of fuel burn and emissions Approaches to Mitigating Environmental Impacts The aviation sector these days is buzzing with talks about aviation emissions. There is a call for aviation emissions by the airlines to be included in climate change pacts (Fogarty, 2009). Talk is now turning to ways of mitigating air travel's future impact on climate change, and these "generally fall within two spheres: technology development, and policy mechanisms" (GLOBE-Net, 2007). Engine Technology, Aerodynamic Body and Weight It is estimated that the aircraft we fly today are 70% more efficient than those 10 years ago. IATA predicts that by 2020, another 25% efficiency will be added to the present day fleet (GLOBE-Net, 2007). Improvements in aerodynamics, engine design and weight reduction are the main areas of improvement to counter the dependence on fossil fuel. Though the replacement of fossil fuel is being vigorously pursued with some limited success, fossil fuels will not expect to be replaced in the near future. Apart from engine efficiency, finding an alternative fuel is part of the challenge for the aviation industry. GLOBE-Net (2007) reports that the majority of efficiency improvements over past aircraft have been achieved through the development and improvements in engine technology. Engine improvements, as in the case of automobiles, must increase fuel efficiency (and therefore, decrease CO2 emissions) with reductions in NOx, water vapour, and other air pollutants. Some technological advancement in engine technology uses high pressure ratios to improve efficiency but this worsens the problem with NOx. If new control techniques for NOx are developed to keep within regulatory compliance limits, high pressure ratios will likely be the path pursued by aircraft manufacturers. Further reduction in emissions can be achieved by matching the advancements in engine technology with better aerodynamic shape and use of light weight material to reduce drag. This certainly contributes to reducing the impact on environment and also can be promoted as a cost-saving measure (e.g., savings in fuel costs). Boeing (2007; pg. 1) indicated that "four key technologies contribute to an impressive 20% improvement in fuel use for the 787 Dreamliner as compared to today's similarly sized airplane. New engines, increased use of light weight composite materials, more-efficient systems applications and modern aerodynamics each contribute to the 787's overall performance." Aircraft manufacturers are also exploring the benefits of other technologies such as the use of winglets, fuselage airflow control devices and weight reductions. These could "reduce fuel consumption by a further 7% says the IPCC, although some have limited practicability" (GLOBE-Net, 2007). In the long term, new aircraft configurations (such as a blended wing body) may achieve major improvements in efficiency. Alternate Energy Solutions The time for zero emission aircraft is still far away. The technologies that may make that possible are still in early stages of development and evaluation. Second-generation biofuels, solar power and fuel cells are all being investigated by the aviation industry as well as the automobile industry. The more fuel aircraft burns, the more emissions emitted into the atmosphere thereby increasing its environmental footprint. The aviation industry has come a long way with fuel technology and with the help of Boeing and Airbus (the world's largest aircraft manufacturers). Today aircraft are lighter, quicker and more fuel efficient. Boeing has an ongoing legacy of integrating environmental performance improvements through technology advancements. Over the last 40 years, airplane CO 2 emissions have been reduced by around 70% and the noise levels have been reduced by approximately 90 percent. The noise footprint of the new 787 Dreamliner is 60% lower than any similar aircraft (Boeing 1998-2007; pg. 14). That legacy continues today with every airplane they design and build (Boeing, 1998-2008; pg. 16). One of the many initiatives supported by Boeing is its search for alternative energy solutions. This initiative will lead to reducing greenhouse gas emissions and at the same time Boeing is pioneering three key environmental advancements: • Advanced-Generation Biofuels - Boeing, Virgin Atlantic and GE Aviation conducted the first commercial flight using a biofuel mix with traditional kerosene-based fuel in February 2008. • Solar Cells - Converting sunlight into electricity • Fuel Cells - Convert hydrogen into heat & electricity without combustion, reducing the need for conventional fuels and eliminating emissions. Like Boeing, Airbus has partnered with Honeywell Aerospace, International Aero Engines and Jet Blue Airways in pursuit of developing a sustainable second-generation bio-fuel for commercial jet use, with the hope of reducing the aviation industry's environmental footprint. Alternative fuel research is a core tenet of Airbus' eco-efficiency initiatives (Airbus, 2008). Airbus research has also lead to test flights using gas to liquid kerosene, which is similar to jet fuel but results in lower emissions and is a much cleaner fuel source. Airbus has also researched other types of alternative fuels; for example, bio-mass to liquid and coal to liquid. On February 1, 2008 an Airbus 380 (in collaboration with Shell International and Rolls Royce) conducted a test flight using gas to liquid kerosene in one of the A380 engines. Over the last year, four airlines have flight tested on biofuel: Virgin Atlantic (in February 2008), Air New Zealand (in December 2008), Continental Airlines and Japan Airlines (in January 2009). They have "already flown on routes with one engine part-powered by a range of biofuels including algae and jatropha. Jatropha, a poisonous plant that produces seeds that can be refined into biofuels, is being touted as a good alternative fuel and a potentially powerful weapon against climate change. Experts say the perennial plant can grow on marginal land with limited rainfall, and does not compete with other food crops or encourage deforestation. Following its flight using jatropha in late December, Air New Zealand has set a goal to have 10 percent of fuel coming from biofuel sources by 2013, while Virgin is aiming for 5 percent by 2015" (Szabo et al., 2009). Pew (2009) reports that "the push in development of biofuels continues with a recent $25 million contract awarded by the Defense Advanced Research Projects Agency to SAIC. The company is being tasked to lead a team in development of an integrated process for producing JP-8 from algae at a cost target of $3/gal." The two-phase program aims to conclude with the design and operation of a pre-pilot scale production facility. But another project that involves Boeing, Honeywell, and CFM hopes to see biofuel production levels in the hundreds of millions of gallons per year by 2012 (Pew, 2009). The International Air Transportation Association (IATA) feels that any alternative fuel should be tested for performance and environmental impact before introducing into the marketplace. IATA researched has shown that the conservative nature of the industry will foster alternative fuels that originally are combined with conventional jet fuel. According to IATA (2008a), alternative fuel systems derived from biomass sources have the potential to lower the carbon footprint and lower other emissions as well. New technologies and more economic integration of alternative fuels along with government subsidies will accelerate the acceptance of these fuels in the market place (IATA, 2008a). In "Are bio-fuels really an alternative?" Jeff Gazzard (2009), a board member of the Aviation Environment Federation contends that the biofuel issue may not be as clear as it seems. The jury is still out as to whether either synthetic or biofuels are yet capable of being either entirely fail-safe for aviation use or environmentally sustainable in the longer term. According to Gazzard (2009) alternate fuels looked attractive when oil was marching towards $147 a barrel, but now that oil has fallen back to below $50 a barrel, $75-$85 a barrel for biofuel is not as attractive. He points out that another issue is that aviation consumes approximately 240 million tones of kerosene a year. Replacing the current aviation fuel with bio-fuel from productive arable land that does not compete with food production would take almost 1.4 million square kilometers, which is greater than twice the area of France. Gazzard (2009) is not convinced that aviation would be the best end-user even if biofuels could be produced sustainably. The industry has also followed with increasing interest in algae as a potential source of aviation fuel but is unconvinced that any cost-effective algae-derived aviation fuel could be produced within a practical timeframe that would allow such fuels to make any substantial contribution to climate change policies of today. Regardless of the skepticism, more and more airlines are testing alternative fuel sources and as global warming continues to escalate in the minds of the consumers. The assessment of GLOBE-Net (2007) is similar - "biofuels could mitigate some aircraft emissions, but the production of biofuels to meet the aviation industry's specifications and quantity demands is currently untested. Ethanol and biodiesel both have properties that make them currently unsuitable for jet fuel, but companies such as Virgin are pursuing biofuels research, investigating possibilities including the use of microorganisms." Further, the option of solar power is still in its infancy and largely unexplored. Boeing (1998-2008; pg. 16) is working with their wholly-owned subsidiary Spectrolab in this area. Spectrolab is one of the world's leading manufacturers of solar cells, powering everything from satellites and interplanetary missions. However, without the commercialization of these and other novel new technologies, annual air traffic growth is expected to outstrip efficiency improvements, resulting in a net rise in CO2 emissions of around 3-4% per year, along with increases in NOx and water vapour emissions. Better Traffic Management One possible contributor to greater aircraft efficiency is improved air traffic management. According to the IATA (2007), there is a 12% inefficiency in global air traffic management which could largely be addressed by three 'mega-projects': a Single Sky for Europe, an efficient air traffic system for the Pearl River Delta in China and a next generation air traffic system in the United States. However, there has not been much progress on these initiatives much to the disappointment of IATA and its leadership. Scientists and aviation experts worldwide are investigating improved air traffic management, lower flight speeds, reducing idling and other efficiencies, searching for areas of potential emissions reductions. Policy Mechanisms In February 2009, four leading airlines and an airport authority - Air France/KLM, British Airways, Cathay Pacific, Virgin Atlantic and airport operator BAA - called for aviation emissions to be included in a broader climate pact. This can be seen as a move to ward off criticism from environmental groups and to probably have a negotiated deal instead of a one that is imposed upon them. Even with only 2% of global pollution coming from airlines, the pressure of the aviation industry has been mounting to participate in emission reduction initiatives (Fogarty, 2009). This call was a prelude to the 2009 Copenhagen Summit on Climate Change where nations are expected to find an agreement around a climate pact that replaces the Kyoto Protocol whose first phase ends in 2012. To date "international air travel is exempt from carbon caps under the Kyoto Protocol. Neither do airlines pay tax on fuel. Understandably, lawmakers are wary of disrupting aviation since air travel represents a cash cow for governments. In the US, for example, the average tax on a $200 ticket is 26%, amounting to about $15bn a year. And the air travel industry picks up the tab for its own infrastructure, an annual bill of about $42bn, according to IATA" (Balch, 2009). In recent years, governments and international organizations have looked at policy options that could create incentives or impose requirements on aircraft operators and manufacturers to reduce emissions. At the forefront of this push is the European Union, which has proposed that aircraft be covered under the region's Emissions Trading Scheme (ETS). Under the proposal, emissions from all flights within the EU will be covered in 2011, with international flights to be included in 2012. The EU hopes to serve as a model for other countries (GLOBE-Net, 2007). An Ernst & Young (2007) study commissioned by the airline industry projects the system would cost airlines more than 40 billion Euros from 2011 to 2022. The IATA states in its climate change strategy that it prefers emissions trading to a carbon tax or other charges, but would rather participate in a worldwide voluntary scheme instead. "The challenge is for the International Civil Aviation Organization (ICAO) and its 190 member States to deliver a global emissions trading scheme that is fair, effective and available for all governments to use on a voluntary basis" (IATA, 2007). Short-term Measures In recent times some airlines have started offering passengers a chance to purchase carbon offsets to neutralize/minimize their carbon emission footprint. Air Canada partners with ZeroFootprint while Westjet has partnered with Offsetters.ca. In 2009, Japan airlines joined hands with Recycle One to help its passengers offset the carbon caused by their flight. "The total emissions figure is based on factors such as distance of travel, aircraft type, baggage and passenger to cargo ratios" (Balch, 2009). Continental, SAS, Qantas, British Airways, JetStar, Virgin Atlantic and Virgin America and some other airlines offer similar programs. Such programs are leading the way now but stronger action may be required to bring a significant reduction in GHG emissions. Long-term Thinking To address the problem of Climate Change, like all other industries, airlines will also have to re-think their business model. They will have to probably agree to be part of a network that moves people and goods from one place to another in an efficient and timely manner. To achieve this goal, they will have to collaborate and network with other transport operators like the railways. "In the Netherlands, airlines and rail companies have a history of cooperation. Long before its merger, KLM had already cancelled several short-haul flights on routes where fast train links existed. Many of KLM's international flights to Dutch cities also finish with a final leg by train" (Balch, 2009). The "Flight" Ahead As demonstrated, the aviation industry plays a vital role in the global economy and provides economic and social benefits. It is also apparent that global temperatures continue to rise while the aviation industry continues to grow. The combination of aviation growth and climate change leads us to believe that CO2 emissions from the aviation industry is one of the many other factors impacting global warming. It has to be addressed even though its impact today is limited to a very low percentage. But with a potential to grow, it cannot go unattended. With this in mind, the following main areas have been identified in order to help reduce aviation emissions. • Strengthen the global leadership strategy (for example, add aviation emissions to Kyoto protocol; revisit fuel surcharge (taxation) issue; create an emissions charge; implement an emissions cap on aviation emissions; enforce Carbon offset programs for all airlines; etc.) • Increase Alternative Fuel technology/implementation (for example, increase biomass fuel technology; etc.) • improvements in Aircraft Technology Efficiency (for example, reduce aircraft fuel consumption and CO2 emissions by replacing older, less fuel efficient aircraft with aircraft using latest fuel efficiency technology and navigation equipment; reduce aircraft noise - mitigate inefficient noise procedures; reduce oxides of nitrogen - try to go beyond compliance limits; etc.) • Improvements in Air Traffic Management (for example, cut inefficiency in current flight patterns - more fuel efficient approaches and overall routing; encourage flight patterns that minimize the impact of non CO2 emissions; optimize aircraft speed; etc.) • Improvements in Operational Efficiencies (for example, increase load factors; eliminate non-essential weight - reassess the value of onboard materials; limit auxiliary power (APU) use by reducing engine idle times and by shutting down engines when taxiing to reduce APU use and fuel burn; reduce taxiing time of aircraft; etc.) All these suggestions require stimulating technology advancements and innovation. Holliday et al. (2002) state that innovation is critical for any organization and industry if it wants to operate in a new global business environment which puts emphasis on environmental alignment of business goals. The aviation industry (airlines, governments, non government organizations, suppliers, manufactures) must work together and create technology advancements that catapult the industry into the future. The innovation created must not only look at how the aviation industry can improve on their CO2 emissions but also how it can change the CO2 emissions landscape. Improving current practices is not good enough. The aviation industry must change the way they operate in order to reduce CO2 emissions. Governments must get involved and work with airlines to spur innovation and remove obstacles for airlines leading the environmental movement.

#### NextGen quickly reduces airline emissions through efficiency measures

Dillingham 8 – Dillingham, 05-06-2008, Gerald L. Dillingham, Ph.D. Director, Physical Infrastructure Issues, “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 ozone and 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. Next steps in reducing aviation emissions include managing NextGen initiatives efficiently; deploying NextGen technologies and procedures as soon as practicable to realize their benefits, including lower emissions levels; and managing a decline in R&D funding, in part, by setting priorities for R&D on NextGen and emissions-reduction technologies. Challenges in reducing aviation emissions include designing aircraft that can simultaneously reduce noise and emissions of air pollutants and greenhouse gases; encouraging financially stressed airlines to purchase more fuel-efficient aircraft and emissions-reduction technologies; addressing the impact on airport expansion of more stringent EPA air quality standards and growing public concerns about the effects of aviation emissions; and responding to proposed domestic and international measures for reducing greenhouse gases that could affect the financial solvency and competitiveness of U.S. airlines.

#### NextGen implementation reduces the CO2 contributions of other transport technologies and worldwide markets

NEXA 11 (NEXA Advisors, A NEXA Capital Company, April 2011, NEXA Capital Partners provides corporate and strategic financial advisory services, and capital investment, to the aerospace, transportation, logistics and homeland security sectors (Venture Capitalist). “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues” p. 12 <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

#### Aviation contrail residue falls to the earth causing immuno-supression

Ambilac 0 – Ambilac Corporation, 2000, http://www.greenspun.com/bboard/q-and-a-fetch-msg.tcl?msg\_id=003bmw

We observe in our skies, jet aero planes constructing fancy designs ultimately spreading out to become cloud-like formations. Dubbed "chemtrails", (http://www.island.net/~wilco ) these formations consist of long-chain polymers in which can be embedded other organic or inorganic compounds, such as viruses and bacteria. On days when the atmospheric conditions are less than ideal, the mixture does not break into small particles as it falls from the planes, but falls as if spider webs are falling from the sky. See http://www.sightings.com/general2/sticky.htm These chemtrails (3) work on several levels. The first, and most direct, level is a lowering of the immune system by constant bombardment of the body by bacteria and viruses in the mix. To be taken into consideration in this direct attack, is the fact that some people are allergic to various compounds in the mix. The human body, already immune-lowered due to pollutants in our environment, is unable to cope with this extra bombardment and will eventually succumb to illness and perhaps even death. A lowered immune system is a lowered vibrational rate.

#### Immuno-suppression causes extinction

Fieger 4 [Leslie Fieger, Author – The End of the World. “The Precipice”, <http://www.lesliefieger.com/articles/precipice.htm>] ATP

There is much, much more. The very real and growing dangers of using human created weapons of mass destruction in resource wars (oil now, water tomorrow); looming viral and prion pandemics ravaging chemically weakened immune systems all help to define the precipice we stand on, the crisis point we face. Ignoring the reality of it or avoiding the difficult choices that must be made will only serve to accelerate the end of human society as we know it and probably, even human existence.

#### Warming is real and human caused – consensus of experts agree

Patriot News 12 (Patriot News, “Global warming: It's real it's now, and it can't be ignored”, <http://www.pennlive.com/editorials/index.ssf/2012/04/global_warming_its_real_its_no.html>) KA

Anyone who chalks global warming up to some left-wing conspiracy or dismisses it as a fanciful theory is simply not paying attention. Every single major U.S. and international scientific organization has attested to the basic facts of global warming. These include the American Association for the Advancement of Science, National Academy of Sciences, American Meteorological Society, World Meteorological Organization and dozens more. There are occasional scientists who disagree. But for each one, there are thousands of scientists who say the evidence is overwhelming. Another common misconception is that global warming doesn’t matter. Who cares if the average global temperature rises by a degree or two? Other than a few oceanfront property owners, who cares if sea levels rise by a foot or two? If only it were that simple. Continued global warming will threaten food production in some parts of the world, contributing to hunger and malnutrition. Floods and droughts will become more common. Infectious diseases are expected to become more common in less developed countries. Wars could break out over controlling scarce resources. There is much more.

#### Largest risk of extinction

Deibel ‘7 (Terry L. Deibel, professor of IR at National War College, Foreign Affairs Strategy, “Conclusion: American Foreign Affairs Strategy Today Anthropogenic – caused by CO2”)

Finally, there is one major existential threat to American security (as well as prosperity) of a nonviolent nature, which, though far in the future, demands urgent action. It is the threat of global warming to the stability of the climate upon which all earthly life depends. Scientists worldwide have been observing the gathering of this threat for three decades now, and what was once a mere possibility has passed through probability to near certainty. Indeed not one of more than 900 articles on climate change published in refereed scientific journals from 1993 to 2003 doubted that anthropogenic warming is occurring. “In legitimate scientific circles,” writes Elizabeth Kolbert, “it is virtually impossible to find evidence of disagreement over the fundamentals of global warming.” Evidence from a vast international scientific monitoring effort accumulates almost weekly, as this sample of newspaper reports shows: an international panel predicts “brutal droughts, floods and violent storms across the planet over the next century”; climate change could “literally alter ocean currents, wipe away huge portions of Alpine Snowcaps and aid the spread of cholera and malaria”; “glaciers in the Antarctic and in Greenland are melting much faster than expected, and…worldwide, plants are blooming several days earlier than a decade ago”; “rising sea temperatures have been accompanied by a significant global increase in the most destructive hurricanes”; “NASA scientists have concluded from direct temperature measurements that 2005 was the hottest year on record, with 1998 a close second”; “Earth’s warming climate is estimated to contribute to more than 150,000 deaths and 5 million illnesses each year” as disease spreads; “widespread bleaching from Texas to Trinidad…killed broad swaths of corals” due to a 2-degree rise in sea temperatures. “The world is slowly disintegrating,” concluded Inuit hunter Noah Metuq, who lives 30 miles from the Arctic Circle. “They call it climate change…but we just call it breaking up.” From the founding of the first cities some 6,000 years ago until the beginning of the industrial revolution, carbon dioxide levels in the atmosphere remained relatively constant at about 280 parts per million (ppm). At present they are accelerating toward 400 ppm, and by 2050 they will reach 500 ppm, about double pre-industrial levels. Unfortunately, atmospheric CO2 lasts about a century, so there is no way immediately to reduce levels, only to slow their increase, we are thus in for significant global warming; the only debate is how much and how serous the effects will be. As the newspaper stories quoted above show, we are already experiencing the effects of 1-2 degree warming in more violent storms, spread of disease, mass die offs of plants and animals, species extinction, and threatened inundation of low-lying countries like the Pacific nation of Kiribati and the Netherlands at a warming of 5 degrees or less the Greenland and West Antarctic ice sheets could disintegrate, leading to a sea level of rise of 20 feet that would cover North Carolina’s outer banks, swamp the southern third of Florida, and inundate Manhattan up to the middle of Greenwich Village. Another catastrophic effect would be the collapse of the Atlantic thermohaline circulation that keeps the winter weather in Europe far warmer than its latitude would otherwise allow. Economist William Cline once estimated the damage to the United States alone from moderate levels of warming at 1-6 percent of GDP annually; severe warming could cost 13-26 percent of GDP. But the most frightening scenario is runaway greenhouse warming, based on positive feedback from the buildup of water vapor in the atmosphere that is both caused by and causes hotter surface temperatures. Past ice age transitions, associated with only 5-10 degree changes in average global temperatures, took place in just decades, even though no one was then pouring ever-increasing amounts of carbon into the atmosphere. Faced with this specter, the best one can conclude is that “humankind’s continuing enhancement of the natural greenhouse effect is akin to playing Russian roulette with the earth’s climate and humanity’s life support system. At worst, says physics professor Marty Hoffert of New York University, “we’re just going to burn everything up; we’re going to het the atmosphere to the temperature it was in the Cretaceous when there were crocodiles at the poles, and then everything will collapse.” During the Cold War, astronomer Carl Sagan popularized a theory of nuclear winter to describe how a thermonuclear war between the Untied States and the Soviet Union would not only destroy both countries but possible end life on this planet. Global warming is the post-Cold War era’s equivalent of nuclear winter at least as serious and considerably better supported scientifically. Over the long run it puts dangers form terrorism and traditional military challenges to shame. It is a threat not only to the security and prosperity to the United States, but potentially to the continued existence of life on this planet.

## \*\*\*Inherency\*\*\*

### More Funding Key

#### [1AC] Current AATF funding is insufficient to solve the case but non-uniques your DAs—Consistent FAA incentive policy is key to NextGen

Bin Salam 12 (Sakib, Eno Center for Transportation, *NextGen: Aligning Costs, Benefits and Political Leadership*, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf) LA

On the policy-side, there are several obstacles to NextGen that hinder progress and the likelihood of a timely and cost- efficient implementation. First of all, there are uncertainties regarding the extent of the benefits NextGen can potentially provide. It is difficult to make forecasts about how much congestion or fuel consumption can be reduced to make the infrastructure investment worthwhile. This makes it chal- lenging to create sustained political, financial, and industry support for the project. Secondly, there are doubts about costs and the FAA’s ability to deliver technology solutions of this magnitude. In the early 1980s, aviation modernization projects were pro- jected to cost $12 billion and be ready in 10 years. NextGen infrastructure and equipage is now estimated to cost about $40 billion with expected completion by 2025.1 Testimony by the US Department of Transportation Inspector Gen- eral and a recent report by the Government Accountability Office (GAO) have pointed out cost overruns and delays in several NextGen programs. This continued uncertainty regarding the total infrastructure and equipage cost figure of NextGen has planted seeds of doubt amongst stakeholders and potential NextGen beneficiaries. Third, the airlines and general aviation users have been hesi- tant to bear equipage costs due to low profitability, econom- ic turmoil, and a lack of clear incentives to justify investing in NextGen. Operators are unlikely to invest until, at a minimum, the FAA is ready to deliver the promised benefits. This leads to a stalemate: operators are uncertain whether investing in NextGen is worthwhile, when the infrastructure is not yet fully in place, and without equipage the infrastruc- ture by itself is ineffective. The FAA has mandated equi- page of Automated Dependent Surveillance-Broadcast Out (ADS-B) that allows the equipped aircraft to send transmis- sion to other equipped aircraft ADS-B ground stations for all operators by 2020. However, there is uncertainty over when other NextGen on-board equipment will be required, particularly ADS-B In which allows the equipped aircraft to receive transmission from other ADS-B ground stations and other aircraft. Fourth, NextGen faces funding issues that pose some very difficult policy decisions. Work on the ground infrastruc- ture aspect of NextGen is currently funded by the Facilities and Equipment account of the AATF and some progress, albeit slow, has been made on this project. However, recent reports by the Congressional Budget Office and the Gov- ernment Accountability Office show that current AATF revenues are inadequate to fund NextGen.2 Despite recent resolution over the long overdue FAA reauthorization bill, little progress has been regarding securing a full-fledged modernization funding plan. The current bill authorizes a flat amount of $2.731 billion over four years for Next- Gen and funding is still subject to annual appropriation. A project that is already endangered by uncertainties regarding its worth would benefit from a stable and adequate funding source. A fifth problem facing NextGen is lack of Congressional political leadership in prioritizing a project of such potential value. In July 2011 the House of Representatives passed a short-term extension bill that failed to pass the senate, resulting in a shutdown that lasted a fortnight. The AATF received no tax revenues during the shutdown. As Con- gressional leaders argued over the Essential Air Services program, the trust fund lost over $400 million in foregone tax revenues. Those are funds that could have potentially been used towards an investment like NextGen. Further- more, according to the FAA some of the NextGen program delays can be attributed to the furlough of some of the FAA employees in July 2011 and a freeze on contractor funding which resulted in work stoppage orders for several projects.3 This impact of the impasse on NextGen was also docu- mented on the GAO report on the FAA’s NextGen cost- management.4 In order for NextGen to succeed, there must be greater certainty about potential benefits and costs. In the highly competitive low profit-margin airline industry, few want to take on the burden of paying for something that spreads speculative benefits so widely. It will also be essential to have a mechanism that raises sufficient capital for NextGen infrastructure in a transparent and equitable manner, while imposing minimal burdens on those who pay for it. Without a sustainable, stable, and reliable strategy for both continued infrastructural improvements and incentives for equipage, there is no guarantee that NextGen can be implemented in a timely and cost-effective manner. Without strong politi- cal leadership, a clear and unbiased delineation of costs and benefits, a transparent source of funds, and incentives for operators to equip, it is unlikely that NextGen benefits can be delivered in a timely manner if at all.

#### NextGen has insufficient funding which slows progress

Hanna 12 (Channon, writer for Airports Council International, “Eno Transportation Foundation Report on NextGen”, <http://www.aci-na.org/blog/2012/04/05/eno-transportation-foundation-report-on-nextgen/>) KA

The Eno report discusses NextGen benefits, including those to commercial aviation and general aviation. It quantifies potential fuel savings, delay costs saving, and safety benefits. The report also discusses the costs associated with NextGen implementation, including infrastructure costs such as those costs associated with installing ADS-B, communications equipment, and computer systems associated with En Route Automation Modernization (ERAM). In addition to the infrastructure costs, the report details equipage costs for both commercial and general aviation and explains that if commercial and general aviation fleets do not equip their aircraft then the real benefits to NextGen will not be realized. Finally, the report details the funding issues with NextGen and describes some potential options for both lawmakers and industry stakeholders to consider. The report notes that NextGen is currently funded out of the airport and airway trust fund (AATF). As airports know very well, the AATF has had to rely on larger contributions from the general fund in recent years than ever before, and while the current FAA Reauthorization bill has authorized NextGen funding at $2.7 billion for the next four years, NextGen is still subject to annual appropriations which causes instability in trying to move forward with funding NextGen infrastructure. The report points out that there is no funding mechanism that is directly linked to NextGen, and explores several funding options that could be available for NextGen— pointing out that the industry must consider whether these options are politically feasible— and that any revenue source for NextGen must be practical in the current political environment.

#### FAA program is inefficient and can’t solve in the squo

Hoover 11 (J. Nicholas, Informationweek.com, *Problems Plague FAA's NextGen Air Traffic Control Upgrade*, 5/10/11, http://www.informationweek.com/news/government/info-management/231900067) LA

The Federal Aviation Administration continues to struggle with budgets, deadlines, and management of its multi-billion dollar upgrades to the nation's air traffic control systems, government officials and industry executives told Congress on Wednesday. The long-term, multi-stage NextGen effort, which has been underway [for several years](http://www.informationweek.com/news/government/enterprise-architecture/225200456) and isn't slated to be complete until approximately 2025, aims to improve American aviation by upgrading numerous Cold War-era flight systems. But the effort has long suffered problems. Within the last couple of years, the FAA has instituted a number of changes to improve NextGen's management, including working closely with an advisory group made up of users and other constituents, changing the NextGen program so that it directly reports to the FAA's deputy administrator, and centralized program management for the effort. However, [ongoing problems](http://www.informationweek.com/news/government/enterprise-apps/226400053) continue to threaten the program's costs and timeline and have kept private industry in the dark about the program's benefits and schedule, the officials and executives told the House Transportation and Infrastructure Committee. As a result, according to Lee Moak, president of the Air Line Pilots Association, a group that represents the interests of 53,000 pilots, and Ed Bolen, president and CEO of the National Business Aviation Association, manufacturers are building and delivering future-proofed planes and carriers are putting new processes in place but can't take advantage of all their capabilities because of delays in or improper management of NextGen. For example, numerous carriers are ready to adopt procedures that they co-developed with the FAA to provide "smooth, fuel efficient, low emission descents that reduce [the need for] communications and enhance safety during good weather conditions" and others that help out in poor weather conditions, Bolen said. But the FAA doesn't even have plans or approval processes to permit planes to follow these procedures even as jet fuel costs continue to rise.

#### NextGen currently in need of funding and implementation

NBTA 9 (National Business Travel Association, “NBTA: Need for Updated Aviation System Evident in Today’s Widespread Flight Delays, Cancellations “, <http://www.gbta.org/usa/pressreleases/Pages/mb111909.aspx>) KA

"Thousands of travelers across the United States today are suffering flight delays and cancellations due to a ‘glitch’ in our antiquated aviation system. This is an unacceptable drag on corporate productivity at a time when we need the government to be the best partner of a private sector trying to drive economic growth. Today is a prime example of how necessary a 21st Century aviation system is for our nation’s travelers and economic stability. We urge the FAA to redouble its efforts to build redundancy into the information technology systems that the flying public relies upon. In particular, to facilitate efficient and safe air travel, the FAA’s Next Generation Air Transportation System (NextGen) needs funding and swift implementation. NextGen is a wide-ranging transformation of the entire national air traffic control system to meet current and future demand. The program will also support the economic viability of the air system while reducing delays and improving safety. In fact, the FAA estimates that the project’s full implementation will lead to a 20 percent reduction in delays. As the Congress considers additional legislation to spur economic growth, NBTA urges Congress to include significant funding for NextGen to speed up the implementation of this critical tool for economic recovery."

#### Funding for NextGen has been passed but is massively insufficient for innovation

Carey 12 (Bill, senior editor with Aviation International News, “AIN Blog: Rockwell Collins CEO Urges New Approach to NextGen”, <http://www.ainonline.com/aviation-news/blogs/ain-blog-rockwell-collins-ceo-urges-new-approach-nextgen>) KA

Rockwell Collins CEO Clay Jones may not be a pessimist when it comes to the Next Generation Air Transportation System (NextGen). But the leader of one of the world’s major avionics manufacturers is not brimming with optimism either. “Who in this room has any reasonable degree of confidence we’re going to actually get the funds necessary to implement NextGen by 2020?” Jones asked attendees of the RTCA Symposium, many of whom have invested considerable time and energy in the NextGen vision. NextGen’s risks are no secret. The Government Accountability Office and the Department of Transportation Inspector General have issued regular and repetitive warnings about the FAA’s oversight of the program and contract management, the lack of cost and schedule baselines for key programs, the need for an integrated master schedule. Rockwell Collins provides the displays, radios and navigation systems that pilots will actually use in the future airspace—in effect, where the rubber meets the road—and its CEO isn’t sold on the dream. This isn’t a new theme for the former Air Force F-15 pilot. “Technology is light years ahead of policy,” Jones said during a panel discussion in April at the U.S. Chamber of Commerce Aviation Summit. “We’ve gone from no architecture to no implementation plan to no political will.” At the annual RTCA event June 5 in Washington, D.C., Jones recounted his own hopeful vision of an avionics-enabled future in the mid-1990s, when the dream was called “Free Flight.” Since then, he said he has been alternately discouraged and inspired by new developments. The FAA reauthorization legislation passed by Congress and signed by the President in February after more than four years of delay and 23 temporary extensions is a good-news-and-bad news story, Jones said. The good news: it finally provides the FAA with funding stability of $63 billion over four years, with $11 billion directed to ATC modernization. It moves forward “discrete” NextGen programs such as ADS-B and DataComm, and provides a “first framework” for the introduction of unmanned aircraft into civilian airspace. “The bad news,” Jones said, “is that out of the $11 billion designated for modernization of the ATC system in February, only about one-third, or $4 billion, will likely be dedicated to NextGen programs and will require four years of annual Congressional appropriations.” He then begged the question: did anybody in the room really believe our broken, ineffectual Congress could make that happen?

#### NextGen not being funded because of cost and doubts

Hinton 11 (Christopher, writer for Market Watch, “Airlines uneasy over costly bid to replace radar”, <http://www.marketwatch.com/Story/story/print?guid=D235C056-7D9A-11E0-915A-00212804637C>) KA

Help was supposed to come by scrapping the 1950s-era ground-based air-traffic control system in favor of a 21st-century satellite-based tracking technology. GPS-assisted aircraft could then fly closer together, react faster to changing flight conditions and optimize their landing approaches. It’s an upgrade that could save the airlines hundred of millions of dollars a year. But the U.S. plan to achieve that, estimated to cost $40 billion, is stuck on the ground. Poor planning and the politics of fiscal austerity have left the system only partially installed. Now, airline executives are so disillusioned that they’re balking at buying additional cockpit gear for a program they say isn’t delivering on its promise. Even avionic suppliers with rich contracts at stake in the plan came up with a novel way of making their equipment more affordable, aircraft operators haven’t changed their position. “Many carriers — Delta, Southwest, American, United — we have all made significant investments in equipage for our existing fleets that we are not using,” said Delta Air Lines (NYSE:DAL) Chief Executive Richard Anderson, during a recent conference call with reporters. “We want to leverage the technology we have today before we add more technology and more cost.” For the Federal Aviation Administration, which is overseeing the so-called NextGen plan, the loss of confidence is another black eye for an agency still smarting from the furor over napping air-traffic controllers and a sharp rise in close calls of mid-air collisions. In a watchdog report last week, the U.S. Department of Transportation’s inspector general criticized the FAA for not coming up with an “integrated master schedule” for NextGen, and highlighted design decisions that put the entire program’s cost and schedule targets at further risk.

#### Doubts and insufficient funding hinders NextGen development

Halsey 11 (Ashley,III, writer for Seattle Times, “Antidote to air gridlock may not get off ground”, <http://o.seattletimes.nwsource.com/html/boeingaerospace/2015510103_airtraffic05.html>) KA

Now the Obama administration has embarked on the single most ambitious and expensive national transportation project since completion of the interstate highway system, a program called the Next Generation Air Transportation System (NextGen). The NextGen concept sounds simple: Replace an air traffic system based on 60-year-old radar with a satellite-based, Global Positioning System (GPS) network that would be far more versatile and efficient. In reality it is an extraordinarily complex undertaking, threatened with delay by airline fears that the government won't deliver the system in time to justify their expenditures. NextGen demands the largest investment ever made in civil aviation: $29 billion to $42 billion for equipment, software and training by 2025. The cost would be shared by a federal government struggling with budget constraints and an airline industry that has been drained by years of recession and inflated fuel prices. NextGen is touted as the antidote to gridlock in the air travel system, which is forecast to be serving 1 billion passengers a year by 2021, up from 713 million last year.

#### NextGen costs will go up massively if delayed and everyone loves it

Halsey 11 (Ashley,III, writer for Seattle Times, “Antidote to air gridlock may not get off ground”, <http://o.seattletimes.nwsource.com/html/boeingaerospace/2015510103_airtraffic05.html>) KA

Advocates say the United States will lose its competitive edge in the global transportation economy unless the government pumps $11.5 billion into the program in the next seven years and airlines pony up an additional $7 billion to $10 billion. The cost of delaying the system even by less than five years has been calculated at $20 billion. NextGen has virtually no credible enemies — not in the administration, not on Capitol Hill and not in the airline industry. But the seemingly simple concept is layered like an onion with complexities. In addition to demanding an enormous investment, there is a confluence of history and technology that creates a hurdle to progress.

#### Constant funding and stability needed for NextGen to succeed

Press of Atlantic City 11 (Press of Atlantic City, “NextGen funding / FAA needs stability”, <http://www.pressofatlanticcity.com/opinion/editorials/nextgen-funding-faa-needs-stability/article_744f8e9f-d27f-5657-ab6a-ee3685b7b1d7.html>) KA

Last week, Congress approved yet another short-term reauthorization of the Federal Aviation Administration. In doing so, lawmakers managed to avoid a repeat of their shameful behavior in July, when partisan squabbling caused the FAA to lose $350 million in airline ticket taxes, stalled airport construction projects and furloughed 4,000 employees. But Congress failed to tackle the real issue: how to provide stable, long-term funding for the agency that oversees the safety of air travel. That stability is necessary if the promise of the NextGen Air Transportation System is to become a reality. NextGen is the umbrella name used to describe a series of efforts to modernize the air traffic control system. For instance, it would use satellite technology, similar to the GPS in your smartphone, to replace the current, 1960s-era, radar-based system. Proponents say it will make air travel safer and more efficient.

#### Lack of confidence and funding deficiencies prevent NextGen from being implemented

Bogdan 12 (Jennifer, staff writer for Press of Atlantic City, “Uncertainty about benefits, funds hurting Next Generation Air Transportation System, think tank study says”, <http://www.pressofatlanticcity.com/communities/eht/uncertainty-about-benefits-funds-hurting-next-generation-air-transportation-system/article_606a1c4a-86a1-11e1-9a37-001a4bcf887a.html>) KA

Airline carriers are reluctant to take on the costs associated with upgrading planes to accommodate the Next Generation Air Transportation System because there is no clear funding stream for the project and there is disagreement about its benefits, according to a study by a Washington, D.C., think tank. The study by the Eno Center for Transportation, a nonpartisan group that leads professional development in the transportation industry, found four key barriers to implementing the federal program known as NextGen: n Uncertainty about the program’s benefits; n Uncertainty about the Federal Aviation Administration’s ability to deliver the program; n Lack of a clear source of funds for NextGen; n And operators’ reluctance to invest in NextGen equipment. NextGen refers to a series of initiatives that will modernize the air traffic control system, transforming it from a radar-based system to a more-efficient satellite-based program. The cost of the upgrades is projected at about $40 billion — with half shouldered by the federal government and half by the airlines — and they are not expected to be complete before 2025.

### Uniqueness Trick

#### Squo should have triggered the link to the DA—airlines are already starting to equip

Peterson 7 (Barbara S., Popular Mechanics, *End of Flight Delays? FAA’s GPS Fix Could Bust Sky Gridlock*, 7/20/7, http://www.popularmechanics.com/technology/aviation/safety/4219569) LA

Several airlines aren't waiting for government action: Cargo carrier UPS Airlines has already equipped nearly 300 of its planes and its main airport hub in Louisville, Ky., with ADS-B technology. "It allows us to do simultaneous approaches to parallel runways, which we couldn't do with existing surveillance," says UPS director of operations Karen Lee. "It leaps the old technology by 15 generations." By shortening flight times and using more efficient approach paths, UPS expects to save about 800,000 gallons of fuel annually. Next year, Southwest will install a system similar to that used by Alaska Air. Southwest is forecasting big fuel savings when it re-equips its fleet of 520 737s next year, because pilots will be able to throttle down to near idle power during a constant descent, staying a specific distance behind the plane ahead in what UPS's Lee describes as "beads on a string." At a busy airport with ADS-B, the landing capacity for a single runway could increase by 25 percent, handling a plane every 45 seconds. To passengers sitting on the tarmac this summer, delayed yet again, that day can't come too soon.

#### NextGen has funding now but it has to compete with other projects—makes it very politically contested

Fujisaki 12 (Norm, Metron Aviation, *FAA Reauthorization:Trying to Get 10 Pounds into a 5 Pound Bag?*, 3/22/12, http://www.metronaviation.com/blogs/tasking-nextgen/2012/03/22/faa-reauthorizationtrying-to-get-10-pounds-into-a-5-pound-bag/) LA

The Reauthorization is interesting from several perspectives. It directs the Secretary of Transportation to give budgetary priority to NextGen projects. Of course, in reality, there is only so much latitude that the Secretary of Transportation and the FAA Administrator have. They can request, but the appropriators in Congress are the ones who determine how much funding is provided and where it is allocated. In a constrained budgetary environment, which this is, there is never enough funding to go around. Aviation will have to complete with every other government agency and public need.

## \*\*\*Solvency\*\*\*

### Loan Guarantees k2 implementation

#### [1AC] Civil aviation drives the economy and NextGen is needed—Loan Guarantees are the only way to solve

Blakey 11 (Marion C., Reporter for The Hill, *The Future of NextGen*, 2/15/11, http://thehill.com/blogs/congress-blog/economy-a-budget/144119-the-future-of-nextgen) LA

The House and Senate have each declared passage of a new FAA Authorization bill a top legislative priority, very welcome news after more than three years of short-term extensions. Air transportation is a proven economic engine; passage of this bill is an investment in our nation’s economic recovery.  The U.S. air transportation system has been the world’s gold standard for more than half a century. But to remain so, we need to bring our system into the 21st Century. Air service demand will return to pre-recession levels, but along with the return of that demand will come the return of gridlock—you can count on it. The best means of addressing the gridlock to come is acceleration of the full deployment and implementation the Next Generation Air Transportation System. That makes funding NextGen a government investment, not government spending. Even in these tough economic times, it makes more sense to accelerate NextGen than slow it down. Cutting NextGen will ultimately cost the government and our economy much more than it will save.  One of the larger challenges facing our ability to realize NextGen’s enormous benefits is the issue of establishing a sound business case for equipping civil aircraft with upgraded avionics systems. Quite frankly, without equipage there is no NextGen.  Innovative and careful structuring of government support for equipage can help resolve the obstacles to full implementation of NextGen. However, with the nation’s need to address the growing federal deficit, it is important also to look at ways to leverage the available private-sector capital markets.  To this end, AIA recommends language in the FAA Reauthorization bill that encourages funding equipage with the participation of private-sector investment capital. FAA should have the authority to enter into government-guaranteed loan arrangements that can be used in innovative ways to incentivize the retrofitting of commercial and general aviation aircraft with NextGen avionics equipment.  Critical to leveraging available private-sector capital markets is reducing risk to stimulate investment. A key message from industry throughout the FAA Reauthorization deliberations is the need for government accountability for achieving progress. FAA must establish a set of progress metrics so that the administration, the Congress, industry stakeholders and the public can measure and track the operational improvement that is actually being achieved by the program. These metrics need to track performance outcomes, not just activity. Both industry and the regulators must be capable of determining whether efforts are actually improving safety, capacity and efficiency.  A big part of NextGen are the thousands of new satellite-based procedures that allow more efficient takeoffs and landings. All these airspace procedures must be designed and implemented, and most will require an environmental assessment. The National Environmental Policy Act process can be extremely protracted and time-consuming. Given the volume of expected airspace redesigns and the immediate economic and environmental benefits their implementation will provide, AIA recommends including NextGen-related airspace redesigns in the Airport Streamlining Approval Process as defined in Section304 of Vision 100 and an FAA-EPA interagency review to produce a more streamlined process.  With a streamlined NEPA process, new flight tracks and procedures will be implemented expeditiously. FAA estimates these satellite-guided procedures will be quieter, reduce delays and save fuel. By 2018, these procedures will save aircraft 1.4 billion gallons of fuel, which means they will emit 14 million fewer tons of CO2. To implement these procedures even quicker, AIA recommends the FAA certify third- party procedure development. Far more procedures could be put in place in less time and each would be checked and approved by FAA inspectors.  The civil aviation industry is an economic engine that contributes positively to the U.S. trade balance, creates high paying jobs, keeps just-in-time business models viable and connects all Americans to friends, family and business opportunities. All of that economic activity is funneled through the nation’s air traffic system. Full NextGen deployment requires the production and installation of hundreds of thousands of high-tech avionics products assembled by skilled workers in U.S. factories and maintenance stations in every state.  Lack of an authorization bill has kept NextGen and other critical programs on life support. It’s time to give FAA the tools to keep our nation the leader in civil aviation.

#### [1AC] Full commercial involvement is key to fully solving the case

Dyment 11 (Michael J., NextGen Equipage Fund, *Transitioning to Satellite-Based Air Traffic Control*, Geospacial Today 9/15/11, LexisNexis) LA

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.

#### **Stable and predictable funding is key to NextGen solving efficiency and security concerns**

ACI 11 (Airports Council International, *Air Traffic Modernization*, http://aci-na.org/static/entransit/Air%20Traffic%20Modernization%20Fact%20Sheet.pdf) LA

THE NEED FOR AIR TRAFFIC MODERNIZATION IS AN AIRPORT PRIORITY Maximizing the safe and efficient use of the airspace and airports is critical to accommodating future aviation demand. If the aviation industry is to meet the challenge of Federal Aviation Administration (FAA) forecasts that predict one billion passengers by 2015 and a doubling of today’s passenger levels by 2025, it will require substantial improvements and investments in the air traffic control system, just as it will require federal and local capital investments in airport infrastructure. Airports believe that these investments require that the FAA have a stable and predictable funding system to ensure sufficient capital resources are available. WHAT IS NEXTGEN? The Next Generation Air Transportation System (NextGen) includes a set of FAA initiatives that will apply new technologies, set standards and develop new procedures that together will transform today’s ground-based air traffic control system to a system based on a combination of ground and satellite navigational capabilities having far greater precision and capability. Once the core elements of NextGen are in place, air carriers, general aviation and the military will be able to use the airspace and airport operating environments in a safer, more sustainable and efficient manner, helping to enable the FAA and aviation industry to continuously improve performance and meet the challenges of the future. HOW DOES NEXTGEN ADDRESS AIRPORT NEEDS? NextGen would increase capacity in the enroute and terminal environments, particularly in weather conditions that today cause en route and terminal airspace capacity to drop, resulting in delays and cancellations and less than desirable passenger experiences. If investments are not made, and the full benefits of NextGen are not realized, airspace capacity will be insufficient to meet forecasts and system disruptions will become routine. Following are three areas where air traffic modernization and NextGen can play important roles: Airport Safety: As aircraft traffic increases, surface movements of aircraft and other vehicles on the airfield grows significantly. This raises the potential for accidents and equipment damage on runways and taxiways as well as for traffic gridlock on the airfield. It is vital that both air traffic controllers and air crews have updated information available to them that accurately determines the position and identification of aircraft and surface vehicles so that safety and airfield throughput can be maintained. Airspace: Today, much of the airspace surrounding our nation’s most intensively used airports is congested, limiting system capacity. Without modernization, this challenge will only increase as the projected numbers of commercial and general aviation aircraft accessing congested airspace is forecast to grow significantly. By reducing aircraft spacing and separation requirements and better managing traffic in, out and within busy terminal airspace, NextGen will safely permit more aircraft to operate in these areas and be routed to the appropriate airports in the region. • Airport Capacity: Many of busiest airports today have runway configurations that do not permit independent arrival and departure streams when aircraft are operating under Instrument Meteorological Conditions (IMC) and flight minimums must be raised. As a result under IMC conditions aircraft spacing and separation must be increased, airport arrival and departure rates drop, and the system is forced to queue, divert, delay or cancel flights. By enabling pilots and controllers to more accurately identify the exact position of aircraft, more precise routes in and out of airports can be flown, increasing throughput during almost all weather conditions.

#### Loan guarantees key to NextGen—spurs airline involvement

Halsey 11 (Ashley, Reporter for the Washington Post, “Antidote To Gridlock May Not Get Off Ground,” http://o.seattletimes.nwsource.com/html/boeingaerospace/

2015510103\_airtraffic05.html) KGH

Case for investing Making the business case that will persuade airlines to take the financial plunge is at the core of the debate. The single biggest incentive to airlines would be persuasive evidence of an immediate return on their investment in fuel savings and fewer delays. One suggestion has been to allow NextGen-equipped planes to land and take off first. Given that a jetliner can burn through $1,000 in fuel in less than a half-hour, circling the airport in a holding pattern becomes an expensive proposition. With most U.S. airlines operating in the red, Chew says few will take the investment leap unless the government has more "skin in the game" than promises and deadlines. Chew is leading an investment group that proposes to lend the airlines money to equip their planes, with a repayment plan that is deferred until the FAA delivers the system. The key, however, is that the federal government must agree to make loan payments if the FAA misses its deadlines. "If the government OKs loan guarantees for equipage, it would jump-start the process," Chew said. "The airlines are not going to want to make any kind of payments until the FAA is ready to deliver. If they don't deliver by 2018, then the airlines are off the hook for these payments." Chew says the FAA and Congress have been receptive to that form of loan guarantee, but so far without committing to it. With Congress in a cost-cutting mood, loan guarantees may provide a viable alternative to slashing a program that virtually everyone supports.

#### Loan guarantees need FAA action

Poole 2/24/12 (Robert, Dir. Of Trans. Policy and Searle Freedom Trust Transportation Fellow, “FAA Reauthorization, Aviation Emissions Trading War, ATC User Fees, Europe’s Next-Generation Milestones, ERAM Woes and FAA Shortcomings,” http://reason.org/news/printer/air-traffic-control-reform-news-90) KGH

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.) Given this dismal outlook, one of the few good elements of the bill is its approval of provisions aimed at facilitating equipage of aircraft to operate in a NextGen environment. For example, last year Nexa Capital Partners proposed an innovative NextGen Equipage Fund. This is a creative effort to resolve the conundrum faced by airlines when deciding when to make the capital expenditures to equip their planes with systems to interface with NextGen systems such as ADS-B, DataComm, etc. Airlines (and business jet operators) rightly fear that if they act too soon, FAA will fail to deliver operational programs that interface with their new onboard gear. So the Equipage Fund would buy the hardware from suppliers and get it installed on aircraft fleets, but the aircraft operators would not start making lease payments until the FAA capability was operational (i.e., they would start paying only when they started to get benefits from the new systems). That model would leave the Equipage Fund holding the bag in the event of FAA delays. Fortunately, the bill provides for equipage loan guarantees from the government. That should enable the Equipage Fund (and others) to get moving on NextGen equipage—assuming DOT and FAA make it a priority to get the loan guarantee provision up and running.

#### FAA needs congress for loan guarantee program

Lynch 12 (Kerry, Reporter from Aviation Daily, “FAA Must Look Beyond Congress For NextGen Equipment Funding”) KGH

The tough budget environment on Capitol Hill makes it highly unlikely that Congress will provide assistance for NextGen equipage beyond the approval for FAA to create a public-private loan guarantee program, a Senate aide told attendees of the RTCA 2012 Symposium. Rich Swayze, a staff member on the Senate aviation operations, safety and security subcommittee, notes the loan guarantee program measure–included in the most recent FAA reauthorization bill– as «very difficult» politically because lawmakers had to justify any costs that may come with it. FAA previously said it needs Congress to appropriate funding for the program, and also may need further legal authority. This will hinder its ability to move forward with a loan guarantee program, notes Jens Hennig, VP-operations for the General Aviation Manufacturers Association (GAMA).

#### Loan guarantees lower costs

Schofield 12 (Adam, Reporter for Aviation Week, “NextGen Emerges,”) KGH

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 loan guarantees key to persuading aviation industry

**Lynch 12 (Kerry, Reporter for Aviation Daily, “FAA Considers Loan-Guarantee Options For NextGen Equipage,”) KGH**

FAA must expedite the incentives and provide flexible loan-guarantee programs to persuade the aviation industry to make the large investments in aircraft equipment needed for NextGen, industry leaders told FAA officials last week. The agency held the first of a series of meetings on possible incentives for commercial and general aviation operators. Congress recently gave FAA the authority to establish an equipage incentive program for U.S.-registered aircraft, and FAA says it must examine «various methods of reducing the government’s risk» while determining industry interest. The agency plans to weigh public input on such a program throughout the summer and expects to host future meetings before setting up a public-private program. Agency officials also caution that Congress must still provide funding for the program through the appropriations process before FAA can move ahead with it.

### **Loan Guarantees good—efficiency**

#### Loan guarantees save money and time

Pasztor 11 (Andy, Sr Special Writer at the Wall Street Journal, “New Way to Upgrade Air Control,” http://www.nexacapital.com/press\_releases/WSJ.com%20Pasztor%202011-0404.pdf) KGH

Aviation-equipment supplier ITT Corp. and a private-equity partner are preparing a loan-guarantee fund of more than $1.5 billion to help upgrade the nation's air-traffic control system, a novel financing plan aimed at ending an impasse over how airlines will purchase new equipment. On Monday, ITT and Nexa Capital Partners LLC are expected to announce proposals to use about $150 million in federal loan guarantees as seed money to establish a larger, self-sustaining fund to pay for installing upgraded equipment on potentially thousands of U.S. airliners. The goal is to help carriers fund their piece of a delay-plagued effort by the Federal Aviation Administration to create a satellite-based traffic control network. The new network would allow aircraft to fly shorter, more direct routes, thereby saving fuel and reducing congestion, and give pilots greater leeway in choosing routes and keeping their planes separated from nearby traffic. The system, dubbed NextGen, is a satellite-based project slated to replace the nation's current air-traffic control system, which is based on decades-old ground-radar technology and doesn't make the most efficient use of airspace or runway capacity. Expected to cost more than $40 billion overall, the next-generation solution has been stymied by a persistent reluctance by airlines to invest billions of dollars to upgrade airborne devices. Now, after years of delays and futile industry lobbying for direct federal aid, ITT and its partner believe they have found the key to overcoming airline resistance. ITT's objective "was to put forward a positive alternative" for bridging the funding gap, said John Kefaliotis, the company's point man on the topic. In discussions with senior FAA officials, he said in a recent interview, "what we get is interest and agreement that it is a viable concept." Executives at JetBlue Airways Corp, Alaska Air Group Inc. and the United Airlines unit of United Continental Holdings Inc. have also expressed support for the idea, according to people familiar with the matter, and have engaged in detailed discussions with the fund's creators. No final agreements are in place, but airline executives generally like the concept because the equipment will be leased and therefore won't add debt to their balance sheets. Senior FAA officials, including Hank Krakowski, who heads the agency's air-traffic control organization, have also been briefed about the prospective fund and informally endorsed the concept, according to the people familiar with the discussions. The FAA's leadership looks favorably on ITT's initiative partly because it avoids adding substantially to the government's deficit. The FAA is reviewing various options, and on Sunday, an FAA spokeswoman declined to comment. "It takes into account today's political realities" by focusing on a "private-enterprise approach instead of a grand government giveaway," said James May, a consultant advising ITT and a former head of the Air Transport Association, which represents the country's largest carriers. Monday's announcement is particularly timely because as part of a broad FAA reauthorization bill, the House on Friday adopted a provision prodding the FAA to embrace such arrangements. Lawmakers voted to require the agency to "leverage the use of private-sector capital" to "expedite the equipage of" NextGen technologies. Without a breakthrough, it could take until the end of the decade or longer for industry to purchase the equipment in traditional ways.

### NextGen Solves—All

#### **NextGen solves the economy, environmental concerns, and improves aviation security**

JPDO 9 (The Joint Planning and Development Office, *NextGen Topics*, http://www.jpdo.gov/Nextgen\_Topics.asp) LA

650 Million Passengers and Growing The demand placed on America's air transportation system has grown significantly over the past 30 years. In 1980, the system carried 281 million passengers. In 2008, it handled nearly 650 million passengers, according to the Department of Transportation. One of the most important benefits of the Next Generation Air Transportation System (NextGen) will be the increase in airspace capacity. Many of the core technologies used in today’s system were first developed during World War II. If the system is to adjust to future demands, new aircraft types, and changing business models, then it has to be updated and transformed to make it more scalable and flexible. Aviation is Vital to the Economy Our nation’s economy relies on an air transportation system that moves both people and goods from domestically and throughout the world safely and efficiently. In fact, 5.6% of our economy is represented by the aviation industry, according to the Federal Aviation Administration (FAA).  In an October 2008 report entitled “The Economic Impact of Civil Aviation on the U.S. Economy”, the FAA estimates that by 2022, the failure to implement the Next Generation Air Transportation System (NextGen) would cost the US economy $22 billion annually in lost economic activity. Even as early as 2015, an FAA simulation shows that without some of the initial elements of NextGen, there will be far greater air traffic delays than currently experienced, according to the “NextGen Q & A” fact sheet at www.faa.gov. NextGen is Efficient and Green A key objective of the Next Generation Air Transportation System (NextGen) is to develop environmental protection that allows sustained aviation growth. In this regard, the JPDO is promoting “green goals.” Specifically, the JPDO and its government and industry partners are focusing on four major environmental concerns: aviation noise, air quality, water quality, and fuel consumption. By using existing air and ground space more resourcefully, NextGen will be able to increase the scalability and efficiency of the system. This will mean reduced delays, increased capacity (in terms of the number of flights), and a reduction in the environmental impact of aviation through improved operations and advanced engine and airframe design. Through more efficient routing, optimized descent approaches, reduced time spent idling on the ground, and other operational improvements, NextGen will also provide substantial environmental benefits. Securing America’s Air Transportation System The Next Generation Air Transportation System (NextGen) technologies will substantially improve our nation’s ability to manage, monitor, and secure the nation’s air transportation system. NextGen will give those charged with this essential mission the tools to work in real time while relying on the same operational picture. This will create an entirely new paradigm for the way America manages the security of its airspace. The benefits will be substantial. For example, with NextGen, it will be possible to immediately view data on the current operation and intent of any aircraft in the system.  In the event an aircraft deviates from its flight plan or begins to operate in a suspicious manner, this information will be instantly available. NextGen’s rapid exchange of information and an integrated approach to security will make it possible to identify aviation workers, travelers, and cargo that pose a potential threat and prevent them from gaining access to the air transportation system through pre-screening/credentialing, on-site screening.

#### NextGen stimulates the economy, mitigates warming, and contributes to competitiveness. Expanding the system is key

Paaswell 9 (Dr. Robert, Exec Director of University Transportation Research Center Region 2, *NextGen: the Future of Aviation Symposium*, 2/25/9, http://www.panynj.gov/airports/pdf/nextgen-symposium-proceedings-02-25-09.pdf) LA

On February 25, 2009, the Port Authority of New York and New Jersey (PANYNJ) and the Region 2 University Transportation Research Center (UTRC) convened a half-day symposium “NextGen: The Future of Aviation.” Attended by approximately 300 individuals from around New York State and the nation, the symposium generated support and a call to action for a faster deployment of the Federal Aviation Administration's Next Generation Air Transportation System - called NextGen, which promises to improve the current antiquated air traffic control system. The aviation industry is vital and fundamental to our national economy and to its continued level of prosperity. Over 11 million people work in aviation related jobs; over $1.2 trillion of economic activities are generated from it. According to the Federal Aviation Administration (FAA), the industry contributes approximately 5% of the United States Gross Domestic Product (GDP) and there is a direct link between aviation growth and the GDP growth. Unfortunately, the National Airspace System (NAS), the backbone of the aviation industry, is at the saturation point, with antiquated ground-based radar technologies no longer able to accommodate the growth of U.S. aviation. These constraints are causing flight delays in the U.S. aviation system, posing a threat to both our regional and national economic growth and prosperity. It is estimated that the delays in the airspace system will only grow worse as the number of passengers flying each year in the U.S. continues to rise. Delays resulting from these constraints of the current NAS are very costly in terms of lost time to the traveling public, loss of productivity, wasted fuel, and pollution on the environment. Flight delays will continue to be costly if no action is taken. The problem of flight delays is especially acute in the New York metropolitan area and their cascade effects impact flights at airports throughout the global system. The New York Region’s three major airports have consistently ranked among the nation’s worst in on-time performance. These airports, which handle about one-third of the nation’s flights, are ultimately responsible for approximately three-quarters of nationwide delays. According to Grounded: The High Cost of Air Traffic Congestion, a report released by the Partnership for New York City, the annual cost of flight delays caused by air traffic congestion at the New York Region’s three major airports was more than $2.6 billion in losses to the regional economy in 2008. If no action is taken, it will total a staggering $79 billion over the eighteen year span between 2008 and 2025. By 2025, approximately 40 million passengers that would have flown in the absence of caps will be displaced and turned away from our region. As a result, the New York Metropolitan Region risks to lose its status as a thriving center of international business, finance and innovation. With insufficient investments on transportation infrastructure, the United States is becoming less important in the global arena in numerous ways. The European countries with a program such as SESAR (Single European Sky ATM Research), understand the importance of investing in the aviation infrastructure to support their economic, quality of life, environmental and energy goals. Others around the world are moving ahead and outpacing the USA. If we do not determine a way to fund these investments in aviation infrastructure, New York, as well as the U.S. will lose its standing in the global arena. There are no inexpensive solutions to the current problem. The Port Authority of New York and New Jersey (PA) understands the challenge and fully appreciates the level of investments needed to keep our regional airports competitive. The PA has made significant investments to enhance capacity at its airports to meet air travel demand. The PA has rededicated capital funds for major projects to improve runway and taxiway capabilities – projects with the potential to add efficiency to airport operations and reduce delays. It has invested in new technologies which will allow efficient movements of aircraft in its facilities and made improvements to customer service for travelers. The PA also acquired a new facility – Stewart International Airport in Newburgh, NY – as a fifth regional airport. The modernization and expansion of this airport is expected to address the growing regional demand for air travel and modestly alleviate delays at the three major airports. The PA recognizes, however, that to fully meet the expected air traffic demand, more ambitious investments from our federal leaders will be needed, which will require strong public support for capacity expansion of the national airspace system. In February 2007, the Federal Aviation Administration (FAA) announced its NextGen program, which envisions the use of advanced satellite-based navigational systems across the national airspace. The program is an important technological upgrade that will, over time, provide significant enhancements to the movement of air traffic. NextGen is an umbrella term for the ongoing, wide-ranging transformation of the United States’ national airspace system. At its most basic level, NextGen represents an evolution from a ground-based radar system of air traffic control to a satellite-based system of air traffic management. According to the FAA, when fully implemented, NextGen promises to alleviate delays at the nation's most congested and delay- prone airports by safely allowing more aircraft to fly more closely together on more direct routes. This will reduce delays and provide unprecedented benefits for the environment and the economy through reductions in carbon emissions, fuel consumption, and noise. The FAA estimates that by 2018, with only one-third of the proposed NextGen changes, nationwide total flight delays will be reduced by 35 to 40 percent, saving almost a billion gallons of fuel.

### NextGen Laundry list

#### Immediate federal action is key—it massively improves efficiency across the board

DeCota 9 (William R., Aviation Director @ Port Authority of New York/New Jersey, *NextGen: the Future of Aviation Symposium*, 2/25/9, http://www.panynj.gov/airports/pdf/nextgen-symposium-proceedings-02-25-09.pdf) LA

More than a single system, NextGen is a portfolio of technology, equipment, procedures and policies aimed at facilitating the largest airspace transformation in the history of aviation. NextGen makes improvements in four basic areas: navigation and surveillance, communication, back-bone information systems, and weather management. First, satellite navigation and control improvements are made to the situational awareness of both the pilot and the controller, with reliable, accurate and real time information on the location of aircraft. It introduces digital non- voice communication for routine communication, reducing “chatter.” It improves the computer network systems that are used to transfer information along the entire national airspace system, ensuring a faster, more streamlined and accurate exchange of information. And finally, it addresses the single most significant cause of delays, the weather. It provides better flight planning that incorporates real-time weather information and provides new technologies that permit aircraft operations to continue in low visibility conditions that currently cause flight delays. Satellite Based Navigation and Surveillance Automatic Dependent Surveillance - Broadcast (ADS-B) The cornerstone of NextGen is a new, aviation-specific application of GPS technology called Automatic Dependent Surveillance - Broadcast (ADS-B). ADS-B uses GPS signals both to transmit precise aircraft location information for use by air traffic controllers and other aircraft, and to receive precise location information about other aircraft. This information is provided to flight crews via a cockpit display. But the benefits of ADS-B are not only experienced in the air. The technology is also being deployed at airports in support of systems designed to eliminate ground-based collisions, or “runway incursions.” Satellite Based Navigation and Surveillance Area Navigation/Required Navigation Performance (RNAV/RNP) Another element used for navigation en-route is the Satellite Based Navigation and Surveillance Area Navigation/Required Navigation Performance (RNAV/RNP). With the introduction of new performance standards, this technology will one day allow pilots to rely instead on a combination of onboard- and satellite-based navigation aids to fly in a much straighter line from Point A to Point B while avoiding turbulent weather. Area Navigation (RNAV) is a method of air navigation, called performance based navigation that allows an aircraft to choose any course within a network of navigation beacons, rather than navigating directly to and from the beacons. As Mr. DeCota said , “you can get to EWR from midtown by driving east to the FDR, then north to 125th St, then west to the Harlem River Drive, then north to the GWB, then west to the turnpike. You will get there. Or you could just go through the Lincoln Tunnel and save yourself time and fuel.” Both RNAV and RNP, like the other tools of NextGen, allow aircraft to safely land as quickly and efficiently as possible. RNP is currently being implemented in Australia and parts of the US and more could be done to realize the benefits of RNP sooner rather than later. Satellite Based Navigation and Surveillance Ground Based Augmentation System (GBAS) For departures and landing at the airport, NextGen will improve the efficiency of airport operations. Satellite Based Navigation and Surveillance Ground Based Augmentation System (GBAS) is one example of a technology that is being implemented right now at one of our region’s airports. It is basically a satellite based type of instrument landing system. Instead of using radio waves, the system has a series of “ground stations” consisting of antennas and receivers around the airport (which is why it is called “ground based”) and a VHF “datalink” to navigational satellites that communicate with each other on aircraft position. It’s called an “augmentation system” because it uses sensors to introduce information into the satellite data that improves the accuracy, availability and reliability of the satellite signal with great precision. At Newark, the PA recently partnered with the FAA and Continental Airlines to begin use of GBAS at a major US airport for the first time commencing this summer. Controller Pilot Data Link Communications (CPDLC) Another important element of the airspace system is communication between pilot, controller and airport. Today, controllers and flight crews communicate solely by voice. NextGen will improve and expand the potential of voice communication. It will also introduce new, more reliable digital text-based technology like CPDTI or Controller Pilot Data Link Communications. Just like text messaging, it allows digital messages to be sent between controllers and pilots. Therefore, instead of having to pick up the radio for every communication, the pilot and controller can send precise messaging to communicate routine matters. And just like ADS-B, CPTDI also works where radio communications is difficult-to-use such as over the ocean. Data Communications will improve safety and efficiency by taking over many tasks now accomplished through voice communications, which are labor intensive and susceptible to error. System-Wide Information Management Systems (SWIM) Another key technological improvement will be the backbone of these technology systems. System Wide Information Management Systems, or SWIM, is an information sharing system for the national airspace system. SWIM is a “mini-internet” information platform that will provide surveillance, weather, and flight data, as well as aeronautical and NAS status information, to users throughout the system. SWIM is an essential part of NextGen, since the safe and efficient use of airspace depends on how well the different parts of the airspace system communicate with each other. By improving the network of information, SWIM will lower information costs, increase speed to establish new systems, increase situational awareness among all users, increase the FAA’s ability to handle traffic volumes, and improve the ability to share information with European providers. Weather Management NextGen Network Enabled Weather (NNEW) Weather is the single largest cause of delays. It constitutes 70 percent of the delays in our nation’s airspace. One of the biggest benefits of NextGen technologies is that they will help to reduce weather related delays. One of the most significant ways it will accomplish this, is through the NextGen Network Enabled Weather system (NNEW). NNEW will provide better, more consistent weather forecasts, particularly for severe conditions that cause delays like convective storms and icing conditions. With this system, changes to weather information will be rapidly disseminated to all users. This will allow pilots, airports and air traffic controllers to make better flight plans, adjust schedules more quickly, accurately and manage air traffic better as weather conditions change over time. Users will access the information in NNEW through a virtual gateway called the 4 Dimensional Weather cube, which will be similar to a website that provides Aviation weather information in terms of latitude, longitude, height and over time. With it, air traffic controllers and pilots will be able to display up-to-the-minute, location-specific weather information. Mr. DeCota ended his presentation by citing some potential benefits of NextGen. NextGen promises huge benefits to the air traveler. First, it will significantly improve the efficiency of air traffic control. It will provide more information to pilots and better information in the tower, resulting in a sharing of decision making between the ground and the cockpit. The improvements to the accuracy of the information will translate into significantly more overall efficiency throughout the system, helping airlines to develop flight schedules, airports to manage aircraft at their facilities, and air traffic controllers to better respond to traffic demands. All of this translates into the ability to shorten the spacing between aircraft. Spacing, which is typically over 3 miles, is necessary because of the current inefficiencies in the system. With improved accuracy enhancements, this spacing can be shortened which will translate into significant capacity gains, while maintaining safety as the number one priority. Finally, he stated that implementing NextGen is ambitious, but that it is also a national issue to be tackled by Washington. It should be the Federal Government’s priority to implement it sooner rather than later.

### FAA Good—Oversight

#### FAA succeeds in oversight—multiple warrants

GAO 5 (Government Accounting Office, *FAA's Safety Oversight System Is Effective but Could Benefit from Better Evaluation of Its Programs' Performance*, http://www.gao.gov/products/GAO-06-266T) LA

The U.S. commercial aviation industry has an extraordinary safety record. However, when passenger airlines have accidents or serious incidents, regardless of their rarity, the consequences can be tragic. The Federal Aviation Administration (FAA) works to maintain a high level of safety through an effective safety oversight system. Keys to this system are to: (1) establish programs that focus resources on areas of highest safety risk and on mitigating risks; (2) provide training and communication to ensure that inspectors can consistently carry out the agency's oversight programs; and (3) have processes and data to continuously monitor, evaluate, and improve the numerous oversight programs that make up the safety oversight system. This statement focuses on these three key areas and is based on recent GAO reports on FAA's inspection oversight programs, industry partnership programs, enforcement program, and training program. FAA's safety oversight system includes programs that focus on risk identification and mitigation through a risk-based system safety approach, leveraging of resources through designee and partnership relationships, and enforcement of safety regulations, but the benefits of these programs are not being fully realized. For example, FAA's system safety approach includes the addition of a program that emphasizes risk identification to its traditional inspection program for overseeing some airlines, which is not based on risk. However, it is likely that the benefits of this approach could be enhanced if the inspection workload was not as heavily oriented to the traditional inspection program's non-risk based activities. FAA leverages its resources through its designee programs, in which designated individuals and organizations perform about 90 percent of certification-related activities, and through its industry partnership programs, which are designed to assist the agency in receiving safety information. An outgrowth of FAA's inspection process is its enforcement program, which is intended to ensure industry compliance with safety regulations. However, GAO has expressed concerns that this program may not be as effective as it could be in deterring violations. FAA has made training an integral part of its safety oversight system, but several actions could improve the results of its training efforts, including ensuring that inspectors are well-trained in FAA's system safety approach and have sufficient knowledge of increasingly complex aircraft and systems to effectively identify safety risks. FAA has established mandatory training requirements for its workforce and designees. We have reported that FAA has generally followed effective management practices for planning, developing, delivering, and assessing the impact of its technical training for safety inspectors. GAO has found inadequate evaluative processes and limitations with data for FAA's inspection programs, designee programs, industry partnership programs, and enforcement program. For example, FAA lacked requirements or criteria for evaluating its designee programs. In another example, FAA's nationwide enforcement database is not as useful as it could be because of missing or incomplete historical information about enforcement cases.

## \*\*\*Economy Advantage\*\*\*

### **NextGen Solves Economy**

#### **NextGen is key to aviation and the economy**

Bin Salam 12 (Sakib, Eno Center for Transportation, *NextGen: Aligning Costs, Benefits and Political Leadership*, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf) LA

The aviation system that is part of the life-blood of our economy is poised to face rising demand with limited additional capacity and outdated technology. This could put considerable stress on the system in terms of con- gestion and efficiency. The Next Generation Air Transportation System (NextGen) represents a series of incre- mental policies, procedures, and technological changes to modernize the air traffic control (ATC) system into a more efficient, state-of-the-art satellite-based system. On the technology side, NextGen is composed of two main components: aircraft based equipment that re- cords and transmits the exact location of the aircraft using Global Positioning System (GPS), and ground based infrastructure that can receive and analyze the GPS data. Infrastructural improvements also entail devising more direct and fuel-efficient routes, and upgrading the computer and backup system used at 20 Federal Avia- tion Administration (FAA) air traffic control centers nationwide. The infrastructure implementation is currently in the hands of the FAA and funded by the Airport and Airway Trust Fund (AATF), while aircraft equipage is expected to be paid for by the operators. On-board equipage could allow improved decision-making capabilities and accessibility during adverse weather, as well as better data communications between cockpit and ATC. This more precise system has the potential to reduce the minimum aircraft separation standard and allow more direct flight patterns, thus decreasing fuel consumption, carbon emissions, and congestion.

#### [1AC] NextGen is key to prevent global economic collapse

AIA 11 (Aerospace Industries Association, *Civil Aviation*, http://www.aia-aerospace.org/assets/ip\_civil\_2011.pdf) LA

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 gross domestic product 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, generate jobs, save fuel, reduce CO2 emissions and, most importantly, improve system safety. To do this most effectively, AIA recommends that:

#### NextGen is key to solve inevitable air traffic control system collapse

Williams 9 (Genevra, JD Candidate @ SMU, *GPS For the Sky: A Survey of Automatic Dependent Surveillance-Broadcast (ADS-B) and it’s Implementation in the United States*, Journal of Air Law and Commerce, 74 J. Air L. & Com., LexisNexis) LA

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

#### **NextGen is key to solve system unreliabilities which can cause ripple effects**

Williams 9 (Genevra, JD Candidate @ SMU, *GPS For the Sky: A Survey of Automatic Dependent Surveillance-Broadcast (ADS-B) and it’s Implementation in the United States*, Journal of Air Law and Commerce, 74 J. Air L. & Com., LexisNexis) LA

It is against this backdrop that radar technology from World War II currently manages flight traffic in U.S. airspace. 60 Radar works by line of sight and, consequently, an air traffic control center can only manage a plane for as long as it can see it. 61 Like a game of hot potato, air traffic controllers must pass an airplane from control station to control station across the country until it reaches its destination. 62 The technology is further limited in that it can take up to thirty-six seconds to accurately identify an aircraft's position, 63 and sometimes it is difficult to distinguish between planes and other "clutter" like birds or heavy weather. 64 Furthermore, pilots do not even possess the situational awareness, albeit flawed, that controllers have. 65 In general, pilots in radar-controlled airspace must be steered by air traffic control, both to the necessary navigational direction and to the required horizontal position in the airspace. 66 They must ask "Mother may I?" if they ever want to deviate from their prescribed path. 67 The uncertainty and limitations of radar mean that air traffic controllers must build in a wide cushion between aircraft in flight; a minimum of five miles must be maintained between planes flying at the same horizontal level. 68 These "wide safety buffers" 69 reduce the number of planes that are allowed to travel in a given section of air space and slow down the takeoff and landing process. 70 This also means that pilots are confined to a [\*481] network of "highways in the sky." 71 Rather than flying the most direct route between destinations, they must navigate our air space via a web of flight paths designed to keep airplanes separated, both vertically and horizontally. 72 Pilots generally must stick to these predetermined flight paths, and thus have little flexibility to fly a more direct route or to navigate around traffic jams. 73 These factors contribute to a flying environment which feels like it teeters at the brink of chaos every day. 74 For example, in August 2008, a computer breakdown at an FAA facility which processes flight plans caused hundreds of flights to be delayed, impacting all forty of the nation's major airports. 75 In another example from September 2007, the system that feeds radar data into the Air Route Traffic Control Center in Memphis, TN, brought a halt to all air traffic within a 250-mile radius, causing a "ripple effect in several airports" including Dallas, TX, and Nashville, TN, among others. 76 In July 2006, a vehicle crashing into a power pole caused a power outage at the Palmdale, CA, air traffic control facility, whose backup generator then malfunctioned, silencing the center for eighty minutes. 77 This caused an hour long delay of flights into and out of Southern California and triggered flight delays throughout the western United States and Canada. 78

#### [1AC] NextGen solves the economy—mitigates inevitable collapse

Moak 11 (Cptn. Lee, Prez of Airline Pilot’s Association*, Statement before SUBCOMMITTEE ON AVIATION COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE UNITED STATES HOUSE OF REPRESENTATIVES*, 5/10/11, http://www.alpa.org/portals/alpa/pressroom/testimony/2011/MoakTM\_10-5-11-written.pdf) LA

As the budget debate rages in Washington, everyone, from our President to the most liberal and conservative members of Congress, should agree that we need to cut programs that are not providing an acceptable return on our investment and support the ones that bring back more than we put in—those that grow the economy and create jobs. These are decisions that businessmen and women make in companies large and small every day. It’s fundamental to long-term success. This basic measure of smart business spending—return on investment—should be the same in government and industry. The challenge often lies in determining where the waste is and what will bring a good return. There is no serious disagreement on the smart investment in NextGen—it’s plain that funding NextGen will bring enormous returns to the U.S. economy for years to come and equally clear that funding should commence immediately. We need to get our economy moving again. The civil aviation industry has a critical role to play. Civil aviation, directly and indirectly, contributes more than $1.3 trillion to the 2 U.S. economy each year—or 5.2 percent of gross domestic product. The value of air travel—leisure and business—is a critical pillar of the economy. Hotels and resorts, conference centers, rental car companies, tourist attractions, and just-in-time deliveries are not viable without reliable, efficient, affordable air travel. In today’s economy—and even more so in tomorrow’s—millions of jobs depend on keeping the air travel system healthy. NextGen will increase capacity and efficiency while generating growth in our nation’s airlines, aviation companies, and suppliers. This will lead to job growth at a time when our nation needs it the most.

### Loan Guarantees k2 Economy

#### **Loan guarantees improve economy**

NextGen Fund 11 (“NextGen Equipage Fund Announces Public-Private Partnership,” http://www.nextgenfund.com/files/downloads/NEF\_Press\_Release\_2011-0404.pdf) KGH

The NextGen Equipage Fund (www.nextgenfund.com) will enable the retrofit of up to 75 percent of the U.S. commercial air transport fleet – including airlines and some general aviation aircraft – with NextGen technology such as ADS-B and data communications. The NextGen Fund’s innovative offering combines financing at competitive rates backed by loan guarantees with proven credit management practices that drive default risks to near-zero. The main advantage to the airlines and commercial operators is that they can equip for NextGen without a large cash outlay or adding more debt. Payments for the equipage would be deferred until specific NextGen services are delivered to the aircraft operators by the FAA. Encouraging broad equipage among commercial air transport is necessary to maximize the benefits delivered to all users. Said Jim May, former CEO of the Air Transport Association, “Airlines are not in a position to shoulder all the financial risks of buying and installing avionics based solely on government promises that the capabilities needed to enable NextGen will appear sometime in the future. This must become a public-private partnership.” According to the FAA, once fully rolled out NextGen stands to broadly benefit airlines, government and the U.S. economy at large, with as much as $40 billion a year in fuel and other cost savings. Airline passengers also stand to benefit from faster NextGen implementation, including decreased passenger delays and shorter flight times due to more direct air routes. “One of the larger challenges facing our ability to realize the enormous benefits that NextGen is poised to bring our nation, is the issue of establishing a sound business case for equipping airlines with NextGen compatible systems,” said Marion C. Blakey, president and CEO of the Aerospace Industries Association and former FAA administrator, in public testimony. “Aircraft equipage is just as much a part of our national airspace system infrastructure as airports, runways and satellites. The NextGen Equipage Fund is an innovative way to incentivize the retrofitting of commercial aircraft with NextGen avionics equipment. The time is now to encourage the involvement of private sector investment capital.”

### NextGen solves fuel

#### NextGen decreases fuel prices which are key to reduce airline costs

Bin Salam 12 (Sakib, Eno Center for Transportation, *NextGen: Aligning Costs, Benefits and Political Leadership*, http://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-paper.pdf) LA

The FAA maintains that NextGen will benefit operators by increasing fuel efficiency and reducing congestion, poten- tially saving the industry billions of dollars in the process. First the direct fuel savings are calculated, followed by the congestion savings to operators.  The current aviation system uses radar to scan through an area periodically and reports any nearby operating aircraft to ATC. The lack of continuous precise detection means that aircrafts must maintain a minimum separation distance of at least five miles in the en route airspace and three miles in the terminal airspace for safety. Moreover, airplanes are required to fly through predetermined air corridors similar to imaginary highways in the air, limiting en route flex- ibility, though this is a procedural requirement by the FAA and not necessarily due to the limits of existing technology. The precision of GPS would allow reduction in the aircraft separation standard, which would greatly enhance air traffic management and flow. NextGen’s Area Navigation (RNAV) would allow pilots to choose more direct and shorter routes, to their destination, assuming FAA develops appropriate procedures to allow direct navigation. This could result in substantial fuel savings. Another procedure through which NextGen would save fuel is during aircraft landing. Under the current system, an air- craft follows a fuel-intensive stepped descending approach where it descends to a lower altitude, levels off to a constant altitude, and then descends further by periodically altering engine power. Optimal Profile Descent (OPD) would allow the aircraft to glide continuously prior to landing instead of using additional engine power.9 By reducing fuel consumption, NextGen could provide relief to the airline industry’s fuel costs, one of the largest components of total operating cost. Airline profitability in recent years has been stifled in part due to substantial increases in fuel prices: from under $1/gallon between 2000- 2004 to over $2.20/gallon in 2010, including record prices of about $3/gallon in 2008 (Figure 8, Appendix A). Prior to jet fuel price hikes starting in 2004, fuel expenses accounted for about a quarter of total operating expenses. Since 2004, about half of total operating expenses are from fuel costs (Figure 1). Fuel Cost Savings to Airlines The burden of increased fuel expenses is further exacer- bated by airport congestion and existing inefficiencies in an aviation system that uses outdated technologies and proto- cols. Congestion is a problem, particularly at certain busy airports where the congestion is caused by capacity con- straints, and will likely get worse as the economy recovers from the recession and travel demand rises.10 In 2010 major airlines reported that about 40 percent of arrivals and departures are delayed.11 Every additional minute spent by operators sitting on the tarmac or circling an airport awaiting clearance means additional fuel, equip- ment depreciation and maintenance, increased labor costs, employee fatigue, and a possible loss of customers. According to the latest FAA estimate, NextGen could save about 1.4 billion gallons of fuel through 2018.12 This estimate assumes continued benefits of some of the Next- Gen capabilities already in place at some airports and timely implementation of the FAA’s mid-term goals. This amounts to, on average, about 200 million gallons annually assuming full implementation of NextGen. Using the current jet fuel price of about $2.86/gallon in 2011, total fuel savings to operators would be about $600 million annually.

### 2AC Economy Block

#### 1. The U.S. econ is already down, not resilient

Kennedy 6/9 [Alex, writer for the Huff Post, Asian stocks drop after weak US jobs growth, <http://www.huffingtonpost.com/huff-wires/20120709/world-markets/>] ATP

The U.S. economy added a less than expected 80,000 jobs last month, the Labor Department said Friday. The tepid employment growth, which followed the first drop in U.S. manufacturing in three years, increases pressure on the Federal Reserve to implement monetary stimulus measures known as quantitative easing.

#### 2.Economic growth actually checks war – empirically proven

Griswold 5(Daniel, Director of Center for Trade @ Cato Institute, *Free Trade,* 12.29.5, http://www.freetrade.org/node/282)

Many causes lie behind the good news -- the end of the Cold War and the spread of democracy, among them -- but expanding trade and globalization appear to be playing a major role. Far from stoking a "World on Fire," as one misguided American author has argued, growing commercial ties between nations have had a dampening effect on armed conflict and war, for three main reasons. First, trade and globalization have reinforced the trend toward democracy, and democracies don't pick fights with each other. Freedom to trade nurtures democracy by expanding the middle class in globalizing countries and equipping people with tools of communication such as cell phones, satellite TV, and the Internet. With trade comes more travel, more contact with people in other countries, and more exposure to new ideas. Thanks in part to globalization, almost two thirds of the world's countries today are democracies -- a record high. Second, as national economies become more integrated with each other, those nations have more to lose should war break out. War in a globalized world not only means human casualties and bigger government, but also ruptured trade and investment ties that impose lasting damage on the economy. In short, globalization has dramatically raised the economic cost of war. Third, globalization allows nations to acquire wealth through production and trade rather than conquest of territory and resources. Increasingly, wealth is measured in terms of intellectual property, financial assets, and human capital. Those are assets that cannot be seized by armies. If people need resources outside their national borders, say oil or timber or farm products, they can acquire them peacefully by trading away what they can produce best at home. Of course, free trade and globalization do not guarantee peace. Hot-blooded nationalism and ideological fervor can overwhelm cold economic calculations. But deep trade and investment ties among nations make war less attractive. Trade wars in the 1930s deepened the economic depression, exacerbated global tensions, and helped to usher in a world war. Out of the ashes of that experience, the United States urged Germany, France and other Western European nations to form a common market that has become the European Union. In large part because of their intertwined economies, a general war in Europe is now unthinkable. In East Asia, the extensive and growing economic ties among Mainland China, Japan, South Korea, and Taiwan is helping to keep the peace. China's communist rulers may yet decide to go to war over its "renegade province," but the economic cost to their economy would be staggering and could provoke a backlash among its citizens. In contrast, poor and isolated North Korea is all the more dangerous because it has nothing to lose economically should it provoke a war. In Central America, countries that were racked by guerrilla wars and death squads two decades ago have turned not only to democracy but to expanding trade, culminating in the Central American Free Trade Agreement with the United States. As the Stockholm institute reports in its 2005 Yearbook, "Since the 1980s, the introduction of a more open economic model in most states of the Latin American and Caribbean region has been accompanied by the growth of new regional structures, the dying out of interstate conflicts and a reduction in intra-state conflicts." Much of the political violence that remains in the world today is concentrated in the Middle East and Sub-Saharan Africa -- the two regions of the world that are the least integrated into the global economy. Efforts to bring peace to those regions must include lowering their high barriers to trade, foreign investment, and domestic entrepreneurship. Advocates of free trade and globalization have long argued that trade expansion means more efficiency, higher incomes, and reduced poverty. The welcome decline of armed conflicts in the past few decades indicates that free trade also comes with its own peace dividend.

#### Economic collapse leads to Nazism, global starvation, WMD wars–best timeframe

Nyquist 5 (economist, 2-4-05, weekly column, financial sense, http://www.financialsense.com/stormwatch/geo/pastanalysis/2005/0204.html)

Hayek acknowledged that political exigencies might take precedence over economic principles. As it happened, Röpke did not publish Hayek’s article. According to Hayek, “the political danger of increasing unemployment was so great that [Röpke] would risk the danger of causing further [economic] misdirections by more inflation in the hope of postponing the crisis.” Within three years of Hayek’s note to Röpke, Germany’s troubles led to the appointment of Hitler as Chancellor of Germany. The question may be asked: Why were two economists of the [Austrian School](http://cepa.newschool.edu/het/schools/austrian.htm) – Hayek and Röpke – willing to stifle their criticism of credit expansion in the face of political revolution? As it happens, political wisdom is not the same as economic wisdom. In politics the correct solution to a problem may not be acceptable to the voters. After all, the public does not understand economic principles. They do not recognize that pain is necessary to market correction and a healthy economy. Instead, they are frequently ready to reject good economic policy in favor of anti-market demagogues (like Hitler). From the point of view of practical politics, therefore, it is better to adopt bad economic policies and steal the demagogue’s thunder than allow a totalitarian party to win popular approval and destroy the republic. It is still remarkable, however, that Hayek and Röpke were willing to accept the necessity of credit expansion in the case of Weimar Germany. Their colleague, Ludwig von Mises, warned against credit expansion in the text of [Human Action](http://www.amazon.com/exec/obidos/ASIN/0930073185/financialsenseon): “A lowering of the gross market rate of interest as brought about by credit expansion always has the effect of making some projects appear profitable which did not appear so before.” In other words, credit expansion leads to bad investments and an inevitable market debacle. “If the credit expansion is not stopped in time,” Mises explained, “the boom turns into [a] crack-up boom; the flight into real values begins, [and] the whole monetary system founders.” Mises also stated: “The final outcome of the credit expansion is general impoverishment.” Sadly, the voters in Germany during the 1930s and the voters in America today do not understand the harmfulness of credit expansion. Worse yet, the Federal Reserve does not fully appreciate – or does not admit – that America must pass through a period of economic pain in order to regain its economic health. If the Federal Reserve cannot speak frankly, or act correctly in this regard, what can we expect from leading politicians? The party most associated with the free market – the Republican Party – will doubtless take the blame for future economic consequences. Logically, the political left – now in firm control of the Democratic Party – will make significant gains. In a book titled [Omnipotent Government](http://www.amazon.com/exec/obidos/ASIN/0910884153/financialsenseon), written during World War II, Ludwig von Mises noted that the Nazis initially triumphed because the “fundamental tenets of the Nazi ideology do not differ from the generally accepted social and economic ideologies.” According to Mises, these “generally accepted” ideologies embrace the following six points: “(1) Capitalism is an unfair system of exploitation. It injures the immense majority for the benefit of a small minority…. (2) It is therefore the foremost duty of popular government to substitute government control of business for the management of capitalists and entrepreneurs. (3) Price ceilings and minimum wage rates … are an adequate means for improving the lot of the consumers and permanently raising the standard of living…. (4) Easy money policy, i.e., credit expansion, is a useful method of lightening the burdens imposed by capital upon the masses and making a country more prosperous. It has nothing to do with the periodical recurrence of economic depression. Economic crises are an evil inherent in unhampered capitalism. (5) All those who … assert that capitalism best serves the masses … are ill-intentioned and narrow-minded apologists of the selfish class interests of the exploiters…. (6) The advantage derived from foreign trade lies exclusively in exporting. Imports are bad and should be prevented as much as possible.” (See pp. 222-223.)at a time of economic crisis, the appeal of Nazi economic ideas must prove irresistible. It stands to reason, therefore, that a future financial crash will benefit political extremists whose ideas coincide with those listed above. Please note: there is no appreciable difference between the six dogmas listed above and the rhetoric of the Democrats in Congress. Should the United States experience a severe economic contraction during the second term of President Bush, the American people will likely support politicians who advocate further restrictions and controls on our market economy – guaranteeing its strangulation and the steady pauperization of the country. In Congress today, Sen. Edward Kennedy supports nearly all the economic dogmas listed above. It is easy to see, therefore, that the coming economic contraction, due in part to a policy of massive credit expansion, will have serious political consequences for the Republican Party (to the benefit of the Democrats). Furthermore, an economic contraction will encourage the formation of anti-capitalist majorities and a turning away from the free market system. The danger here is not merely economic. The political left openly favors the collapse of America’s strategic position abroad. The withdrawal of the United States from the Middle East, the Far East and Europe would catastrophically impact an international system that presently allows 6 billion people to live on the earth’s surface in relative peace. Should anti-capitalist dogmas overwhelm the global market and trading system that evolved under American leadership, the planet’s economy would contract and untold millions would die of starvation. Nationalistic totalitarianism, fueled by a politics of blame, would once again bring war to Asia and Europe. But this time the war would be waged with mass destruction weapons and the United States would be blamed because it is the center of global capitalism. Furthermore, if the anti-capitalist party gains power in Washington, we can expect to see policies of appeasement and unilateral disarmament enacted. American appeasement and disarmament, in this context, would be an admission of guilt before the court of world opinion. Russia and China, above all, would exploit this admission to justify aggressive wars, invasions and mass destruction attacks. A future financial crash, therefore, must be prevented at all costs. But we cannot do this. As one observer recently lamented, “We drank the poison and now we must die.”

Economic downturn destroys heg

Pape 9 (Robert , poli sci @ U of Chicago, *Chicago Tribune*, 3.8.9, http://www.chicagotribune.com/news/nationworld/chi-perspec0308diplomacymar08,0,4785661.story)

For nearly two decades, [the U.S.](http://www.chicagotribune.com/topic/politics/government/national-government/united-states-ORGOV0000001.topic) has been viewed as a global hegemon—vastly more powerful than any major country in the world. Since 2000, however, our global dominance has fallen dramatically. During the Bush administration, the self-inflicted wounds of the Iraq war, growing government debt, increasingly negative current account balances and other internal economic weaknesses cost the U.S. real power in a world of rapidly spreading knowledge and technology. Simply put, the main legacy of the Bush years has been to leave the U.S. as a declining power.  From Rome to the United States today, the rise and fall of great nations have been driven primarily by economic strength. At any given moment, a state's power depends on the size and quality of its military forces and other power assets. Over time, however, power is a result of economic strength—the prerequisite for building and modernizing military forces. And so the size of the economy relative to potential rivals ultimately determines the limits of power in international politics. The power position of the U.S. is crucial to the foreign policy aims that it can achieve. Since the Cold War, America has maintained a vast array of overseas commitments, seeking to ensure peace and stability not just in its own neighborhood, the Western hemisphere, but also in Europe, Asia and the oil-rich Persian Gulf. Maintaining these commitments requires enormous resources, but American leaders in recent years chose to pursue far more ambitious goals than merely maintaining the status quo.

And, hegemonic decline leads to transition wars – the impact is extinction

Nye 90 (Joe, Prof of Oman Professor of International Relations and former Dean of the Kennedy School at Harvard and one of the most influential and respected contemporary IR scholars, pg 17)

Perceptions of change in the relative power of nations are of critical importance to understanding the relationship between decline and war. One of the oldest generalizations about international politics attributes the onset of major wars to shifts in power among the leading nations. Thus Thucydides accounted for the onset of the Peloponnesian War which destroyed the power of ancient Athens. The history of the interstate system since 1500 is punctuated by severe wars in which one country struggled to surpass another as the leading state. If as Robert Gilpin argues, international politics has not changed fundamentally over the millennia, “the implications for the future are bleak. And if fears about shifting power precipitate a major war in a world with 50,000 nuclear weapons, history as we know it may end.

#### 3. The US is still key to the global economy—five warrants

Sesit 8 (Michael, Bloomberg News Columnist, “The four myths of economic decoupling,” The Korea Herald, February 16, 2008, http://www.lexisnexis.com/us/lnacademic/returnTo.do?returnToKey=20\_T6876616661, AD: 6-30-9)

Myth No. 2: The rest of the world can escape the clutches of a U.S. slowdown. Not according to history. The United States has had five recessions since 1970. Each time, other economies' GDP growth also declined. The U.S. economy fell an average of 3.8 percent during the recessions of 1974-75, 1980, 1982, 1991 and 2001, with other industrial countries slowing an average of 2 percent, Latin America falling 1.7 percent and emerging Asia declining 1.3 percent, according to the International Monetary Fund. "Despite all the chatter about one region or another being immune from problems in the United States, the reality is that in a globalized economycharacterized by rising cross-border flows of goods, services and capital, only hermit economies like North Korea are truly de-linked from planet Earth," says Joseph Quinlan, New York-based chief market strategist at Bank of America Capital Management. "Every one, more or less, sinks or swims in the global village." Myth No. 3: Rising demand in the developing world will compensate for the expected drop in U.S. consumer spending.Emerging-market countries are consuming more, yet growth in many of them is still mostly driven by exports, not domestic demand. Moreover, 2.55 billion people -- almost half the population of the developing world -- lived on less than $2 a day in 2004, the latest year of available data, according to the World Bank and Bank of America. U.S. consumers spent $9.27 trillion in 2006, or 3.5 times the aggregate $2.62 trillion personal-consumption expenditure of the so-called BRIC countries: Brazil, Russia, India and China. Myth No. 4: Growing intra-Asian trade -- especially that between China and other countries in the region -- will make up for lost exports caused by a steep U.S. slowdown. No doubt, intra-regional trade is growing rapidly, but much of it reflects shipments of intermediate goods. Still, 61 percent of emerging Asia's exports are ultimately consumed in the U.S., European Union and Japan, according to the Asian Development Bank, while Asian developing countries account for just 21 percent of final demand. "The U.S. is still more important to each Asian country's total output than demand from other ex-Japan Asian economies combined," the bank said in a recent report.Myth No. 5: Europe is becoming less dependent on the United States. True, America accounts for only 12 percent of EU exports to countries outside the 25-nation bloc, down from 18 percent in 2000. But exports aren't the whole story. Sales by U.S. affiliates of German companies totaled $352 billion in 2005, the last year of available data -- four times the $86 billion of German exports to America. Meanwhile, Dutch U.S. affiliate sales were 16 times exports, U.K.-affiliate sales 7.6 times British exports and French-affiliate sales 5.9 times. "If the U.S. economy heads south, so too will the earnings of many European firms," Quinlan says. What's more, Wall Street's pull on the world's financial markets is unrivaled. "U.S. equity returns remain the single biggest driver of global equity returns," says David Woo, London-based head of global currency strategy at Barclays Capital. "A sizable U.S. equity correction, by precipitating a global equity correction, will likely lead to a synchronized global economic slowdown."

### Other

#### The economy’s lost resiliency

RAMPELL ’11 – [Catherine, economics reporter for The New York Times; wrote for the Washington Post editorial pages and financial section Catherine, “Second Recession in U.S. Could Be Worse Than First”. August 7. <http://www.nytimes.com/2011/08/08/business/a-second-recession-could-be-much-worse-than-the-first.html?pagewanted=all>] ATP

If the economy falls back into recession, as many economists are now warning, the bloodletting could be a lot more painful than the last time around. Given the tumult of the Great Recession, this may be hard to believe. But the economy is much weaker than it was at the outset of the last recession in December 2007, with most major measures of economic health — including jobs, incomes, output and industrial production — worse today than they were back then. And growth has been so weak that almost no ground has been recouped, even though a recovery technically started in June 2009. “It would be disastrous if we entered into a recession at this stage, given that we haven’t yet made up for the last recession,” said Conrad DeQuadros, senior economist at RDQ Economics. When the last downturn hit, the credit bubble left Americans with lots of fat to cut, but a new one would force families to cut from the bone. Making things worse, policy makers used most of the economic tools at their disposal to combat the last recession, and have few options available. Anxiety and uncertainty have increased in the last few days after the decision by Standard & Poor’s to downgrade the country’s credit rating and as Europe continues its desperate attempt to stem its debt crisis. President Obama acknowledged the challenge in his Saturday radio and Internet address, saying the country’s “urgent mission” now was to expand the economy and create jobs. And Treasury Secretary Timothy F. Geithner said in an interview on CNBC on Sunday that the United States had “a lot of work to do” because of its “long-term and unsustainable fiscal position.” But he added, “I have enormous confidence in the basic regenerative capacity of the American economy and the American people.” Still, the numbers are daunting. In the four years since the recession began, the civilian working-age population has grown by about 3 percent. If the economy were healthy, the number of jobs would have grown at least the same amount. Instead, the number of jobs has shrunk. Today the economy has 5 percent fewer jobs — or 6.8 million — than it had before the last recession began. The unemployment rate was 5 percent then, compared with 9.1 percent today. Even those Americans who are working are generally working less; the typical private sector worker has a shorter workweek today than four years ago. Employers shed all the extra work shifts and weak or extraneous employees that they could during the last recession. As shown by unusually strong productivity gains, companies are now squeezing as much work as they can from their newly “lean and mean” work forces. Should a recession return, it is not clear how many additional workers businesses could lay off and still manage to function. With fewer jobs and fewer hours logged, there is less income for households to spend, creating a huge obstacle for a consumer-driven economy. Adjusted for inflation, personal income is down 4 percent, not counting payments from the government for things like unemployment benefits. Income levels are low, and moving in the wrong direction: private wage and salary income actually fell in June, the last month for which data was available. Consumer spending, along with housing, usually drives a recovery. But with incomes so weak, spending is only barely where it was when the recession began. If the economy were healthy, total consumer spending would be higher because of population growth. And with construction nearly nonexistent and home prices down 24 percent since December 2007, the country does not have a buffer in housing to fall back on. Of all the major economic indicators, industrial production — as tracked by the Federal Reserve — is by far the worst off. The Fed’s index of this activity is nearly 8 percent below its level in December 2007. Likewise, and perhaps most worrisome, is the track record for the country’s overall output. According to newly revised data from the Commerce Department, the economy is smaller today than it was when the recession began, despite (or rather, because of) the feeble growth in the last couple of years. If the economy were healthy, it would be much bigger than it was four years ago. Economists refer to the difference between where the economy is and where it could be if it met its full potential as the “output gap.” Menzie Chinn, an economics professor at the University of Wisconsin, has estimated that the economy was about 7 percent smaller than its potential at the beginning of this year. Unlike during the first downturn, there would be few policy remedies available if the economy were to revert back into recession. Interest rates cannot be pushed down further — they are already at zero. The Fed has already flooded the financial markets with money by buying billions in mortgage securities and Treasury bonds, and economists do not even agree on whether those purchases substantially helped the economy. So the Fed may not see much upside to going through another politically controversial round of buying. “There are only so many times the Fed can pull this same rabbit out of its hat,” said Torsten Slok, the chief international economist at Deutsche Bank. Congress had some room — financially and politically — to engage in fiscal stimulus during the last recession. But at the end of 2007, the federal debt was 64.4 percent of the economy. Today, it is estimated at around 100 percent of gross domestic product, a share not seen since the aftermath of World War II, and there is little chance of lawmakers reaching consensus on additional stimulus that would increase the debt. “There is no approachable precedent, at least in the postwar era, for what happens when an economy with 9 percent unemployment falls back into recession,” said Nigel Gault, chief United States economist at IHS Global Insight. “The one precedent you might consider is 1937, when there was also a premature withdrawal of fiscal stimulus, and the economy fell into another recession more painful than the first.”

#### Federal investment into airport infrastructure key to growth

PRINCIPATO ‘12 – [Greg, president, Airports Council International-North America; M.A. in International Relations from University of Chicago; International Trade and Transportation specialist, Hunton & Williams, “Airports Have Greater Economic Clout than the Economies of South Korea, Mexico or Switzerland”. February 29. <http://acinablog.wordpress.com/2012/02/29/airports-have-greater-economic-clout-than-the-economies-of-south-korea-mexico-or-switzerland/>] ATP

As a nation, we (through our Congress and President) decided to increase our investments in airport infrastructure. Our study, the first undertaken since those policy changes went fully into effect, shows the very positive results. America’s airports support 10.5 million jobs. America’s airports support $1.2 trillion in economic activity, larger than the GDP of South Korea. “Airports, Inc.” directly employs 1.3 million people, making it the second largest employer in the nation, behind Wal-Mart. Total airport payroll equals the total payroll of the State of Michigan. The total economic clout of airports: 8 percent of U.S. GDP and 7 percent of U.S. employment. Those are big numbers. But if you are still not convinced, consider this: during that time, the jobs number increased by 56 percent. Total payroll has gone up over 90 percent. And the total contribution to the output of the American economy has more than doubled. All this has happened despite the industry being devastated by the largest terrorist attack in history. All this has happened despite the most severe economic downturn since the Great Depression, including spikes in the price of fuel. This economic growth occurred because we decided to invest in our economic future. In economic times as difficult as most of us will ever experience, those investments paid off. That is why it is so discouraging that the recent FAA bill leaves in place federal limits on what airports and local communities can do to generate resources. That is why it is so discouraging that the president’s budget reduces investment in airports. That is why it is so discouraging that local communities cannot raise their own resources because of decisions made in Washington. We are putting the future in peril, just as we are set to take off. Some have called for a new national airline policy, designed to promote the financial strength of airline companies. I am a strong proponent of strong airline companies. But the purpose of the air transportation system is the movement of people and products to destinations and markets. It is not to ensure shareholder value for airlines; that’s what airline executives and boards are supposed to do. We do need a new national AVIATION policy, looking at all aspects from NextGen to financing airport infrastructure to the regulatory environment in which aviation must operate to the tax structure, all of it. It must be designed to strengthen the air transportation system, not merely any one component of it. We are now stepping back from investments in aviation at the same time as our competitors around the world are stepping up. We are in peril of becoming what the steel industry became in the 1970’s and 1980’s, out of date and non-competitive. We have a chance to avoid that. Our study shows the benefits in terms of job creation and economic impact when good decisions and good investments are made. I worry that the next study will show when the opposite happens.

#### US crisis tanks the global economy

RAHMAN ‘11 – [Ashfaqur, former Ambassador and Chairman of the Centre for Foreign Affairs Studies. “Another global recession?”. August 21. <http://www.thedailystar.net/newDesign/news-details.php?nid=199461>] ATP

Several developments, especially in Europe and the US, fan this fear. First, the US recovery from the last recession has been fragile. Its economy is much more susceptible to geopolitical shocks. Second there is a rise in fuel prices. The political instability in the Middle East is far from over. This is causing risks for the country and the international economy. Third, the global food prices in July this year is markedly higher than a year ago, almost 35% more. Commodities such as maize (up 84%), sugar (up 62%), wheat (up 55%), soybean oil (up 47%) have seen spike in their prices. Crude oil prices have also risen by 45%, affecting production costs. In the US, even though its debt ceiling has been raised and the country can now continue to borrow, credit agencies have downgraded its credit rating and therefore its stock markets have started to flounder. World Bank President Zoellick recently said: "There was a convergence of some events in Europe and the US that has led many market participants to lose confidence in economic leadership of the key countries." He added: "Those events, combined with other fragilities in the nature of recovery, have pushed US into a new danger zone." Employment in the US has, therefore, come near to a grinding halt. Prices of homes there continue to slide. Consumer and business spending is slowing remarkably. So, when the giant consumer economy slows down, there would be less demand for goods she buys from abroad, even from countries like Bangladesh. This would lead to decline in exports from such countries to the US. Then these economies would start to slide too, leading to factory closures and unemployment on a large scale. There would be less money available for economic development activities. Adding to the woes of the US economy are the travails of European economies. There, countries like Greece and Portugal, which are heavily indebted, have already received a first round of bailout. But this is not working. A second bailout has been given to Greece. But these countries remain in deep economic trouble. Bigger economies like Spain and Italy are also on the verge of bankruptcy. More sound economies like France and Germany are unwilling to provide money through the European Central Bank to bail them out. A proposal to issue Euro bonds to be funded by all the countries of the Euro Zone has also not met with approval. A creeping fear of the leaders of such big economies is that their electorate is not likely to agree to fund bankruptcies in other countries through the taxes they pay. Inevitably, they are saying that these weaker economies must restrain expenditures and thereby check indebtedness and live within their means. Thus, with fresh international bailouts not in the horizon and with possibilities of a debt default by countries like Greece, there is a likelihood of a ripple going through the world's financial system. Now what is recession and especially one with a global dimension ? There is no commonly accepted definition of a recession or for that matter of a global recession. The International Monetary Fund (IMF) regards periods when global growth is less than 3% to be a global recession. During this period, global per capita output growth is zero or negative and unemployment and bankruptcies are on the rise. Recession within a country implies that there is a business cycle contraction. It occurs when "there is a widespread drop in spending following an adverse supply shock or the bursting of an economic bubble." The most common indicator is "two down quarters of GDP." That is, when GDP of a country does not increase for six months. When recession occurs there is a slowdown in economic activity. Overall consumption, investment, government spending and net exports fall. Economic drivers such as employment, household savings, corporate investments, interest rates are on the wane. Interestingly, recession can be of several types. Each type may be literally of distinctive shapes. Thus V-shaped, or a short and sharp contraction, is common. It is usually followed by a rapid and sustained recovery. A U-shaped slump is a prolonged recession. The W-shaped slowdown of the economy is a double dip recession. There is also an L-shaped recession when, in 8 out of 9 three-monthly quarters, the economy is spiraling downward. So what type of recession can the world expect in the next quarter? Experts say that it could be a W-shaped one, known as a double dip type. But let us try to understand why the world is likely to face another recession, when it has just emerged from the last one, the Great Recession in 2010. Do not forget that this recession had begun in 2007 with the "mortgage and the derivative" scandal when the real estate and property bubble burst. Today, many say that the last recession had never ended. Despite official data that shows recovery, it was only a modest recovery. So, when the recession hit the US in 2007 it was the Great Recession I. The US government fought it by stimulating their economy with large bailouts. But this time, for the Great Recession II, which we may be entering, there is a completely different response. Politicians are squabbling over how much to cut spending. Therefore, we may be in a new double dip or W-shaped recession.

#### Global war

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] ATP

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 (Feaver, 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.

## \*\*\*Terrorism Advantage\*\*\*

### \*Shell Terrorism(9/11) Scenario\*

#### Despite government security efforts, terrorism threats still exist

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

Despite the strenuous efforts by governments to harden commercial aviation in the post-9/11 era, the number of plots illustrates that al-Qa`ida core, its affiliates, and numerous other Islamist extremist groups and self-radicalized individuals maintain a high level of interest in attacking aviation. Despite the organizational disruptions caused by the deaths of numerous senior al-Qa`ida leaders in 2011, and the current preoccupation of several al-Qa`ida affiliates with local conflicts, this ongoing interest in attacking aviation is unlikely to dissipate in the long-term. Furthermore, the evolving tactics utilized in these various plots lend weight to AQAP’s contention that government regulators suffer from a lack of imagination in anticipating and mitigating emergent and existing threats. As indicated by numerous accounts, including the description of the cargo plot contained in Inspire, terrorists constantly seek to analyze existing aviation security measures to probe for weaknesses and develop countermeasures. Terrorists’ ongoing efforts to study and defeat security are further exemplified by the arrest of Rajib Karim, a former information technology employee at British Airways; prior to his arrest, Karim maintained an ongoing dialogue with AQAP operative Anwar al-`Awlaqi and attempted to provide al-`Awlaqi with information on aviation security procedures.[1] Therefore, despite government efforts to improve aviation security, a number of critical tactical threats remain.

#### More than airplanes are at risk when it comes to aviation terrorism

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

One aspect of aviation security that is not frequently addressed is the potential for terrorists to strike other aspects of aviation infrastructure beyond aircraft. Commercial airlines are highly reliant upon information technology systems to handle critical functions such as reservations and crew check-in, a fact not lost upon Rajib Karim when he suggested in correspondence with Anwar al-`Awlaqi that he could erase data from British Airways’ servers, thus disabling the airline’s website.[15] Such an approach would mesh closely with al-Qa`ida core’s and AQAP’s stated aims of waging economic jihad against the West. The operational control centers operated by air carriers are another significant point of vulnerability, which conduct the airlines’ flight control, meteorology, and emergency management functions. Despite their criticality to flight operations, these control centers are rarely heavily guarded, meaning that a team of attackers equipped with inside knowledge could temporarily shut down the global operations of a major air carrier, particularly if backup facilities were to be targeted as well.

#### A terrorist nuclear strike causes world war 3

Corsi 2005 (Jerome, Ph.D. from Harvard, Atomic Iran, 176-178)BSB

In the span of less than one hour, the nation’s largest city will have been virtually wiped off the map. Removal of debris will take several years, and recovery may never fully happen. The damage to the nation’s economy will be measured in the trillions of dollars, and the loss of the country’s major financial and business center may reduce America immediately to a second-class status. The resulting psychological impact will bring paralysis throughout the land for an indefinite period of time. The president may not be able to communicate with the nation for days, even weeks, as television and radio systems struggle to come back on line. No natural or man-made disaster in history will compare with the magnitude of damage that has been done to New York City in this one horrible day. THE UNITED STATES RETAILATES: “END OF THE WORLD” SCENARIOS The combination of horror and outrage that will surge upon the nation will demand that the president retaliate for the incomprehensible damage done by the attack. The problem will be that the president will not immediately know how to respond or against whom. The perpetrators will have been incinerated by the explosion that destroyed New York City. Unlike 9/11, there will have been no interval during the attack when those hijacked could make phone calls to loved ones telling them before they died that the hijackers were radical Islamic extremists. There will be no such phone calls when the attack will not have been anticipated until the instant the terrorists detonate their improvised nuclear device inside the truck parked on a curb at the Empire State Building. Nor will there be any possibility of finding any clues, which either were vaporized instantly or are now lying physically inaccessible under tons of radioactive rubble. Still, the president, members of Congress, the military, and the public at large will suspect another attack by our known enemy—Islamic terrorists. The first impulse will be to launch a nuclear strike on Mecca, to destroy the whole religion of Islam. Medina could possibly be added to the target list just to make the point with crystal clarity. Yet what would we gain? The moment Mecca and Medina were wiped off the map, the Islamic world—more than one billion human beings in countless different nations—would feel attacked. Nothing would emerge intact after a war between the United States and Islam. The apocalypse would be upon us. Then, too, we would face an immediate threat from our long-term enemy, the former Soviet Union. Many in the Kremlin would see this as an opportunity to grasp the victory that had been snatched from them by Ronald Reagan, when the Berlin Wall came down. A missile strike by the Russians on a score of American cities could possibly be preemptive. Would the U.S. strategic defense system be so in shock that immediate retaliation would not be possible? Hard-liners in Moscow might argue that there was never a better opportunity to destroy America. In China, our newer Communist enemies might not care if we could retaliate. With a population already over 1.3 billion people and with their population not concentrated in a few major cities, the Chinese might calculate to initiate a nuclear blow on the United States. What if the United States retaliated with a nuclear counterattack upon China? The Chinese might be able to absorb the blow and recover. The North Koreans might calculate even more recklessly. Why not launch upon America the few missiles they have that could reach our soil? More confusion and chaos might only advance their position. If Russia, China, and the United States could be drawn into attacking one another, North Korea might emerge stronger just because it was overlooked while the great nations focus on attacking one another. So, too, our supposed allies in Europe might relish the immediate reduction in power suddenly inflicted upon America. Many of the great egos in Europe have never fully recovered from the disgrace of World War II, when in the last century the Americans a second time in just over two decades have been forced to come to their rescue. If the French did not start launching nuclear weapons themselves, they might be happy to fan the diplomatic fire beginning to burn under the Russians and the Chinese. Or the president might decide simply to launch a limited nuclear strike on Tehran itself. This might be the most rational option in the attempt to retaliate but still communicate restraint. The problem is that a strike on Tehran would add more nuclear devastation to the world calculation. Muslims around the world would still see the retaliation as an attack on Islam, especially when the United States had no positive proof that the destruction of New York City had been triggered by radical Islamic extremists with assistance from Iran. But for the president not to retaliate might be unacceptable to the American people. So weakened by the loss of New York, Americans would feel vulnerable in every city in the nation. “Who is going to be next?” would be the question on everyone’s mind. For this there would be no effective answer. That the president might think politically at this instant seems almost petty, yet every president is by nature a politician. The political party in power at the time of the attack would be destroyed unless the president retaliated with a nuclear strike against somebody. The American people would feel a price had to be paid while the country was still capable of exacting revenge.

### Terror Risk High

#### Terrorists are continually finding new ways to "terrorize"

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

Terrorist groups, particularly AQAP, have continuously refined their ability to conceal improvised explosive devices (IEDs) from security screening equipment, as shown by the 2009 Christmas Day plot, where a would-be suicide bomber concealed explosives in his underwear, and the 2010 cargo bomb plot, where bombmakers hid explosives in printer cartridges. Following the 2009 plot in particular, TSA, foreign regulatory agencies, and some airlines sought to increase safeguards against passenger- or cargo-borne IEDs by the deployment of AIT and ETD equipment. IEDs, however, are likely to remain a significant threat to commercial aviation due to limitations in current screening technology. AIT can be defeated by concealing IEDs internally, either by the frequently discussed stratagem of surgically implanting devices in a would-be suicide bomber or by the simpler route of secreting the device within a body cavity. Alternately, IEDs concealed within complex electronic devices are likely to defeat all but the most thorough visual inspection, as illustrated by explosives experts’ initial failure to detect the devices used in the 2010 cargo plot.[12] AQAP has shown itself to be particularly adept at concealing IEDs within electronic devices such as printers and radios, which it will likely continue to use in the future.

#### Airports are at risk just as much as airplanes

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

Another threat to commercial aviation is the increasing number of plots and attacks targeting airports themselves rather than aircraft. There have been two significant attacks staged at international airports thus far in 2011 in Frankfurt and Moscow. Attacks against airports have been planned or executed using a variety of tactics, such as firearms, car bombs, suicide bombers, and hijacked aircraft. The targets have included airport facilities such as fuel lines, arrival halls, and curbside drop-off points. Terrorists could also breach perimeter fencing and assault aircraft on runways, taxiing areas, and at gates. This tactic was used during the 2001 Bandaranaike airport attack in Sri Lanka, when a team of Black Tigers[16] used rocket-propelled grenades and antitank weapons to destroy half of Sri Lankan Airlines’ fleet of aircraft.[17] More recently, Afghan authorities announced the discovery of arms caches belonging to the Haqqani network near Kabul Airport and claimed that the group had planned to use the caches to stage an assault on the airport.[18] The actions of activist groups—such as Plane Stupid, which has breached perimeter fencing at UK airports so that activists could handcuff themselves to aircraft in a protest against the airline industry’s carbon emissions[19]—demonstrate the viability of such an attack in the West as well.[20]

#### Current security actions are not enough

Brandt 11 (Ben, MA in Security Studies from Georgetown University, "Terrorist Threats to Commercial Aviation: A Contemporary Assessment", Combating Terrorism Center, http://www.ctc.usma.edu/posts/terrorist-threats-to-commercial-aviation-a-contemporary-assessment) BSB

The trend toward attacking airports rather than aircraft has likely been driven by a number of factors, particularly increased checkpoint screening measures and terrorists’ growing emphasis on decentralized, small-scale attacks on targets of opportunity. Firearms will likely prove to be a key component of future attacks, given their relative ease of use compared to explosives, as well as their wide availability in the United States and many other countries. This trend was exemplified by the 2011 Frankfurt attack, which was conducted by Arid Uka, an employee at the airport’s postal facility, who shot and killed two U.S. soldiers at a bus at the terminal. Although deployment of plainclothes security personnel and quick reaction teams can help ameliorate the impact of attacks on airports, their ease of execution and the impossibility of eliminating all airport queues (be they for drop-off, check-in, security screening, baggage claim, or car rentals) make this tactic a persistent threat.

### Al Qaeda Threat High

#### Al Qaeda is still a threat

Hindustan Times 7/7 (July 07, 2012 "Al Qaeda entrenches itself in Africa" http://www.hindustantimes.com/world-news/RestOfAsia/Al-Qaeda-entrenches-itself-in-Africa/Article1-884536.aspx) BSB

From East to West Africa, a rise in Islamic extremism has led to a surge in deadly attacks and kidnappings by groups linked to al-Qaeda, sparking fears of a new "arc of terror" on the continent. While these groups are mostly occupied with domestic issues, their anti-western rhetoric and targeting of foreigners pose a wider challenge. So too does growing evidence of ties between armed groups from the Sahel and east Africa and Nigeria, observers say. The three main al Qaeda-linked groups are Somalia's Shebab in the Horn of Africa. Al-Qaeda in the Islamic Maghreb (AQIM) which is active across the Sahel and Boko Haram, which has sharply increased its attacks in Nigeria since 2010. "We do have enough evidence of some communication between Boko Haram and AQIM and affiliated groups," a Washington DC-based analyst focused on the Sahel told AFP. However while both Boko Haram and AQIM had claimed support or training from Shebab, this had not been confirmed, he added. General Carter Ham, head of US African command AFRICOM, warned in September 2011 that the various Islamist groups had said they wanted to "more closely collaborate and synchronize their efforts" in training and operations. "If left unaddressed, you could have a network that ranges from East Africa, through the centre and into the Sahel and Maghreb, and I think that would be very, very worrying."

#### Al Qaeda is trying to gain a foothold in Syria

Associated Press 7/6 (The Associated Press July 6th, 2012, "Al-Qaeda fighters streaming to Syria: Iraq" National Post, http://news.nationalpost.com/2012/07/06/al-qaeda-fighters-streaming-to-syria-iraq/) BSB

Iraq asserted Thursday that al-Qaeda insurgents are streaming out of the country to carry out attacks in Syria, an ominous development as the Syrian conflict inflames an already hostile region. Extremists have been making inroads as the 16-month-old uprising against President Bashar al-Assad grinds on, bringing a dangerous new element to the forces fighting to topple the regime. The terrorists are taking advantage of the chaos and the violence gripping Syria, which the head of the country’s UN observer mission said Thursday had reached “unprecedented levels.” Iraqi Foreign Minister Hoshyar Zebari said authorities were worried that extremists could gain another foothold in Syria, posing a new threat to the stability of the entire region.

#### It won't be long until Al Qaeda strikes again

Maclean 7/5 (William Maclean, Journalist for Reuters, "Local wars blur al Qaeda's threat to West" Reuters, http://www.reuters.com/article/2012/07/05/us-security-qaeda-idUSBRE86408D20120705") BSB

Spinoff groups from al Qaeda have become increasingly engrossed in insurgencies in Africa and the Middle East, inflicting death and mayhem on local communities. But this emphasis on the pursuit of the enemy nearby has cast doubt on their commitment, in practice, to bin Laden's war on the "far enemy" - the West and the United States in particular. More than a year after U.S. forces killed bin Laden, some groups such as the Yemeni-based Al Qaeda in the Arabian Peninsula (AQAP) undoubtedly remain a menace to the West. Turmoil in Syria, Somalia and parts of Libya, Mali, Iraq and Nigeria has also allowed Islamist militias to recruit, train, arm and organize. And yet their targets have been overwhelmingly close at hand, rather than in Europe or the United States. "Al Qaeda has become a useful label for any group that essentially pursues local aims but wishes to exaggerate its reach and sophistication," said Richard Barrett, Coordinator of the Al-Qaida-Taliban Monitoring Team at the United Nations. "Al Qaeda has lost much of its reputation as the vanguard of a global cause, and as the activities of its affiliates result in more and more death and destruction for local communities, this process will accelerate," he told Reuters. Boasting newly-acquired weapons, kidnap ransom funds, territorial gains in remote regions and a coterie of radicalized Western volunteers, many groups appear to have the wherewithal for viable plots within Western borders, Western officials say.

#### Al Qaeda is regaining momentum in Syria

Westall 7/5 (Sylvia Westall, Correspondent, Kuwait, "Iraq says al Qaeda members crossing into Syria" Reuters, http://www.reuters.com/article/2012/07/05/us-syria-crisis-iraq-qaeda-idUSBRE8640DQ20120705") BSB

Hoshiyar Zebari said al Qaeda "operational officers" appeared to be moving through old smuggling routes carrying weapons. "We have solid information and intelligence that members of al Qaeda terrorist networks have gone in the other direction, to Syria, to help, to liaise, to carry out terrorist attacks," he told a news conference in Baghdad. Syria says that a 16-month-old uprising against President Bashar al-Assad is not a popular revolt but a "terrorist" conspiracy funded and directed from abroad, not least by the wealthy Gulf monarchies of Saudi Arabia and Qatar. Assad, who belongs to the minority Alawite sect, an offshoot of Shi'ite Islam, also says much of the violence in Syria bears the fingerprints of al Qaeda and its Sunni Muslim Islamist ideology. Iraq has reinforced security along its 680 km (422 miles) desert border with Syria, making it the most heavily guarded Iraqi frontier, Zebari said. "Most of the suicide bombers, foreign fighters, elements of al Qaeda used to slip into Iraq from Syria. So they know the routes and the connections. It does not mean that these operations are done regularly in an organized way," he said. "This is our main concern - about the spillover, about extremist groups taking root in neighboring countries, to have a base," Zebari added. Al Qaeda operatives were communicating through underground networks of militants, he said.

#### Al-Qaeda is targeting planes specifically

YNet News 7/1 (Israel News, "Report: Al-Qaeda plans to bomb plane in Olympics" http://www.ynetnews.com/articles/0,7340,L-4249568,00.html) BSB

Intelligence sources reveal that al-Qaeda is plotting a terrorist attack on an American airliner in the run-up to the Olympics, the Sunday Times reported Sunday. According to the Sunday Times, al-Qaeda in the Arabian Peninsula (AQAP) has recruited a Norwegian convert at a training camp in Yemen. The group is understood to have selected a target, believed to be a US passenger jet. The intelligence officials said the latest plot was not specifically targeted at the Olympics and should be seen in the context of al-Qaeda’s continuing ambitions to blow up US planes. “There is terrorist plotting going on irrespective of the Olympics. The only thing that connects this to the Olympics is the fact that they are about to happen,” said a Whitehall official to the Sunday Times. The Norwegian recruit goes under the Islamic name of Abu Abdurrahman. He is understood to be in his 30s and with no previous criminal record. He converted in 2008 and quickly became radicalized. He later travelled to Yemen for training, the Sunday Times reported. This is the fourth terrorist attempt of the group since 2009, when AQAP sent a Nigerian-born British student on a plane with an underpants bomb. The bomb failed to detonate over Detroit and the man was arrested and jailed. In 2010, al-Qaeda sent two bombs hidden in printer cartridges on cargo planes destined for Chicago. They were intercepted and defused in Dubai and Britain. A third plot was averted in early 2012, when a British undercover agent managed to infiltrated AQAP, and volunteered to be a suicide bomber. He smuggled out the latest version of the underpants bomb to US authorities.

#### Al-Qaeda has attacked our planes recently

NJNR 7/2 (New Jersey News room "Another al Qaeda plane bombing foiled" http://www.newjerseynewsroom.com/international/another-al-qaida-plane-bombing-thwarted) BSB

British Intelligence officials say they have thwarted the latest al Qaeda bomb plot, this one targeting the London Olympics. The Sunday Times of London reports al Qaeda's Yemen-based terror cell known as al Qaeda in the Arabian Peninsula is believed to be behind the planned attack. Officials say although the plan was not specifically targeted toward the Olympics, it should be seen as another attempt by al Qaeda's Yemen affiliate to blow up a US plane. “There is terrorist plotting going on irrespective of the Olympics. The only thing that connects this to the Olympics is the fact that they are about to happen,” said a Whitehall official. Al Qaeda has recruited a Norwegian convert who is known by the Islamic name, Muslim Abu Abdurrahman, at a training camp in Yemen to carry out the plot. Abdurrahman is believed to be in his thirties and of "clean skin," meaning he has no previous criminal record. He converted four years ago, became radicalized and then travelled to Yemen, where he lived for several months while completing his training. He is also believed to have been in Azzan, a long-time al Qaeda base, until last month when he moved to Dammaj, which is just north of Yemen. Law enforcement officials have declined to disclose the timing, target or any other further details of the plot, including how they discovered it and any plans they may have to avert it. This is not the first time al Qaeda's Yemen affiliate has attempted to blow up U.S. jetliners. There have been at least three other bombings on US planes since 2009, all of which were detected and averted.

### NextGen Solves Terror

#### NextGen key to national security – solves terrorism

FAA 11 (Federal Aviation Administration, “Why NextGen Matters”, <http://www.faa.gov/nextgen/why_nextgen_matters/>) KA

NextGen is a comprehensive overhaul of our National Airspace System to make air travel more convenient and dependable, while ensuring your flight is as safe, secure and hassle-free as possible. In a continuous roll-out of improvements and upgrades, the FAA is building the capability to guide and track air traffic more precisely and efficiently to save fuel and reduce noise and pollution. NextGen is better for our environment, and better for our economy. NextGen will be a better way of doing business. Travel will be more predictable because there will be fewer delays, less time sitting on the ground and holding in the air, with more flexibility to get around weather problems. NextGen will reduce aviation’s impact on the environment. Flying will be quieter, cleaner and more fuel-efficient. We’ll use alternative fuels, new equipment and operational procedures, lessening our impact on the climate. More precise flight paths help us limit the amount of noise that communities experience. NextGen will help us be even more proactive about preventing accidents with advanced safety management to enable us, with other government agencies and aviation partners, to better predict risks and then identify and resolve hazards. NextGen boils down to getting the right information to the right person at the right time. It will help controllers and operators make better decisions. This data will assist operators in keeping employees and passengers better informed. 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. NextGen will allow us to meet our increasing national security needs and ensure that travelers benefit from the highest levels of safety.

#### NextGen promotes national security

Joint Planning and Development Office 11 (Joint Planning and Development Office, “Targeted NextGen Capabilities for 2025”, <http://www.jpdo.gov/library/2011_Targeted_NextGen-Capabilities_for_2025_v3.25.pdf>) KA

By 2025, it is expected that there will be significant demand and wide use in the NAS of both remotely piloted and autonomous UAS by commercial and security interests. Rules governing operations for these aircraft will reflect the capabilities of the vehicle and the class of airspace in which they operate, just as is the case today for manned aircraft of varying equipage. NextGen will accommodate user and regulatory requirements to ensure that both national security and passenger safety are protected.

#### NextGen solves national security threats

Kuhlmann 9 (Ron, Aviation Analyst and Writer, Sharp Aviation Teams, Centre for Asia Pacific Aviation, response to “Funding The Aviation Industry's Conversion To NextGen”, <http://transportation.nationaljournal.com/2009/08/funding-nextgen-air-traffic.php>) KA

But like any national grid, the entire populace benefits from its safe and efficient operation. A sizable percentage of both national and global prosperity and connectivity is rooted in air travel so that a poorly functioning ATC network adds indirect costs for a multitude of products and services utilized even by non-flyers. There is also a juxtaposition in which travelers are increasingly benefiting from cutting edge technology as they book and are processed by airlines even as the aircraft they board are controlled by systems related to technology long ago discarded by most consumers in their private lives. When our roads and bridges crumble there is public outcry and pressure to correct the situation. But because ATC systems are only one component of air travel, unseen by the end consumer, we rather rail at the carriers for delays and inefficiencies over which they often have no control. Most travelers assume "ATC delay" is just an airline ploy to cover shoddy operations. Finally, because a portion of the sky is always filled with military aircraft charged with national security, we all share a stake in that activity as well.

#### Next Gen gets is critical to preventing terrorism

Toner 12 (Dr. Karlin, Director and Senior Staff Advisor to the Secretary of Transportation for NextGen, Joint Planning and Development Office, “NextGen Topics”, http://www.jpdo.gov/Nextgen\_Topics.asp)

Securing America’s Air Transportation System The Next Generation Air Transportation System (NextGen) technologies will substantially improve our nation’s ability to manage, monitor, and secure the nation’s air transportation system. NextGen will give those charged with this essential mission the tools to work in real time while relying on the same operational picture. This will create an entirely new paradigm for the way America manages the security of its airspace. The benefits will be substantial. For example, with NextGen, it will be possible to immediately view data on the current operation and intent of any aircraft in the system. In the event an aircraft deviates from its flight plan or begins to operate in a suspicious manner, this information will be instantly available. NextGen’s rapid exchange of information and an integrated approach to security will make it possible to identify aviation workers, travelers, and cargo that pose a potential threat and prevent them from gaining access to the air transportation system through pre-screening/credentialing, on-site screening.

#### Next Gen solves all types of terrorism

Elias 9 (Bart Elias, Specialist in aviation technology, "National Aviation Security Policy, strategy, and Mode-Specific Plans: Backgrounds and consideration for congress", http://www.fas.org/sgp/crs/homesec/RL34302.pdf) BSB

It remains unclear, however, whether this anticipated growth in aviation operations is being adequately planned for in the context of national strategies and mode-specific plans for aviation security. The strategies indicate that they will evolve with shifting threat and vulnerability characteristics on the basis of ongoing risk assessments. However, the degree to which the changing nature, size, and scope of aviation and air travel is being considered in these risk assessments remains a signficant issue for policymakers and aviation security strategists. With regard to the sustainability of aviation security technologies, specific strategies for maintaining deployed technologies and phasing-in next generation screening technologies have not yet been clearly defined. While plans for enhancing aviation security under the comprehensive Next Generation Air Transportation System (NGATS) initiative envision extensive improvements to aviation security by 2025, the roadmap to achieving these capabilities has not yet been fully defined. According to the future concept of operations for aviation and airport security, significant security transformations will include • integrated dynamic risk management solutions; • biometric technologies for airport access controls; • smaller footprint, multi-threat detection capabilities for screening passengers and baggage; • network-enabled environmental sensors to detect and warn of chemical, biological, radiological, nuclear, and explosives (CBRNE) threats at airports; • rapidly deployable, reconfigurable screening systems to meet temporary and intermittent screening requirements; • on-board aircraft safety modifications and ground-based systems and procedures to protect flights from shoulder-fired missiles; • network-centric information sharing capabilities for data mining and decision support to aid security operations personnel and security analysts; and • capabilities to allow for CBRNE screening of all air cargo items not packed in secured areas or securely conveyed to aircraft.24 • While all of these objectives are reflected to some degree in the National Strategy for Aviation Security and the supporting plans, Congress may have a particular interest in how the strategic plan aligns with NGATS plans for enhancing aviation and airport security over the next 18 to 20 years.

#### Terrorism cannot be solved without Next Gen

Elias 9 (Bart Elias, Specialist in aviation technology, "National Aviation Security Policy, strategy, and Mode-Specific Plans: Backgrounds and consideration for congress", http://www.fas.org/sgp/crs/homesec/RL34302.pdf) BSB

As Congress proceeds with initiatives to oversee and possibly modify U.S. approaches to aviation security, substantive issues relating to the contents of aviation security policy, national strategy, and planning documents may be a considerable focus of discussion and debate. While these documents will likely play an important role as a general blueprint for guiding aviation security policy and strategy, it is also likely that the U.S. approach to aviation security will need to continually evolve and adapt to shifting threats and vulnerabilities. Addressing funding and resources to address shifts in risk and security strategy may be an issue of considerable interest in the context of future year budget planning and debate.

### Terror Impacts

#### Nuclear material is easily attainable—multiple sources

Konkel 5 (Todd, Georgetown University, Container Security: Preventing a Nuclear Catastrophy, http://irps.ucsd.edu/assets/004/5372.pdf; LA)

A fundamental factor contributing to the threat of a container-based terrorist attack is the disturbing availability of nuclear materials, which include unsecured nuclear weapons, fissile nuclear material and other sources of radioactivity. As previously stated, given a choice, a terrorist would opt for a nuclear device over a dirty bomb in order to maximize casualties and damage to physical infrastructure. The first obstacle a potential nuclear terrorist faces is the acquisition of a functional nuclear weapon. There are more than two hundred locations worldwide where a would-be terrorist could acquire a nuclear weapon or the fissile material to make one.14 The area of greatest concern is Russia, which may still possess as many as twelve thousand low-yield tactical nuclear weapons that are often kept in less secure conditions than the weapons in the nation’s strategic arsenal.15 Fortunately, a nuclear bomb in a terrorist’s hands has thus far been only the subject of spy thrillers and Hollywood productions rather than a live CNN newscast.

#### The US would assume Russia or China was involved in the attack

Ayson 2010 [Robert Ayson, Professor of Strategic Studies and Director of the Centre for Strategic Studies: New Zealand at the Victoria University of Wellington, 2010, “After a Terrorist Nuclear Attack: Envisaging Catalytic Effects,” Studies in Conflict & Terrorism, Volume 33, Issue 7, July, Available Online to Subscribing Institutions via InformaWorld]

But these two nuclear worlds—a non-state actor nuclear attack and a catastrophic interstate nuclear exchange—are not necessarily separable. It is just possible that some sort of terrorist attack, and especially an act of nuclear terrorism, could precipitate a chain of events leading to a massive exchange of nuclear weapons between two or more of the states that possess them. In this context, today’s and tomorrow’s terrorist groups might assume the place allotted during the early Cold War years to new state possessors of small nuclear arsenals who were seen as raising the risks of a catalytic nuclear war between the superpowers started by third parties. These risks were considered in the late 1950s and early 1960s as concerns grew about nuclear proliferation, the so-called n+1 problem. It may require a considerable amount of imagination to depict an especially plausible situation where an act of nuclear terrorism could lead to such a massive inter-state nuclear war. For example, in the event of a terrorist nuclear attack on the United States, it might well be wondered just how Russia and/or China could plausibly be brought into the picture, not least because they seem unlikely to be fingered as the most obvious state sponsors or encouragers of terrorist groups. They would seem far too responsible to be involved in supporting that sort of terrorist behavior that could just as easily threaten them as well. Some possibilities, however remote, do suggest themselves. For example, how might the United States react if it was thought or discovered that the fissile material used in the act of nuclear terrorism had come from Russian stocks,40 and if for some reason Moscow denied any responsibility for nuclear laxity? The correct attribution of that nuclear material to a particular country might not be a case of science fiction given the observation by Michael May et al. that while the debris resulting from a nuclear explosion would be “spread over a wide area in tiny fragments, its radioactivity makes it detectable, identifiable and collectable, and a wealth of information can be obtained from its analysis: the efficiency of the explosion, the materials used and, most important … some indication of where the nuclear material came from.”41 Alternatively, if the act of nuclear terrorism came as a complete surprise, and American officials refused to believe that a terrorist group was fully responsible (or responsible at all) suspicion would shift immediately to state possessors. Ruling out Western ally countries like the United Kingdom and France, and probably Israel and India as well, authorities in Washington would be left with a very short list consisting of North Korea, perhaps Iran if its program continues, and possibly Pakistan. But at what stage would Russia and China be definitely ruled out in this high stakes game of nuclear Cluedo? In particular, if the act of nuclear terrorism occurred against a backdrop of existing tension in Washington’s relations with Russia and/or China, and at a time when threats had already been traded between these major powers, would officials and political leaders not be tempted to assume the worst? Of course, the chances of this occurring would only seem to increase if the United States was already involved in some sort of limited armed conflict with Russia and/or China, or if they were confronting each other from a distance in a proxy war, as unlikely as these developments may seem at the present time. The reverse might well apply too: should a nuclear terrorist attack occur in Russia or China during a period of heightened tension or even limited conflict with the United States, could Moscow and Beijing resist the pressures that might rise domestically to consider the United States as a possible perpetrator or encourager of the attack? Washington’s early response to a terrorist nuclear attack on its own soil might also raise the possibility of an unwanted (and nuclear aided) confrontation with Russia and/or China. For example, in the noise and confusion during the immediate aftermath of the terrorist nuclear attack, the U.S. president might be expected to place the country’s armed forces, including its nuclear arsenal, on a higher stage of alert. In such a tense environment, when careful planning runs up against the friction of reality, it is just possible that Moscow and/or China might mistakenly read this as a sign of U.S. intentions to use force (and possibly nuclear force) against them. In that situation, the temptations to preempt such actions might grow, although it must be admitted that any preemption would probably still meet with a devastating response. As part of its initial response to the act of nuclear terrorism (as discussed earlier) Washington might decide to order a significant conventional (or nuclear) retaliatory or disarming attack against the leadership of the terrorist group and/or states seen to support that group. Depending on the identity and especially the location of these targets, Russia and/or China might interpret such action as being far too close for their comfort, and potentially as an infringement on their spheres of influence and even on their sovereignty. One far-fetched but perhaps not impossible scenario might stem from a judgment in Washington that some of the main aiders and abetters of the terrorist action resided somewhere such as Chechnya, perhaps in connection with what Allison claims is the “Chechen insurgents’ … long-standing interest in all things nuclear.”42 American pressure on that part of the world would almost certainly raise alarms in Moscow that might require a degree of advanced consultation from Washington that the latter found itself unable or unwilling to provide.

### \*Shell Cyber Terrorism Scenario\*

#### Air-traffic control is vulnerable to cyber attacks now – causes US retaliation

The Boston Globe 12 (The Boston Globe, "The military alone can’t protect against increasing cyberattacks,"http://www.boston.com/bostonglobe/editorial\_opinion/editorials/articles/2011/06/12/the\_military\_alone\_cant\_protect\_against\_increasing\_cyberattacks/, accessed 6/25/12, CNM)

Against this backdrop, the Defense Department recently updated its own strategy on cyberattacks. Over 100 foreign intelligence agencies have already attempted to hack the department’s networks, so the Pentagon’s intensified focus on cybersecurity seems long overdue — and a reminder to private businesses whose networks may be vulnerable that they should be taking greater precautions of their own. The Pentagon’s new policy makes clear that any cyberattack that damages US critical infrastructure or US military readiness could be considered an “act of war.’’ A cyberattack on a non-military target — against civilian air-traffic control, for example — could in itself cause enough destruction, death, or significant disruption to justify the use of force.

#### NextGen key to solving cyber terrorism and other problems

Tobruk Refinery 11 (Tobruk Refinery, “2011 FAA Budget Debate and NextGen Air Traffic Control Systems”, <http://tobrukrefinery.org/tag/nextgen/>) KA

In fact there was an interesting article the other day in the Wall Street Journal titled; “House Bill Seeks Cuts to FAA,” by Josh Mitchell and Any Pasztor on April 2, 2011. In the article amongst many other interesting facts the article noted that if the bill were to be passed it would push back the FAA budget to that of 2008s budget, but this also at a time when the FAA is working on seriously updating its Air Traffic Control System for efficiency and safety. On the safety front would be prevention of cyber terrorism, midair collisions, runway incursions, and regular terrorism using aircraft as weapons. For efficiency it could provide less wait times, more direct routes, and thus, drastically reduce fuel consumption which is on everyone’s mind, especially the airlines with the increase costs of jet fuel. The article stated; “Republicans aim to cut about $4 billion from the projected spending through 2015,” and Democrats are screaming air-safety, and carbon footprint of aviation. Northrop and Lockheed, and Boeing as well, see lucrative contracts along with other contractors for the installation of NextGen Air Traffic Control Systems, even going 3D or partial holographic for ATC personnel displays. I’d advise anyone looking into this topic to go to the GAO Website and search “ATC Modernization” and “NextGen Air Traffic FAA” – and I think what you’ll quickly discover is that in these references and archived GAO Reports are tons of information on why we need ATC Modernization and the challenges faced in the turbulent skies ahead, along with Historical Perspectives – including the ongoing problem and the blob of bureaucracy.

#### Cyber warfare risks escalation and global war

**Fritz 9 (Jason, researcher for International Commission on Nuclear Nonproliferation and Disarmament, former Army officer and consultant, “Hacking Nuclear Command and Control,” July, http://www.icnnd.org/latest/research/Jason\_Fritz\_Hacking\_NC2.pdf)**

This paper will analyse the threat of cyber terrorism in regard to nuclear weapons. Specifically, this research will use open source knowledge to identify the structure of nuclear command and control centres, how those structures might be compromised through computer network operations, and how doing so would fit within established cyber terrorists’ capabilities, strategies, and tactics. If access to command and control centres is obtained, terrorists could fake or actually cause one nuclear-armed state to attack another, thus provoking a nuclear response from another nuclear power. This may be an easier alternative for terrorist groups than building or acquiring a nuclear weapon or dirty bomb themselves. This would also act as a force equaliser, and provide terrorists with the asymmetric benefits of high speed, removal of geographical distance, and a relatively low cost. Continuing difficulties in developing computer tracking technologies which could trace the identity of intruders, and difficulties in establishing an internationally agreed upon legal framework to guide responses to computer network operations, point towards an inherent weakness in using computer networks to manage nuclear weaponry. This is particularly relevant to reducing the hair trigger posture of existing nuclear arsenals. All computers which are connected to the internet are susceptible to infiltration and remote control. Computers which operate on a closed network may also be compromised by various hacker methods, such as privilege escalation, roaming notebooks, wireless access points, embedded exploits in software and hardware, and maintenance entry points. For example, e-mail spoofing targeted at individuals who have access to a closed network, could lead to the installation of a virus on an open network. This virus could then be carelessly transported on removable data storage between the open and closed network. Information found on the internet may also reveal how to access these closed networks directly. Efforts by militaries to place increasing reliance on computer networks, including experimental technology such as autonomous systems, and their desire to have multiple launch options, such as nuclear triad capability, enables multiple entry points for terrorists. For example, if a terrestrial command centre is impenetrable, perhaps isolating one nuclear armed submarine would prove an easier task. There is evidence to suggest multiple attempts have been made by hackers to compromise the extremely low radio frequency once used by the US Navy to send nuclear launch approval to submerged submarines. Additionally, the alleged Soviet system known as Perimetr was designed to automatically launch nuclear weapons if it was unable to establish communications with Soviet leadership. This was intended as a retaliatory response in the event that nuclear weapons had decapitated Soviet leadership; however it did not account for the possibility of cyber terrorists blocking communications through computer network operations in an attempt to engage the system. Should a warhead be launched, damage could be further enhanced through additional computer network operations. By using proxies, multi-layered attacks could be engineered. Terrorists could remotely commandeer computers in China and use them to launch a US nuclear attack against Russia. Thus Russia would believe it was under attack from the US and the US would believe China was responsible. Further, emergency response communications could be disrupted, transportation could be shut down, and disinformation, such as misdirection, could be planted, thereby hindering the disaster relief effort and maximizing destruction. Disruptions in communication and the use of disinformation could also be used to provoke uninformed responses. For example, a nuclear strike between India and Pakistan could be coordinated with Distributed Denial of Service attacks against key networks, so they would have further difficulty in identifying what happened and be forced to respond quickly. Terrorists could also knock out communications between these states so they cannot discuss the situation. Alternatively, amidst the confusion of a traditional large-scale terrorist attack, claims of responsibility and declarations of war could be falsified in an attempt to instigate a hasty military response. These false claims could be posted directly on Presidential, military, and government websites. E-mails could also be sent to the media and foreign governments using the IP addresses and e-mail accounts of government officials. A sophisticated and all encompassing combination of traditional terrorism and cyber terrorism could be enough to launch nuclear weapons on its own, without the need for compromising command and control centres directly.

### Cyberterror risk high

#### Vulnerability now – the entire air traffic control system could be completely compromised –increased efforts solve

Baldor, 9 (Lolita C., writer for Associated Press, "Air traffic systems vulnerable to cyber attack Audit: Support systems have been breached by hackers in recent months," accessed 6-25-12, http://www.msnbc.msn.com/id/30602242/ns/technology\_and\_science-security/t/air-traffic-systems-vulnerable-cyber-attack/#.T-lPOnDEdFM, CNM)

WASHINGTON — America's air traffic control systems are vulnerable to cyber attacks, and support systems have been breached in recent months to allow hackers access to personnel records and network servers, a new report says. The audit done by the Department of Transportation's inspector general concluded that although most of the attacks disrupted only support systems, they could spread to the operational systems that control communications, surveillance and flight information used to separate aircraft. The report noted several recent cyber attacks, including a February incident, in which hackers gained access to personal information on about 48,000 current and former FAA employees, and an attack in 2008 when hackers took control of some FAA network servers. Auditors said the Federal Aviation Administration is not able to detect potential cyber security attacks adequately, and it must secure its systems better against hackers and other intruders. "In our opinion, unless effective action is taken quickly, it is likely to be a matter of when, not if, ATC (air traffic control) systems encounter attacks that do serious harm to ATC operations," the auditors said. In response to the findings, FAA officials stressed that the support systems and traffic control networks are separated. They agreed, however, that more aggressive action should be taken to secure the networks and secure high-risk vulnerabilities. According to the report, the FAA received 800 cyber incident alerts during the budget year that ended Sept. 30, 2008, and more than 150 were not resolved before the calendar year was over. Fifty of those, the auditors said, had been open for more than 3 months, "including critical incidents in which hackers may have taken over control" of some computers. Officials tested Internet-based systems that are used to provide information to the public such as communications frequencies for pilots, as well as internal FAA computer systems. The tests found almost 4,000 "vulnerabilities," including 763 viewed as "high risk." The vulnerabilities including weak passwords, unprotected file folders and other software problems. The weaknesses could allow hackers or internal FAA workers to gain access to air traffic systems, and possibly compromise computers there or infect them with malicious codes or viruses, the audit warned. Such software gaps, the report said, are "especially worrisome at a time when the nation is facing increased threats from sophisticated nation state-sponsored cyber attacks." In its response to the audit, the FAA said corrective actions already are being taken, and others should be in place in the coming months. Rep. John Mica of Florida, the top Republican on the House Transportation and Infrastructure Committee, asked Wednesday for a congressional hearing on the matter. He said that while the recent attacks did not do serious damage, the report "confirms that our entire system could be compromised by a similar threat" and jeopardize the industry and threaten public safety.

#### Cyber warfare happening now – recent events prove

Global Data Vault 9 (Global Data Vault, “Air Traffic Control System Vulnerable to Cyber Terrorism”, <http://www.globaldatavault.com/blog/air-traffic-control-system-vulnerable-to-cyber-terrorism/>) KA

In years past, there have been numerous public cases of hacks and viruses that have taken place across the United States. President Obama announced on May 29 that he will create a new White House office of cyber security, due to the nation’s vulnerability to cyber attacks. The President said that the U.S. has for too long failed to adequately protect the security of its computer networks. President Obama called the cyber threats one of the most serious economic and military dangers the nation faces. Recently, reports have warned that America’s air traffic control systems are susceptible to cyber attacks. The Federal Aviation Administration is in the process of modernizing its system. The satellite-based air traffic control system is heavily reliant on commercial software and IP-based technology, which creates more opportunities for outsiders to hack into the FAA systems. There have been 763 identified high-risk vulnerabilities that could give immediate access into an FAA computer system. Insufficient monitoring coverage of air traffic control (ATC) systems creates another weakness for the FAA. This is not the first time that the FAA has been under attack. Hackers have actually gained access to FAA systems in the past, including one that caused a partial shutdown of ATC systems in Alaska.

### NextGen Solves CyberTerror

#### NAS needs better cyber protection

Williams 10+ (James H Williams, Federal Aviation Administration, "National Airspace System Security Cyber Architecture" http://www.mitre.org/work/tech\_papers/2011/10\_4169/10\_4169.pdf) BSB

The present features of the NAS are not sufficient to guarantee efficient or uninterrupted operation in the future. Greater use of IP networking to interconnect systems and services in the NextGen era will adversely influence past resiliency, redundancy, and isolation solutions. Greater interconnections of systems will also increase the cyber risks to the NAS. Improved cyber security requires changes to present NAS safety provisions. Consideration of deliberate actions, in addition accidental actions, is now required. A shift from safety review at specified times to continual analyses is needed. An expansion of responsibility for system administrators and network operators from maintaining performance to detecting intrusive actions is also imperative. Improved cyber security also requires changes to the NAS infrastructure to provide more assurance that data provided by external partners and actions requested by external partners are not malicious in intent. Ultimately this means the NAS infrastructure must allow system modifications in a short timeframe to counteract changing cyber threats. Agility of function is now a requisite characteristic of the NAS. This future cyber security need counterposes a safety culture which values consistency and lack of change.

#### Next Gen prevents cyber terror

National Science and Technology Council 6, ("Federal Plan for Cyber Security and information assurance research and development" http://www.pdfdocspace.com/docs/40649/available-online-(pdf-document).html) BSB

The mission of the FAA is to provide the safest, most efficient aerospace system in the world. In securing the national airspace system, the FAA supports DHS programs in emergency preparedness, crisis management, and continuity of government planning. The FAA is a member of the Joint Planning and Development Office (JPDO), which is chartered by Congress to develop a vision of the aviation system in the year 2025 and a Next Generation Air Transportation System (NGATS) Implementation Plan. The JPDO includes DHS, DOC, DoD, DOT, NASA, and OSTP. Close partnerships with other Federal agencies on integration of security technologies and management of over-flight programs help ensure continuous operation of the national airspace system. FAA cyber security and information assurance research activities seek to maximize budget effectiveness and leverage developments by other agencies. FAA’s unique requirements are based on identification of security measures that provide for the safety and security of the FAA workforce, facilities, and critical infrastructure. Cyber-defense concept modeling plays a significant role in improving the security of FAA’s information infrastructure. The agency’s cyber security goal is mission survivability by achieving zero cyber events that disable or significantly degrade FAA services. The Director of Information Technology Research and Development (Chief Technology Officer) is responsible for developing, managing, and executing FAA’s IT and information systems security R&D programs.

#### NextGen’s cyber terror defense strategy works

De Souza 11 (Paul, founder of the Cyber Security Forum Initiative, “FAA’s Next Generation Air Transportation System (NextGen)”, <http://paulcsfi.wordpress.com/2011/03/01/faanextgen/>) KA

Now that you have a better understanding of the NextGen technology, I would like to share some of my notes covering the cyber security side of things. The core elements of NextGen are comprised of CATM-T (Collaborative Air Traffic Management Technologies), SWIM (System Wide Information Management), NNEW (NextGen Network Enabled Weather), and NVS (Airspace System Voice Switch). All of these critical elements rely heavily on technological advances and are meant to increase situational awareness and information sharing. While NextGen adds amazing capabilities to NAS, the risk of compromise multiplies under the new platform. There is more data movement and data exchange, creating the need for trusted communications and integrity checks. One of the points that grabbed my attention was the use of the cloud as a way to maximize operational results. The interesting part is the fact that the FAA will run its own cloud and not rely on 3rd party providers like some of our governmental institutions in the US are planning on doing. I find this move from the FAA a wise one. They are implementing security in depth and following NIST standards. Their cyber security objectives sound in line with good security standards. Some of the concerns I have would relate to the supply chain security strategy the FAA would implement, application security and proper software development, control center resiliency, how to deal with sophisticated cyber-attacks against NextGen (including state sponsored cyber operations in case of cyber warfare), training and education of FAA cyber personnel.

#### New security programs are needed to solve cyber-terror

National Science and Technology Council 6, ("Federal Plan for Cyber Security and information assurance research and development" http://www.pdfdocspace.com/docs/40649/available-online-(pdf-document).html) BSB

In the current climate of elevated risk created by the vulnerabilities of and threats to the Nation’s IT infrastructure, cyber security is not just a paperwork drill. Adversaries are capable of launching harmful attacks on U.S. systems, networks, and information assets. Such attacks could damage both the IT infrastructure and other critical infrastructures. Cyber security has largely failed to gain wide adoption in many consumer products for a variety of reasons, including a lack of appreciation for consequences of insecurity, the difficulty of developing secure products, performance and cost penalties, user inconvenience, logistical problems for organizations in implementing and consistently maintaining security practices, and the difficulty of assessing the value of security improvements. But consumer and enterprise concerns have been heightened by increasingly sophisticated hacker attacks and identity thefts, warnings of “cyber terrorism,” and the pervasiveness of IT uses. Consequently, many in the computer industry have come to recognize that the industry’s continued ability to gain consumer confidence in new, more capable applications will depend on improved software development and systems engineering practices and the adoption of strengthened security models. Thus, industry leaders, trade and professional associations, and advocacy groups support a robust Federal role in the long-term fundamental R&D needed to provide the foundations for next-generation security technologies.

### Cyberterror Impact

#### Cyber conflict causes US retaliation and escalation

Lewis 10 (James Andrew, Center for Strategic and International Studies, “The Cyber War Has Not Begun”, <http://csis.org/files/publication/100311_TheCyberWarHasNotBegun.pdf>) KA

Even in a conflict – with China over Taiwan or Russia over Georgia – our opponents would be constrained in launching some kinds of cyber attack. Attacks on civilian targets in the continental United States could trigger a much stronger reaction than attacks on military targets and deployed forces. Moving from deployed forces in theater to civilian targets in the homeland risks unmanageable escalation. These risks and uncertainties create implicit thresholds in cyber conflict that nations have so far observed. Just as with missiles and aircraft, our nation-state opponents have the ability to strike the United States using cyber attacks, but they have chosen not to do so because of the risk of retaliation.

Third, cyber attacks, especially attacks against less technologically adept countries, raise the risk of conflict escalation. If the United States launches a cyber attack against a state or non-state actor that cannot respond in kind, that actor might respond with physical attacks. 7 Moreover, the United States considers physical attacks a valid response to cyber attacks. A 2009 review of U.S. military strategy documents and statements from officials indicate that a nuclear strike remains an option for U.S. response to cyber attacks. 8

#### Cyber terror risks conflict and extinction

Bucci 9 (Steven P., IBM's Issue Lead for Cyber Security Programs, Ex-Deputy Assistant Secretary of Defense, “The Confluence of Cyber Crime and Terrorism,” <http://www.heritage.org/Research/NationalSecurity/hl1123.cfm>) KA

Terrorists will recognize the opportunity the cyber world offers sooner or later. They will also recognize that they need help to properly exploit it. It is unlikely they will have the patience to develop their own completely independent capabilities. At the same time, the highly developed, highly capable cyber criminal networks want money and care little about the source. This is a marriage made in Hell. The threat of a full nation-state attack, either cyber or cyber-enabled kinetic, is our most dangerous threat. We pray deterrence will continue to hold, and we should take all measures to shore up that deterrence. Terrorists will never be deterred in this way. They will continue to seek ways to successfully harm us, and they will join hands with criminal elements to do so. A terrorist attack enabled by cyber crime capabilities will now be an eighth group of cyber threats, and it will be the most likely major event we will need to confront. Some would say that cyber crime is a purely law enforcement issue, with no national security component. That is a dubious "truth" today. This is not a static situation, and it will definitely be more dangerously false in the future. Unless we get cyber crime under control, it will mutate into a very real, very dangerous national security issue with potentially catastrophic ramifications. It would be far better to address it now rather than in the midst of a terrorist incident or campaign of incidents against one of our countries. Terrorism enabled by cyber criminals is our most likely major cyber threat. It must be met with all our assets.

## \*\*\*Warming Advantage\*\*\*

### Airplanes K2 Emissions

#### Jet fuel effects global warming

Brown 5 (Collin Brown, Deputy politcal editor, "Aviation fuel to undermine pledge on global warming" http://www.independent.co.uk/environment/aviation-fuel-to-undermine-pledge-on-global-warming-516542.html) BSB

The devastating cost in global warming of tax-free fuel for airlines is laid bare in an EU report being studied by MPs. Aviation fuel is untaxed, despite the growing evidence that it is undermining international efforts to reduce the damaging gases that cause global warming. The European Commission report says that if the current rate of growth in air travel is continued, it will result in a 150 per cent increase in emissions from international flights from EU airports by 2012. That will offset more than a quarter of the reductions required under the European Union's agreed Kyoto target. On current trends, the Commission says that aviation emissions "will become a major contributor" of greenhouse gases.

#### Airplane emissions affect climate change more than CO2

Braconnier 11 (Deborah Braconnier, Specializing in SEO content, "Airplane contrails worse than CO2 emissions for global warming: study" http://phys.org/news/2011-03-airplane-contrails-worse-co2-emissions.html) BSB

Airplane contrails are the white clouds that we see in the sky spreading behind jets. These cirrus clouds are created when the hot, moist air released from the plane freezes in the colder and drier air. These clouds then trap the long-wave radiation from Earth and create a warming of the atmosphere. In their study, Burkhardt and Karchar utilized satellite imagery of these spreading contrails to create a computer model which estimates how the contrails affect the Earth’s temperature. They have discovered that aviation contrails play a huge role in the impact on the climate and an even greater impact than that created by the CO2 emissions produced. While the CO2 emissions from airplanes account for around three percent of the annual CO2 emissions from all fossil fuels and change the radiation by 28 milliwatts per square meter, the aviation contrails are responsible for a change of around 31 milliwatts per square meter.

#### Airline emissions are key

Hodgkinson et al 7 (Associate Professor in the Law School at UWA, "STRATEGIES FOR AIRLINES ON AIRCRAFT EMISSIONS AND CLIMATE CHANGE: SUSTAINABLE, LONG - TERM SOLUTIONS" http://www.hodgkinsongroup.com/documents/Hodgkinson\_airline\_emissions.bak.pdf) BSB

A number of organisations such as the Intergovernmental Panel on Climate Change (IPCC), Oxford University, the Massachusetts Institute of Technology (MIT) and the Tyndall Centre, for example, have studied the impacts of aviation on the global atmosphere. These studies, together with reports from Royal Commissions and other inquiries, make the following points clear: 􀁸 the climate change impacts of aviation are significantly worse than those of its carbon dioxide emissions alone. Further, reference to aviation being responsible for 2% of global carbon dioxide emissions is misleading as the figure (a) is based on total anthropogenic carbon dioxide emissions in 1992 (as determined by the IPCC), not 2007; (b) does not take into account aviation’s non-CO2 greenhouse gas (GHG) emissions which significantly contribute to the climate change impacts of aviation; and (c) ignores growth in air travel; 􀁸 air travel demand is growing at unprecedented rates, yet substantial reductions of aviation GHG emissions are not possible in the short to medium term; 􀁸 not only are emissions from air travel increasing significantly in absolute terms but, against a background of emissions reductions from many other sources, their relative rate of increase is even greater. Put another way, “if the [recommended] reductions in carbon dioxide emissions from groundlevel activities … are achieved, and the growth in air transport projected by the IPCC materialises, then air travel will become one of the major sources of anthropogenic climate change by 2050;” 5 􀁸 development of alternative jet fuels and aircraft technological developments, together with the development of more efficient operational practices and more efficient air traffic management systems and processes, will only partially offset the growth in aviation emissions; 􀁸 there is presently no systematic or compulsory incentive to reduce international aviation emissions; 􀁸 without government action to significantly reduce aviation growth within the UK, for example, aviation emissions may be greater than those forecast for all other sectors of the economy. As a result, aviation may exceed the carbon target for all sectors by 2050;

#### Flight efficiency is critical to slow the rate of warming --- airlines’ impact is unique

Capoccitti 10 (Sam, Aviation Consultant, et al., “Aviation Industry - Mitigating Climate Change Impacts through Technology and Policy”, Journal of Technology Management & Innovation, 5(2), http://www.scielo.cl/scielo.php?pid=S0718-27242010000200006&script=sci\_arttext)

Environmental impact of Flight The main environmental concerns associated with aircraft are climate change, stratospheric ozone reduction (leading to increased surface UV radiation, regional pollution, and local pollution. During flight, aircraft engines emit carbon dioxide, oxides of nitrogen oxides of sulphur, water vapour, hydrocarbons and particles - the particles consist mainly of sulphate from sulphur oxides, and soot. These emissions alter the chemical composition of the atmosphere in a variety of ways, both directly and indirectly (RCEP, 2002). While much of the CO2 is absorbed on Earth in plants and the ocean surface, a huge amount goes into the atmosphere, where it and other gases create a kind of lid around the globe --the so-called greenhouse effect. Heat that would normally escape into space is thus reflected back to Earth, raising global temperatures (Lehrer, 2001). Nitrogen oxides (NOx) and H2O vapor from aircraft increase the formation of cirrus clouds and create contrails, which are visible from the ground. The combination of " 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 (IPCC estimated that radiative forcing from all aircraft greenhouse gas emissions is a factor of 2 to 4 times higher than that from its CO2 emissions alone). Hence any strategy to reduce aircraft emissions will need to consider other gases and not just CO2" (GreenSkies, n.d.; pg.1). The environmental issues associated with flight are also correlated with the altitude at which the carbon dioxide is emitted, the higher the attitude the greater damage to the ozone layer. Research has shown that the majority of flights fly at an altitude between 29,500 ft and 39,400 ft (9-12 km). Figure 1 (Federal Aviation Administration, 2005; pg. 32 ) highlights the distribution to total fuel burn and emissions by 1 km altitudes for the year 2000. The lower spike in fuel burn and emissions in the 0-1 km range is attributed to aircraft emissions from the ground when aircraft are idling or taxiing. It was noticed after the events of 9/11 (when there was a temporary halt to all commercial flights) that the Earth's temperature was 1 to 2 degrees Celsius colder, which coincides with the theory that aircraft emissions do impact the environment. Figure 1. Altitude distribution of fuel burn and emissions Approaches to Mitigating Environmental Impacts The aviation sector these days is buzzing with talks about aviation emissions. There is a call for aviation emissions by the airlines to be included in climate change pacts (Fogarty, 2009). Talk is now turning to ways of mitigating air travel's future impact on climate change, and these "generally fall within two spheres: technology development, and policy mechanisms" (GLOBE-Net, 2007). Engine Technology, Aerodynamic Body and Weight It is estimated that the aircraft we fly today are 70% more efficient than those 10 years ago. IATA predicts that by 2020, another 25% efficiency will be added to the present day fleet (GLOBE-Net, 2007). Improvements in aerodynamics, engine design and weight reduction are the main areas of improvement to counter the dependence on fossil fuel. Though the replacement of fossil fuel is being vigorously pursued with some limited success, fossil fuels will not expect to be replaced in the near future. Apart from engine efficiency, finding an alternative fuel is part of the challenge for the aviation industry. GLOBE-Net (2007) reports that the majority of efficiency improvements over past aircraft have been achieved through the development and improvements in engine technology. Engine improvements, as in the case of automobiles, must increase fuel efficiency (and therefore, decrease CO2 emissions) with reductions in NOx, water vapour, and other air pollutants. Some technological advancement in engine technology uses high pressure ratios to improve efficiency but this worsens the problem with NOx. If new control techniques for NOx are developed to keep within regulatory compliance limits, high pressure ratios will likely be the path pursued by aircraft manufacturers. Further reduction in emissions can be achieved by matching the advancements in engine technology with better aerodynamic shape and use of light weight material to reduce drag. This certainly contributes to reducing the impact on environment and also can be promoted as a cost-saving measure (e.g., savings in fuel costs). Boeing (2007; pg. 1) indicated that "four key technologies contribute to an impressive 20% improvement in fuel use for the 787 Dreamliner as compared to today's similarly sized airplane. New engines, increased use of light weight composite materials, more-efficient systems applications and modern aerodynamics each contribute to the 787's overall performance." Aircraft manufacturers are also exploring the benefits of other technologies such as the use of winglets, fuselage airflow control devices and weight reductions. These could "reduce fuel consumption by a further 7% says the IPCC, although some have limited practicability" (GLOBE-Net, 2007). In the long term, new aircraft configurations (such as a blended wing body) may achieve major improvements in efficiency. Alternate Energy Solutions The time for zero emission aircraft is still far away. The technologies that may make that possible are still in early stages of development and evaluation. Second-generation biofuels, solar power and fuel cells are all being investigated by the aviation industry as well as the automobile industry. The more fuel aircraft burns, the more emissions emitted into the atmosphere thereby increasing its environmental footprint. The aviation industry has come a long way with fuel technology and with the help of Boeing and Airbus (the world's largest aircraft manufacturers). Today aircraft are lighter, quicker and more fuel efficient. Boeing has an ongoing legacy of integrating environmental performance improvements through technology advancements. Over the last 40 years, airplane CO 2 emissions have been reduced by around 70% and the noise levels have been reduced by approximately 90 percent. The noise footprint of the new 787 Dreamliner is 60% lower than any similar aircraft (Boeing 1998-2007; pg. 14). That legacy continues today with every airplane they design and build (Boeing, 1998-2008; pg. 16). One of the many initiatives supported by Boeing is its search for alternative energy solutions. This initiative will lead to reducing greenhouse gas emissions and at the same time Boeing is pioneering three key environmental advancements: • Advanced-Generation Biofuels - Boeing, Virgin Atlantic and GE Aviation conducted the first commercial flight using a biofuel mix with traditional kerosene-based fuel in February 2008. • Solar Cells - Converting sunlight into electricity • Fuel Cells - Convert hydrogen into heat & electricity without combustion, reducing the need for conventional fuels and eliminating emissions. Like Boeing, Airbus has partnered with Honeywell Aerospace, International Aero Engines and Jet Blue Airways in pursuit of developing a sustainable second-generation bio-fuel for commercial jet use, with the hope of reducing the aviation industry's environmental footprint. Alternative fuel research is a core tenet of Airbus' eco-efficiency initiatives (Airbus, 2008). Airbus research has also lead to test flights using gas to liquid kerosene, which is similar to jet fuel but results in lower emissions and is a much cleaner fuel source. Airbus has also researched other types of alternative fuels; for example, bio-mass to liquid and coal to liquid. On February 1, 2008 an Airbus 380 (in collaboration with Shell International and Rolls Royce) conducted a test flight using gas to liquid kerosene in one of the A380 engines. Over the last year, four airlines have flight tested on biofuel: Virgin Atlantic (in February 2008), Air New Zealand (in December 2008), Continental Airlines and Japan Airlines (in January 2009). They have "already flown on routes with one engine part-powered by a range of biofuels including algae and jatropha. Jatropha, a poisonous plant that produces seeds that can be refined into biofuels, is being touted as a good alternative fuel and a potentially powerful weapon against climate change. Experts say the perennial plant can grow on marginal land with limited rainfall, and does not compete with other food crops or encourage deforestation. Following its flight using jatropha in late December, Air New Zealand has set a goal to have 10 percent of fuel coming from biofuel sources by 2013, while Virgin is aiming for 5 percent by 2015" (Szabo et al., 2009). Pew (2009) reports that "the push in development of biofuels continues with a recent $25 million contract awarded by the Defense Advanced Research Projects Agency to SAIC. The company is being tasked to lead a team in development of an integrated process for producing JP-8 from algae at a cost target of $3/gal." The two-phase program aims to conclude with the design and operation of a pre-pilot scale production facility. But another project that involves Boeing, Honeywell, and CFM hopes to see biofuel production levels in the hundreds of millions of gallons per year by 2012 (Pew, 2009). The International Air Transportation Association (IATA) feels that any alternative fuel should be tested for performance and environmental impact before introducing into the marketplace. IATA researched has shown that the conservative nature of the industry will foster alternative fuels that originally are combined with conventional jet fuel. According to IATA (2008a), alternative fuel systems derived from biomass sources have the potential to lower the carbon footprint and lower other emissions as well. New technologies and more economic integration of alternative fuels along with government subsidies will accelerate the acceptance of these fuels in the market place (IATA, 2008a). In "Are bio-fuels really an alternative?" Jeff Gazzard (2009), a board member of the Aviation Environment Federation contends that the biofuel issue may not be as clear as it seems. The jury is still out as to whether either synthetic or biofuels are yet capable of being either entirely fail-safe for aviation use or environmentally sustainable in the longer term. According to Gazzard (2009) alternate fuels looked attractive when oil was marching towards $147 a barrel, but now that oil has fallen back to below $50 a barrel, $75-$85 a barrel for biofuel is not as attractive. He points out that another issue is that aviation consumes approximately 240 million tones of kerosene a year. Replacing the current aviation fuel with bio-fuel from productive arable land that does not compete with food production would take almost 1.4 million square kilometers, which is greater than twice the area of France. Gazzard (2009) is not convinced that aviation would be the best end-user even if biofuels could be produced sustainably. The industry has also followed with increasing interest in algae as a potential source of aviation fuel but is unconvinced that any cost-effective algae-derived aviation fuel could be produced within a practical timeframe that would allow such fuels to make any substantial contribution to climate change policies of today. Regardless of the skepticism, more and more airlines are testing alternative fuel sources and as global warming continues to escalate in the minds of the consumers. The assessment of GLOBE-Net (2007) is similar - "biofuels could mitigate some aircraft emissions, but the production of biofuels to meet the aviation industry's specifications and quantity demands is currently untested. Ethanol and biodiesel both have properties that make them currently unsuitable for jet fuel, but companies such as Virgin are pursuing biofuels research, investigating possibilities including the use of microorganisms." Further, the option of solar power is still in its infancy and largely unexplored. Boeing (1998-2008; pg. 16) is working with their wholly-owned subsidiary Spectrolab in this area. Spectrolab is one of the world's leading manufacturers of solar cells, powering everything from satellites and interplanetary missions. However, without the commercialization of these and other novel new technologies, annual air traffic growth is expected to outstrip efficiency improvements, resulting in a net rise in CO2 emissions of around 3-4% per year, along with increases in NOx and water vapour emissions. Better Traffic Management One possible contributor to greater aircraft efficiency is improved air traffic management. According to the IATA (2007), there is a 12% inefficiency in global air traffic management which could largely be addressed by three 'mega-projects': a Single Sky for Europe, an efficient air traffic system for the Pearl River Delta in China and a next generation air traffic system in the United States. However, there has not been much progress on these initiatives much to the disappointment of IATA and its leadership. Scientists and aviation experts worldwide are investigating improved air traffic management, lower flight speeds, reducing idling and other efficiencies, searching for areas of potential emissions reductions. Policy Mechanisms In February 2009, four leading airlines and an airport authority - Air France/KLM, British Airways, Cathay Pacific, Virgin Atlantic and airport operator BAA - called for aviation emissions to be included in a broader climate pact. This can be seen as a move to ward off criticism from environmental groups and to probably have a negotiated deal instead of a one that is imposed upon them. Even with only 2% of global pollution coming from airlines, the pressure of the aviation industry has been mounting to participate in emission reduction initiatives (Fogarty, 2009). This call was a prelude to the 2009 Copenhagen Summit on Climate Change where nations are expected to find an agreement around a climate pact that replaces the Kyoto Protocol whose first phase ends in 2012. To date "international air travel is exempt from carbon caps under the Kyoto Protocol. Neither do airlines pay tax on fuel. Understandably, lawmakers are wary of disrupting aviation since air travel represents a cash cow for governments. In the US, for example, the average tax on a $200 ticket is 26%, amounting to about $15bn a year. And the air travel industry picks up the tab for its own infrastructure, an annual bill of about $42bn, according to IATA" (Balch, 2009). In recent years, governments and international organizations have looked at policy options that could create incentives or impose requirements on aircraft operators and manufacturers to reduce emissions. At the forefront of this push is the European Union, which has proposed that aircraft be covered under the region's Emissions Trading Scheme (ETS). Under the proposal, emissions from all flights within the EU will be covered in 2011, with international flights to be included in 2012. The EU hopes to serve as a model for other countries (GLOBE-Net, 2007). An Ernst & Young (2007) study commissioned by the airline industry projects the system would cost airlines more than 40 billion Euros from 2011 to 2022. The IATA states in its climate change strategy that it prefers emissions trading to a carbon tax or other charges, but would rather participate in a worldwide voluntary scheme instead. "The challenge is for the International Civil Aviation Organization (ICAO) and its 190 member States to deliver a global emissions trading scheme that is fair, effective and available for all governments to use on a voluntary basis" (IATA, 2007). Short-term Measures In recent times some airlines have started offering passengers a chance to purchase carbon offsets to neutralize/minimize their carbon emission footprint. Air Canada partners with ZeroFootprint while Westjet has partnered with Offsetters.ca. In 2009, Japan airlines joined hands with Recycle One to help its passengers offset the carbon caused by their flight. "The total emissions figure is based on factors such as distance of travel, aircraft type, baggage and passenger to cargo ratios" (Balch, 2009). Continental, SAS, Qantas, British Airways, JetStar, Virgin Atlantic and Virgin America and some other airlines offer similar programs. Such programs are leading the way now but stronger action may be required to bring a significant reduction in GHG emissions. Long-term Thinking To address the problem of Climate Change, like all other industries, airlines will also have to re-think their business model. They will have to probably agree to be part of a network that moves people and goods from one place to another in an efficient and timely manner. To achieve this goal, they will have to collaborate and network with other transport operators like the railways. "In the Netherlands, airlines and rail companies have a history of cooperation. Long before its merger, KLM had already cancelled several short-haul flights on routes where fast train links existed. Many of KLM's international flights to Dutch cities also finish with a final leg by train" (Balch, 2009). The "Flight" Ahead As demonstrated, the aviation industry plays a vital role in the global economy and provides economic and social benefits. It is also apparent that global temperatures continue to rise while the aviation industry continues to grow. The combination of aviation growth and climate change leads us to believe that CO2 emissions from the aviation industry is one of the many other factors impacting global warming. It has to be addressed even though its impact today is limited to a very low percentage. But with a potential to grow, it cannot go unattended. With this in mind, the following main areas have been identified in order to help reduce aviation emissions. • Strengthen the global leadership strategy (for example, add aviation emissions to Kyoto protocol; revisit fuel surcharge (taxation) issue; create an emissions charge; implement an emissions cap on aviation emissions; enforce Carbon offset programs for all airlines; etc.) • Increase Alternative Fuel technology/implementation (for example, increase biomass fuel technology; etc.) • improvements in Aircraft Technology Efficiency (for example, reduce aircraft fuel consumption and CO2 emissions by replacing older, less fuel efficient aircraft with aircraft using latest fuel efficiency technology and navigation equipment; reduce aircraft noise - mitigate inefficient noise procedures; reduce oxides of nitrogen - try to go beyond compliance limits; etc.) • Improvements in Air Traffic Management (for example, cut inefficiency in current flight patterns - more fuel efficient approaches and overall routing; encourage flight patterns that minimize the impact of non CO2 emissions; optimize aircraft speed; etc.) • Improvements in Operational Efficiencies (for example, increase load factors; eliminate non-essential weight - reassess the value of onboard materials; limit auxiliary power (APU) use by reducing engine idle times and by shutting down engines when taxiing to reduce APU use and fuel burn; reduce taxiing time of aircraft; etc.) All these suggestions require stimulating technology advancements and innovation. Holliday et al. (2002) state that innovation is critical for any organization and industry if it wants to operate in a new global business environment which puts emphasis on environmental alignment of business goals. The aviation industry (airlines, governments, non government organizations, suppliers, manufactures) must work together and create technology advancements that catapult the industry into the future. The innovation created must not only look at how the aviation industry can improve on their CO2 emissions but also how it can change the CO2 emissions landscape. Improving current practices is not good enough. The aviation industry must change the way they operate in order to reduce CO2 emissions. Governments must get involved and work with airlines to spur innovation and remove obstacles for airlines leading the environmental movement.

### NextGen Solves Airline Emissions

#### Plan quickly lowers airline pollution --- emerging R+D solves in the long-run

Dillingham 8 – Dillingham, 05-06-2008, Gerald L. Dillingham, Ph.D. Director, Physical Infrastructure Issues, “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 ozone and 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. Next steps in reducing aviation emissions include managing NextGen initiatives efficiently; deploying NextGen technologies and procedures as soon as practicable to realize their benefits, including lower emissions levels; and managing a decline in R&D funding, in part, by setting priorities for R&D on NextGen and emissions-reduction technologies. Challenges in reducing aviation emissions include designing aircraft that can simultaneously reduce noise and emissions of air pollutants and greenhouse gases; encouraging financially stressed airlines to purchase more fuel-efficient aircraft and emissions-reduction technologies; addressing the impact on airport expansion of more stringent EPA air quality standards and growing public concerns about the effects of aviation emissions; and responding to proposed domestic and international measures for reducing greenhouse gases that could affect the financial solvency and competitiveness of U.S. airlines.

#### NextGen cuts airline emission by boosting efficiency

Johnson 9 (Keith, Reporter – WSJ, “Cleared for Takeoff: Obama Budget’s Green Take on Air Travel”, Wall Street Journal, 5-8, http://blogs.wsj.com/environmentalcapital/2009/05/08/cleared-for-takeoff-obama-budgets-green-take-on-air-travel/)

The $865 million allocated to the next-generation of air navigation systems—creatively called NextGen—is a way to modernize the way commercial airliners take off, fly, and land at the nation’s increasingly crowded airports. Designed to improve safety and efficiency of the antiquated air-traffic control system through 2025, NextGen has some surprising environmental benefits: It promises to cuts fuel consumption, and emissions, from airliners. The idea is basically to do for air travel what dashboard GPS devices have done for cars: Put high-tech satellite navigation to work in the cockpit. Some of the new technology, developed by companies like ITT Corporation, is slowly being rolled out. Last month, Miami joined airports Atlanta and Dallas-Fort Worth that have started using a new way to keep airliners in communication with the ground and with each other. All of that helps safety, of course. And makes it easier for busy airports to safely juggle lots of airliners, improving efficiency and cutting down on delays. That was the main reason freight carriers such as UPS have been experimenting with new navigation technology—it helps the bottom line in a time-sensitive business. But when it comes to the environment, little things add up. The new system lets aircraft fly straighter routes, for starters. And by allowing aircraft to glide in for landing in a gentle path, using practically no throttle, the new systems can cut fuel consumption around airports, traditionally one of the areas where fuel burn is heaviest. Other airlines like Southwest have already been experimenting with juiced-up navigation systems to boost efficiency. Since early 2008, UPS has been using one of the new technologies developed by ITT, called automatic dependent broadcast surveillance, on flights into its Louisville hub. The new technology cuts emissions of its big Boeing 757 aircraft by 38%, UPS says. “It improves safety, reduces delays, reduces fuel burn, and the attendant environmental impacts,” says John Kefaliotis, ITT’s vice-president for NextGen. Overhauling the air traffic control system may not be the high-profile stuff President Obama’s green revolution is made of. But it does show, once again, that making things more efficient makes things work better, saves money—and can help the environment.

#### NextGen key to environmental protection

JPDO 6 (Joint Planning and Development Office, 2006, “Next Generation Air Transportation In Brief” http://www.jpdo.gov/library/in\_Brief\_2006.pdf)

A key NextGen objective is to “develop environmental protection that allows sustained aviation growth.” In this regard, JPDO and its agency and industry partners are focusing on three primary environmental concerns. They are aviation noise, air quality, and fuel consumption. Several aspects of NextGen have substantial environmental returns. The NextGen vision involves a significant reduction in flight time. Reduced flight times mean that aircraft engines operate less, burn less fuel, and generate less noise and fewer emissions. Recent flight trials have tested new aircraft descent procedures for airport approaches that dramatically reduce fuel consumption, noise and emissions. Precision navigation procedures further allow for the design of airport departure and arrival paths that will reduce noise over populated areas.

#### NextGen is projected to reduce 14 million metric tons of CO2 and reduce fuel consumption

FAA 12 (Federal Aviation Authority, Executive Summary, “NextGen Implementation Plan”, March 2012, http://www.faa.gov/nextgen/media/executive\_summary\_2012.pdf)

NextGen will provide a number of benefits for NAS users, our environment and our economy. We estimate that NextGen improvements will reduce delays 38 percent by 2020, compared with what would happen if we did not implement planned NextGen improvements. These delay reductions will provide an estimated $24 billion in cumulative benefits through 2020. NextGen delay reductions are in addition to any reduction from future runway construction or expansion. We estimate 14 million metric tons in cumulative reductions of carbon dioxide emissions through 2020. For the same period, we estimate 1.4 billion gallons in cumulative reductions of fuel use. To achieve timely NextGen benefits, the FAA needs to synchronize its investments with those of aviation stakeholders. To encourage operator equipage and validate concepts, the FAA conducts simulations, demonstrations, trials and flight evaluations as part of developing NextGen systems and procedures.

#### NextGen systems reduce emissions from planes – Southwest tests prove reductions

Ascanio 11 (Joe, a full time web designer, developer and marketing guy working in the online travel technology marketplace and TerraCurve.com is his personal project, “Way to go: Southwest Airlines cuts costs and emissions with NextGen air traffic systems”, 1-18-11, TerraCurve.com, http://www.terracurve.com/2011/01/18/way-to-go-southwest-airlines-cuts-costs-and-emissions-with-nextgen-air-traffic-systems/)

Southwest Airlines has begun flying advanced navigation procedures at 11 airports in an effort to reduce emissions while cutting expenses; for every minute of time saved on each flight, the annual savings add up to 156,000 metric tons in emissions and $25 million in fuel savings per year. Southwest Airlines has officially begun flying Required Navigation Performance (RNP) efficient procedures at 11 US airports; providing the ability to fly shorter flight paths and idle-thrust descents while reducing fuel consumption and lowering both emissions and community noise levels. This marks a major milestone in environmental impact reduction and a significant step in the future of the US NextGen air traffic management system. Sky’s the limit RNP is satellite-based navigation that brings together the accuracy of GPS (Global Positioning System), the capabilities of advanced aircraft avionics and new flight procedures. Southwest has modified 345 Boeing 737-700 aircraft with new flight display software and trained more than 5,900 pilots in the procedures. GE Aviation is providing the onboard technology through its TrueCourse flight management system. Annual savings of $16 million are projected from using the procedures at the 11 airports, with an anticipated saving of over $60 million once all airports served by Southwest have efficient RNP procedures in place. The airline calculates that for a single minute of time saved on each of its flight, the annual savings add up to 156,000 metric tons in emissions and $25 million in fuel savings per year. The initiative is the culmination of a four-year project with partners Boeing, GE and Honeywell. Southwest is estimated to have invested $175 million in equipping its fleet with the technology. “RNP sets the stage for Southwest to continue doing its part to conserve fuel, improve safety, and reduce carbon emissions and greenhouse gases, while simultaneously taking advantage of the high-performance characteristics that exist in an airline’s fleet,” said the airline’s Vice President of the Operations Coordination Center. “The efficiencies RNP introduces help Southwest be a good neighbour while also maintaining our low fares.” The GE Aviation TrueCourse flight management system controls the aircraft track to an accuracy of 10 meters and the time of arrival to within 10 seconds to any point in the flight plan. In June 2010, GE Aviation was awarded funding as part of the FAA’s Continuous Lower Energy, Emissions and Noise (CLEEN) program to help further develop Flight Management System – Air Traffic Management (FMS-ATM) technologies. The program is focused on meeting NextGen environmental goals and to enable greater mobility. The aim is to enable the technologies to enter the fleet beginning in 2015. As part of CLEEN, GE is working with industry partners Lockheed Martin, AirDat and Alaska Airlines. GE will develop advanced FMS functionality that will be installed on Alaska Airlines Boeing 737 aircraft to demonstrate the environmental benefits. Work with Lockheed Martin, the prime contractor for the En Route Automation Modernization (ERAM) system, will demonstrate integration between the airborne FMS and the ground-based air traffic system. Alaska Airlines, which pioneered RNP precision flight-guidance technology during the mid-1990s to help its planes land at remote and geographically challenging airports, has been conducting advanced RNP procedures as part of its Greener Skies project, including trialling continuous descent approaches at Seattle-Tacoma International Airport. Compared to a conventional landing, Alaska found that fuel consumption and emissions could be reduced by 35%. The airline estimates the new procedures at Sea-Tac will lead to cuts in fuel consumption of 2.1 million gallons annually and reduce carbon emissions by 22,000 tonnes. The FAA’s latest estimates show that by 2018, NextGen (Next Generation Air Transportation System) will reduce total flight delays by about 21% while providing $22 billion in cumulative benefits to the travelling public, aircraft operators and the FAA. In the process, more than 1.4 billion gallons of fuel are expected to be saved during this period, cutting carbon dioxide emissions by nearly 14 million tons.

#### Tests are currently proving NextGen’s capabilities to reduce CO2 and fuel costs

Stock et Al. 12 (Stephen, Jeremy, and Kevin, award winning career journalist and two staff writers, “FAA Moves Towards NextGEN”, 5-4-12, http://www.nbcbayarea.com/news/local/FAA-ANOUNCES-NextGEN-143416166.html)

A $5 million pilot project that is supposed to make the skies safer, cheaper and more efficient took off today at Oakland International Airport. It's called NextGEN and eventually it will replace older technology nationwide. Right now the project will be tested at Oakland, San Francisco, San Jose and Sacramento's airports. The FAA says the news system uses satellite technology coordinated with ground based tracking. They say the new system will enable air traffic controllers to land airplanes more precisely. The result should allow planes to fly closer together and they will do it with less noise. This will save time, jet fuel and money for both the airlines and passengers, according to the FAA. “NextGEN is right now. There are things that we are doing that are improving the use of the air space that will result in a lot of benefits right away,” FAA Acting Administrator Michael Huerta told NBC Bay Area. “It's one of the nation's busiest. Oakland sits about eight miles from San Francisco and San Jose is about 20 miles to the south. But we've got the group to do it. It's time for these procedures to be changed." said Steve Hefley with the National Air Traffic Controller Association. Once implemented, the FAA estimates annual savings for the NextGEN Program will total 2.3 million gallons of fuel, $6.5 million in reduced fuel cost, 23,000 metric tons in reduced CO2 and 1.5 million fewer miles flown.

### International Modeling

#### The US is an international model through the OES

Harnish 8 (Reno, Principal deputy assistant secretary for oceans, environment and science, http://2001-2009.state.gov/g/oes/rls/rm/111779.htm)

The U.S. is a model for research: competitive, transparent and peer reviewed. Benefits even advanced countries seek to draw lessons from the U.S. vs an institute system; It is a major development goal, in my opinion, that will encourage scientific talent to stay at home, solve local problems, help construct a work force that is more capable of applying technology in a competitive world. Serves foreign policy interests like non-proliferation. We do this with 180 people assigned to the Oceans, Environment and Science Bureau of the Department of State in Washington (GS, FS, AAAS, Jeffersons). 58 bilateral ESTH officers and 12 ESTH Regional officers “Hubs.” We pursue more than 350 negotiations on technical topics and administer $75 million in programs. I. Bilateral S&T Cooperation Agreements Science and science-based approaches make tangible improvements in people’s lives. Strategically applied, S&T outreach serves as a powerful tool to reach important segments of civil society. Sound science is a critical foundation for sound policy making and ensures that the international community develops reliable international benchmarks. Science is global in nature – international cooperation is essential if we are to find solutions to global issues like climate change and combating emerging infectious diseases. International scientific cooperation promotes good will, strengthens political relationships, helps foster democracy and civil society, and advances the frontiers of knowledge for the benefit of all. The Bureau of Oceans, Environment, and Science (OES) in DOS pursues such efforts through the establishment of bilateral and multilateral S&T cooperation agreements. There are now over forty of these framework agreements in place, or in various stages of negotiation, in every region of the world – from Asia and Africa, to Europe, the Middle East, and Latin America. These bilateral agreements have significant indirect benefits including contributing to solutions and initiatives that encourage sustainable economic growth (Vietnam and Brazil, innovation), promoting good will, strengthening political relationships, helping foster democracy and civil society, supporting the role of women in science and society, promoting science education for youth, and advancing the frontiers of knowledge for the benefit of all. The agreements are instrumental in advancing our diplomatic relationships with key countries (like Egypt and Pakistan). They bring leading U.S. government scientists together with foreign counterparts and policymakers to discuss the important role of cooperative scientific endeavors in advancing, for example, our understanding of key elements of the climate system. Through our bilateral relationship with Russia, to cite one such project, we have advanced the state of research on the impacts of climate change in the Arctic – a key system in which we are working to address important gaps in knowledge. In bringing senior officials together to discuss areas of common concern, the bilateral partnerships have helped to demonstrate how much we have in common and have thereby advanced our diplomatic relationships and helped us achieve our objectives. II. Broader Promotion of International Cooperation The International Space Station Agreement and the International Thermonuclear Experimental Reactor (ITER) projects are multilateral projects the Department supports that have the promise of broadening knowledge, strengthening capabilities, and extending benefits to the United States and our international partners. (In my tour in Italy, space station was example of cooperation as synergy, Super Conducting Super Collider points to difficulties). Disseminating knowledge on the use of remote sensing capabilities in developing countries and negotiation of nanotechnology standards for emerging products and services in member nations of the Organization for Economic Cooperation and Development (OECD) are included in the wide range of subjects supported by DOS. (In addition to new Rules of Cooperation with Russia, $6 Billion Fund cooperation should be examined). The Global Positioning System (GPS) is one of the greatest gifts of the American people to the world. OES works with the USG interagency community and foreign space-based satellite navigation providers to promote compatibility and interoperability of other provider’s signals and services with GPS for the benefit of users worldwide. A GPS-Galileo Cooperation Agreement with the European Union and Joint Statements on GPS Cooperation with Japan, India, Australia, and Russia are producing tangible results such as common signal design and protecting United States national security interests. OES works closely with the United Nations (UN) Office on Outer Space Affairs and other interested nations to form a voluntary International Committee on Global Navigation Satellite Systems (ICG) and related Providers Forum. This multilateral venue provides an opportunity for discussing and resolving spectrum compatibility and interoperability issues, considering guidelines for the broadcast of natural disaster alarms via Global Navigation Satellite Systems (GNSS), seeking ways to enhance performance of GNSS services, promoting GNSS use among developing countries, and coordinating work among international scientific organizations for GNSS applications worldwide. OES protects U.S. security and global economic growth by promoting global health. Global health policy is firmly grounded in a scientific understanding of the infectious, environmental and potential terrorist threats to public health worldwide. OES works with agencies throughout the U.S. government to facilitate policy-making regarding environmental health, infectious disease, health in post-conflict situations, and surveillance and response, bioterrorism, defense of the food supply and health security. OES works on global health with other U.S. government agencies, including the National Security Council, Homeland Security Council, Departments of Health and Human Services, Homeland Security, Agriculture, Defense, USAID, and intelligence agencies. (During my time in Azerbaijan DTRA collects samples of pathogens then gives AZ a facility for securing them and doing responsible research.) OES also works with the United Nations (especially the World Health Organization) and other international organizations, the private sector, non-governmental organizations, and foreign governments. Often, the scope of scientific endeavors and research interests requires DOS, due to limited financial resources, to leverage its resources with other governments. For example, with National Oceanic and Atmospheric Administration (NOAA) leadership and DOS cooperation, the United States hosted the First Earth Observation Summit in 2003, with 34 participating nations, to generate international support for creating a comprehensive Global Earth Observation System of Systems (GEOSS). This ambitious undertaking involves coordinating disparate Earth observation systems across the world in order to improve our collective ability to address critical environmental, economic, and societal concerns. The now 72 member governments, including the European Commission, and 46 participating organizations of the Group on Earth Observations (GEO) met in Cape Town in November 2007 to assess progress. Other parts of the Department of State are similarly engaged in S&T related cooperation. They focus on redirecting scientists through engagement in new programs, whether in the Middle East, North Africa or Central Asia. In Eurasia, cooperation is focused on post Soviet demilitarization of science infrastructure following the model of the Civilian Research and Development Foundation (CRDF) and the International Science and Technology Center (ISTC). Cooperation in Eurasia involves cooperation with the Department of Energy, which since 1994 has funded over 650 projects at over 200 research institutes in Russia, Kazakhstan, Georgia, Armenia, and Uzbekistan under its Global Initiatives for Proliferation Prevention (GIPP) program to provide meaningful, sustainable, non-weapons-related work for former Soviet weapons of mass destruction scientists, engineers, and technicians through commercially viable market opportunities. Also, the GIPP program provides seed funds for the identification and maturation of technology and facilities interactions between U.S. industry and former Soviet institutes for developing industrial partnerships, joint ventures, and other mutually beneficial peaceful arrangements. OES works closely with a number of USG technical agencies on the international aspects of climate change policy. Under OSTP leadership, OES has played a key role in the Intergovernmental Panel on Climate Change (IPCC) since its inception, through official contributions and key leadership positions in IPCC report development, as well as through the contributions of many U.S. scientists and experts. Another example of DOS cooperation on climate issues includes: the Asia-Pacific Partnership on Clean Development and Climate, which focuses on acceleration and deployment of clean energy technologies, and includes Australia, Canada, China, India, Japan, the Republic of Korea and the United States. Oceanographic exploration in the 20th century has completely transformed our view of the deep ocean. Today, scientists know that the deep sea is teeming with life and that its biodiversity is comparable to the world’s richest tropical rainforests. The advent of new exploratory technologies is leading to the discovery of ecosystems which are extraordinary in nature, often hosting species found nowhere else on the planet. For the fishing industry also, the unreachable is now within reach. Advances in bottom fishing technology mean that it is now possible to fish the deep sea’s rugged floors and canyons. This has led to an urgent call for action within the international community to ensure that deep-sea bottom fishing on the high seas is monitored and regulated to protect these unique and fragile areas. The Department of State, in collaboration with NOAA, has facilitated science and technology partnerships enabling more effective fishery regulation to achieve sustainability.

### Air Pollution Module

#### **Aviation emissions are a key contributor to air pollution**

Dillingham 8 [Gerald L. Dillingham, Ph.D. Director, Physical Infrastructure Issues, “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>] ATP

Aviation emissions, like other combustible emissions, include pollutants that affect health. While it is difficult to determine the health effects of pollution from any one source, the nitrogen oxides produced by aircraft engines contribute to the formation of ozone, the air pollutant of most concern in the United States and other industrialized countries. Ozone has been shown to aggravate respiratory ailments. A National Research Council panel recently concluded that there is strong evidence that even short-term exposure to ozone is likely to contribute to premature deaths of people with asthma, heart disease, and other preexisting conditions. With improvements in aircraft fuel efficiency and the expected resulting increases in nitrogen oxide emissions, aviation’s contribution to ozone formation may increase. In addition, aviation is associated with other air pollutants, such as hazardous air pollutants, including benzene and formaldehyde, and particulate matter, all of which can adversely affect health. Data on emissions of hazardous air pollutants in the vicinity of airports are limited, but EPA estimates that aviation’s production of these pollutants is small relative to other sources, such as on-road vehicles. Nevertheless, according to EPA, there is growing public concern about the health effects of the hazardous air pollutants and particulate matter associated with aviation emissions. See appendix I for more detailed information on the health and environmental effects of aviation emissions.

#### No alt causes --- NextGen solves other transportation emissions and improves international efficiency

NEXA 11 (NEXA Advisors, A NEXA Capital Company, April 2011, NEXA Capital Partners provides corporate and strategic financial advisory services, and capital investment, to the aerospace, transportation, logistics and homeland security sectors (Venture Capitalist). “NextGen Equipage Fund Job Creation, Economic Benefits, and Contribution to Federal Revenues” p. 12 <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

### XT: Air Pollution High

#### Air pollution high – fine particles affecting everyone

Brugge & Zamore 11 (Doug & Wig, Staff, New York Daily News, http://articles.nydailynews.com/2011-01-25/news/27096629\_1\_air-scientific-advisory-committee-fine-particulate-matter-air-pollution, ATP)

All the above is true. The pollutant is fine particulate matter - extremely tiny solids and liquids suspended in the air - that we inhale with every breath. While a very low level of fine particulate matter exists naturally, the vast bulk of this pollutant comes from combustion of coal and fuel in our motor vehicles. All of us are exposed, some to more, some to less, every day in the air all around us. Exposures are usually particularly high in Southern California, as well as the coal burning states and urban metropolitan areas in the East. The EPA is considering revising its fine particulate matter standards to lower the acceptable annual average level from 15 to perhaps 12 micrograms per cubic meter of air. Even such a small change could save many tens of thousands of lives a year. The decision whether or not to revise the fine particulate matter standards and by how much, rests with EPA staff, EPA's Clean Air Scientific Advisory Committee and EPA Administrator Lisa Jackson. Despite the extremely high stakes associated with this review and the considerable potential impact on our health, public awareness and participation have been low. One of us has often been the only volunteer testifying at EPA's science review meetings. While the public has remained largely silent, industry has been working hard to limit the revisions on the grounds that the proposed changes would be bad for business.

#### Air quality low – EPA regulations prove

Fears & Elperin 11 (Darryl & Juliet, Staff, Washington Post, <http://www.boston.com/news/nation/washington/articles/2011/07/08/epa_to_impose_new_cross_state_air_pollution_rules/>, ATP)

The Environmental Protection Agency said yesterday it finalized rules that compel 28 states and the District of Columbia to curb air pollution that travels across states by wind and weather, the first in a series of federal restrictions aimed at improving the air Americans breathe. The Cross State Air Pollution Rule, which replaces a President George W. Bush-era regulation thrown out by federal courts in 2008, targets coal-fired power plants mainly in the eastern United States. The measure, along with a proposal aimed at cutting summertime smog in the Midwest, will cost the utility industry roughly $2.4 billion in pollution control upgrades over several years. EPA Administrator Lisa Jackson called the rule “another long overdue step to protect the air we breathe and that our children breathe.’’ Jackson predicted that the rule will prevent up to 34,000 premature deaths annually and result in fewer hospital visits and work sick days, she said, generating $280 billion in benefits “that far outweigh the cost of complying with the rule.’’ A federal judge vacated the Bush administration’s Clean Air Interstate Rule for several reasons, questioning whether the emissions trading system it established would do enough to bring all states into compliance. Frank O’Donnell, who directs the advocacy group Clean Air Watch, said the measures are “a good first step in cleaning up the air’’ but are less significant than upcoming guidelines for acceptable smog and soot levels.

#### Fireworks displays have increased air pollution

Sun-Star 11 (Staff, “Valley Air District Warns of Health Impact From Fireworks,” http://www.mercedsunstar.com/2011/06/30/1952151/valley-air-district-officials.html, ATP)

As the Fourth of July approaches, Valley Air District officials urge residents to consider the effect of fireworks on their neighbors’ health and the Valley’s economy. During fireworks displays, dangerous particulate matter (PM) increases, pumping large quantities of airborne material, including soot, ash and liquids, into the Valley’s air, the district said in a news release. This type of pollution causes serious health effects, including respiratory disease, bronchitis and cardiac illness. PM is especially harmful to people with existing respiratory or cardiac illness, elderly people and children, according to the release. Elevated levels of PM also jeopardize the air basin’s progress in meeting federal health-based standards, which creates economic burdens for the Valley. the news release continued. “Fireworks use is harmful to public health. And it also carries potential economic fallout as an obstacle to attaining health-based standards,” said Seyed Sadredin, the District’s executive director and air pollution control officer. In summer, the Valley’s air can be already stressed by ozone (smog). Fireworks emissions add to the level of pollution in the air, the news release said.

### Contrails Module

#### Aviation contrail residue falls to the earth --- causing immuno-suppression

Ambilac 00 – Ambilac Corporation, 2000, http://www.greenspun.com/bboard/q-and-a-fetch-msg.tcl?msg\_id=003bmw

We observe in our skies, jet aero planes constructing fancy designs ultimately spreading out to become cloud-like formations. Dubbed "chemtrails", (http://www.island.net/~wilco ) these formations consist of long-chain polymers in which can be embedded other organic or inorganic compounds, such as viruses and bacteria. On days when the atmospheric conditions are less than ideal, the mixture does not break into small particles as it falls from the planes, but falls as if spider webs are falling from the sky. See http://www.sightings.com/general2/sticky.htm These chemtrails (3) work on several levels. The first, and most direct, level is a lowering of the immune system by constant bombardment of the body by bacteria and viruses in the mix. To be taken into consideration in this direct attack, is the fact that some people are allergic to various compounds in the mix. The human body, already immune-lowered due to pollutants in our environment, is unable to cope with this extra bombardment and will eventually succumb to illness and perhaps even death. A lowered immune system is a lowered vibrational rate.

#### Immuno-suppression causes extinction

Fieger 4 [Leslie Fieger, Author – The End of the World. “The Precipice”, <http://www.lesliefieger.com/articles/precipice.htm>] ATP

There is much, much more. The very real and growing dangers of using human created weapons of mass destruction in resource wars (oil now, water tomorrow); looming viral and prion pandemics ravaging chemically weakened immune systems all help to define the precipice we stand on, the crisis point we face. Ignoring the reality of it or avoiding the difficult choices that must be made will only serve to accelerate the end of human society as we know it and probably, even human existence.

## \*\*\*AT: Offcase Positions\*\*\*

### AT: Spending DA

#### Plan pays for itself

Baer 10 (Susan M., Aviation Director @ Port Authority of New York/New Jersey, *National Alliance Supports Advancement of Next*, 6/10, http://www.panynj.gov/airports/pdf/AAAE-Airport-Mag-Sue-Baer-June-July-2010.pdf) LA

There's still a lot more to do, and NextGen is fundamental to all our efforts. But NextGen won't be cheap. Total FAA spending over the first 10 years is expected to range from $8 billion-$10 billion, and estimates through 2025 range from $15 billion-$22 billion. And that's just the cost to the federal government. It doesn't include the cost to equip aircraft or modify airports. Twenty-two billion dollars sounds like a big number, and it is. But let's give that number some perspective. Our three major commercial airports - JFK, Newark Liberty and LaGuardia - currently are capped with an operational limitation on the number of aircraft movements per hour for 16 hours of the day. It's the equivalent of a "no vacancy" sign, because every year that those caps are in place, someone is left behind. Someone who wanted to make the trip into or out of the New York region can't, because, essentially, there is no room at the inn. Our estimates say that if there is no material improvement in the congestion and delay situation in the New York region by 2025, we will be leaving behind some 40 million "someones" - the equivalent of the 2009 passenger traffic at Washington's Dulles International and Reagan National airports combined. And the cumulative loss of economic activity that those 40 million passengers would have brought over the next 15 years is far more than $22 billion. In fact, it's closer to $130 billion.

#### Plan costs nothing

Thisdell 11 (Dan, Business Editor – Flight Global Magazine, “Finance is About Risk As Much As Cash”, Space, Time, and Money, 7-4, http://thisdell.wordpress.com/2011/04/07/finance-is-about-risk-as-much-as-cash/)

The Federal Aviation Administration reauthorisation bill, passed by both House and Senate and likely to survive reconciliation, provides for public-private funding of the so-called “NextGen” overhaul of the air traffic management system.

The idea is to shift from long-standing radar-based traffic control to one based on GPS technology. The result would be much more accurate information about where all the aircraft flying actually are, so controllers could both allow them to fly closer together – which needs to happen if there’s any chance of making space for the forecast huge growth in flight demand – and also send them on more-direct routes – which is a good start for cutting fuel burn.

But the system is going to cost something like $40 billion – half in infrastructure and half in on-board equipment and software – and cost and political sloth has meant little has happened in a decade of trying to get it off the ground. Europe’s comparable SESAR system may be (a bit) closer to reality.

The new FAA bill, though, at least paves the way for novel approaches to financing the system. One – the NextGen Equipage Fund – is looking to raise $1.5 billion from strategic investors like ITT, which is to supply some of the ground infrastructure, to help airlines start fitting out their cockpits. Critically, airlines don’t want to spend the cash upfront when it might be years before the system is working.

But the financiers might have an answer. NextGen Fund general partner Russell Chew, a former FAA chief operating officer and former president of JetBlue Airways, says the deal is structured to lend operators the funds needed to outfit their fleets at attractive lease rates that defer payment until near to start of service.

The federal government doesn’t need to put up any cash – just loan guarantees, which would almost certainly only get tapped if the whole fund defaults, says Chew.

#### NextGen creates net savings

Jansen 12 (Bart, senior contributor to USA Today. Available online at http://travel.usatoday.com/flights/post/2012/04/nextgen/664954/1)

Improvements to the air-traffic control system could save hundreds of millions of dollars each year by consuming less fuel and reducing flight delays, according to an industry analyst's report released Wednesday. But airlines remain leery that the Federal Aviation Administration will follow through on improvements that justify buying more expensive equipment for planes, according to the report by Sakib bin Salam, a fellow at the Eno Center for Transportation, a nonpartisan Washington think tank. FAA has estimated that its program for improving air-traffic control, which is nicknamed NextGen, will make flight routes more precise by tracking planes with a satellite global-positioning system [gps]. Routes that are more precise could be shorter, reduce congestion and burn less fuel, saving airlines and passengers money. But according to bin Salam, FAA hasn't released how it estimated that the program would cost $15 billion to $20 billion to build through 2025, or how it estimated potential savings that eclipse those figures. To nail down estimates, bin Salam calculated that burning 1% less fuel would have saved U.S. airlines $229 million in 2010, when fuel was much less expensive than today. Reducing flight delays by 1% would save $39 million per year, based on the cost of flights and the length of delays, bin Salam said. The FAA projects much larger savings in fuel and delays. "Even at a minimum, the savings could be significant," bin Salam told industry experts at the Bipartisan Policy Center.

#### Plan can be funded through internal trade-offs

BENNETT 99 [Grant, Journal of Engineering and Public Policy; Denver Urban Renewal Authority Administrator D. “Funding Airport Infrastructure: Federal Options for Solvency”. August 5. Journal of Engineering and Public Policy. http://www.wise-intern.org/journal/1999/index.html]

The federal funding of airport infrastructure is made through the Airport Improvement Program (AIP). The AIP is appropriated money from the Aviation Trust Fund, which collects a combination of ticket and fuel taxes from the aviation community. Although there is $11.17 billion in the Trust Fund for fiscal year 1999, not all of that money is going to aviation. 6 Approximately $3.41 billion from the Trust Fund will revert back to the federal government’ s general fund and be spent outside of aviation. 7 This raises concern for future infrastructure investment, especially when the aviation community is growing. The American Society of Civil Engineers, along with many key players in the aviation field, support removing the Aviation Trust Fund from the federal government’ s general fund. 8 This would establish a direct link between taxes and investments in the aviation system and insure that dedicated user fees go toward their intended use. Infrastructure funding could then become proactive and grow as the aviation field grows.

#### NextGen has potential to save billions of dollars

OSU 10 (Oregon State University, “AIR TRAFFIC CONTROL IMPROVEMENTS OFFER ENORMOUS POTENTIAL SAVINGS”, <http://oregonstate.edu/ua/ncs/archives/2010/mar/air-traffic-control-improvements-offer-enormous-potential-savings>) KA

Engineers at Oregon State University and NASA have created a new system for air traffic control that could significantly improve congestion in the airways – a problem recently determined to be costing the United States economy up to $41 billion a year. The system has been developed over five years of research, was recently adapted to make it even more flexible for voluntary use by air traffic controllers, and should be able to improve system wide performance by as much as 20 percent – a potential savings of billions of dollars and enormous amounts of frustration by travelers. The concept is designed to leave control of aircraft in the hand of experienced controllers, but give them additional advice they could use at their discretion to improve the flow of aircraft on a regional and national basis. With some additional work the approach could be ready for its first test, researchers say. “It takes a decade and billions of dollars to build a major airport, and with the growth of air traffic in the U.S. it’s pretty clear we’re never going to be able to build our way out of this problem,” said Kagan Tumer, an associate professor in the School of Mechanical, Industrial and Manufacturing Engineering at OSU. “What we can do is improve the efficiency of air traffic control, by giving controllers better information to make complicated decisions that benefit not just their airport but the region or nation as a whole,” he said. “And our approach will do nothing to interfere with the safety of the existing system, which is extremely high.” Existing approaches, the scientists said, are absolutely safe – they’re just inefficient, largely because it’s not practical for a controller to be landing planes in Chicago while worrying at the same time about a weather delay in Kansas City, some mechanical problems in Miami and a growing bottleneck in Los Angeles. But sophisticated computer systems and monitoring devices using advanced algorithms developed in the new research can do exactly that. “The technology may sound complex, but it’s actually nothing more than sometimes telling aircraft to speed up or slow down to maintain certain spacing, or sometimes delaying a takeoff a few minutes, things like that,” Tumer said. “This is already being done to some extent, but only on individual and local levels, not with an approach that rapidly considers changing conditions and new developments over entire regions or the whole nation at the same time. That’s where advanced computer systems can help.”

#### Significant savings from NextGen

Jansen 12 (Bart, writer for USA Today, “Report: Air traffic control improvements would save money”, <http://www.faama.org/2012/04/05/report-air-traffic-control-improvements-would-save-money/>) KA

Improvements to the air-traffic control system could save hundreds of millions of dollars each year by consuming less fuel and reducing flight delays, according to an industry analyst’s report released Wednesday. But airlines remain leery that the Federal Aviation Administration will follow through on improvements that justify buying more expensive equipment for planes, according to the report by Sakib bin Salam, a fellow at the Eno Center for Transportation, a nonpartisan Washington think tank. FAA has estimated that its program for improving air-traffic control, which is nicknamed NextGen, will make flight routes more precise by tracking planes with a satellite global-positioning system. Routes that are more precise could be shorter, reduce congestion and burn less fuel, saving airlines and passengers money. But according to bin Salam, FAA hasn’t released how it estimated that the program would cost $15 billion to $20 billion to build through 2025, or how it estimated potential savings that eclipse those figures. To nail down estimates, bin Salam calculated that burning 1% less fuel would have saved U.S. airlines $229 million in 2010, when fuel was much less expensive than today. Reducing flight delays by 1% would save $39 million per year, based on the cost of flights and the length of delays, bin Salam said. The FAA projects much larger savings in fuel and delays. “Even at a minimum, the savings could be significant,” bin Salam told industry experts at the Bipartisan Policy Center.

#### NextGen saves money over the long-term

TIC 12 (Transportation and Infrastructure Committee, “HEARING TO EXAMINE FAA CONSOLIDATION PLAN NECESSARY FOR NEXTGEN & COST SAVINGS”, <http://transportation.house.gov/news/PRArticle.aspx?NewsID=1637>) KA

Congressional hearing on Thursday will examine the Federal Aviation Administration’s (FAA) need and efforts to consolidate air traffic control facilities to provide long-term cost savings and help U.S. aviation transition to the NextGen air traffic control system. The Aviation Subcommittee will hear testimony from the FAA, the Department of Transportation Office of Inspector General (OIG), and the National Air Traffic Controllers Association regarding the need for action given the age and deteriorating condition of FAA facilities, the state of the federal budget, the need for cost savings, expected facility and infrastructure needs with the implementation of NextGen, and consolidation and realignment planning requirements included in the recently enacted FAA Modernization and Reform Act of 2012 (Reform Act). The FAA is responsible for maintaining or replacing 402 air traffic control facilities in the United States. According to the OIG, the average facility has an expected useful life of approximately 25 to 30 years. As of 2012, the average age of an en-route center, which generally handles high altitude “en route” air traffic moving across the United States, is 49 years. The average age of a TRACON, which typically handles traffic within 40 miles of an airport, is 28 years. According to the FAA, the estimated cost to replace 402 terminal facilities is $10.6 billion, while the estimated annual cost to sustain 402 terminal facilities is $99.3 million. Despite its understanding of the need to make decisions on facility requirements and to move ahead with realignments and consolidations, the FAA has previously met parochial political resistance from Congress, and at times, its own workforce. If the FAA is to successfully implement NextGen and achieve the expected cost savings, cost avoidances, and safety improvements, it must work with Congress, labor, industry and other stakeholders to develop clear facility requirements and sound business cases; comply with the mandates of the recently enacted Reform Act; and move ahead with needed realignments, consolidations, and/or maintenance plans in an expedited fashion.

### AT: Politics

#### NextGen extremely popular – Congress and FAA support

Halsey 11 (Ashley, Reporter – Washington Post, “Antidote To Air Gridlock May Not Get Off Ground”, Washington Post, 7-4, <http://o.seattletimes.nwsource.com/html/boeingaerospace/2015510103_airtraffic05.html>)

Case for investing. Making the business case that will persuade airlines to take the financial plunge is at the core of the debate. The single biggest incentive to airlines would be persuasive evidence of an immediate return on their investment in fuel savings and fewer delays. One suggestion has been to allow NextGen-equipped planes to land and take off first. Given that a jetliner can burn through $1,000 in fuel in less than a half-hour, circling the airport in a holding pattern becomes an expensive proposition. With most U.S. airlines operating in the red, Chew says few will take the investment leap unless the government has more "skin in the game" than promises and deadlines. Chew is leading an investment group that proposes to lend the airlines money to equip their planes, with a repayment plan that is deferred until the FAA delivers the system. The key, however, is that the federal government must agree to make loan payments if the FAA misses its deadlines. "If the government OKs loan guarantees for equipage, it would jump-start the process," Chew said. "The airlines are not going to want to make any kind of payments until the FAA is ready to deliver. If they don't deliver by 2018, then the airlines are off the hook for these payments." Chew says the FAA and Congress have been receptive to that form of loan guarantee, but so far without committing to it. With Congress in a cost-cutting mood, loan guarantees may provide a viable alternative to slashing a program that virtually everyone supports.

#### Congress and industry support NextGen

DiMascio 12 (Jen, Reporter – Aviation Daily, “House Passes FAA Bill, Spurring NextGen Development”, Aviation Daily, 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.

#### Majority of American public supports NextGen

Avionics Today 11 (Avionics Today, “AIA: Poll Shows Support Of NextGen”, <http://www.aviationtoday.com/av/topstories/AIA-Poll-Shows-Support-Of-NextGen_73010.html>) KA

Recent polling conducted on behalf of the Aerospace Industries Association “shows considerable public support for fully funding” FAA and the NextGen program, AIA said April 7. The association said a poll conducted in early March shows 68 percent of Americans support new technologies to improve air safety. Sixty-five percent favor maintaining or increasing FAA funding levels. Nineteen percent of those polled favor cutting FAA’s budget. AIA did not say how many people were polled. “A majority of Americans knowledgeable about FAA’s satellite-based NextGen air-traffic control system support its timely implementation,” the association said. AIA also called on Congress to finally pass long-term FAA reauthorization legislation, which has been extended by continuing resolution since 2007. The two chambers are reconciling bills passed by the Senate in February and House in April. “It’s critical that Congress fund the FAA by passing a fiscal year 2011 appropriations bill,” said AIA President and CEO Marion C. Blakey. “More continuing resolutions will further erode FAA’s ability to implement the much needed Next Generation Air Transportation System in a timely manner.” Passing a full-year appropriations measure will allow FAA to enter into new contracts, move forward with new construction, hire more safety inspectors and certify new technology, activities prohibited under continuing resolutions that allow only spending on previously authorized projects, AIA said.

#### Obama has support for NextGen

Williams 9 (Genevra, 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)

However the funding is structured, it is likely that ADS-B will get funded. There is relatively general consensus that radar technology must be replaced, and although there may not be complete agreement about how ADS-B should be implemented, there seems to be a tacit agreement among all the major stakeholders that ADS-B is the right technology to move towards. 153 Additionally, the FAA has already allocated considerable resources to the project. In August 2007, the FAA awarded ITT Corp. a $ 1.86 billion, eighteen-year contract to build the infrastructure [\*490] for ADS-B. 154 The first phase involves setting up the ground-based portion of the infrastructure and is worth $ 207 million. 155 The company has already installed the system in southern Florida. 156 It was validated by the FAA in December 2008, clearing the way for a nationwide installation. 157 Given the fact that, during his campaign, President Obama's transportation platform focused on modernizing air traffic control and on creating new jobs through investment in infrastructure, 158 it is likely that it will receive enough funding to be implemented in some form. 159 It seems that failing to implement ADS-B is simply not an option. 160

#### Lobbies and airlines support NextGen

Lowe 11 (Paul, “Chamber of Commerce Makes The Case For NextGen”, 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.

#### Massive NextGen support from Congress and Obama

Babbit 11 (J. Randolph, served as Administrator of the US Federal Aviation Administration, "Realigning for NextGen", <http://www.faa.gov/news/speeches/news_story.cfm?newsId=13133>) KA

While much of NextGen involves the air traffic control function, it also involves much more than that, and needs the involvement and focus of every FAA office going forward. Congress also supported our proposal for how we handle large programs going forward into the future. As you may have heard, we are creating a Program Management Office in the Air Traffic Organization to better manage our major acquisition programs, including NextGen. This office will play a critical role in the success of NextGen by acting as the bridge between strategic requirements and tactical program implementation. Currently, air traffic acquisitions managers are embedded in different offices. Soon they will all be in one place. Having a portfolio of programs under one umbrella provides the potential for streamlining, better cost control, and economies of scale. Several infrastructure programs that support NextGen will be moved to the new Program Management Office, such as ERAM. And acquisition management for many NextGen programs themselves will move there, such as ADS-B. These changes will help us to better coordinate the evolution of our air traffic control system as we embrace NextGen. In the meantime, Congress is in the midst of the 2012 budget process. The President has asked for more than $18 billion to run the FAA and he is very supportive of NextGen. President Obama recognizes the importance of maintaining our infrastructure and the economic good that comes from putting people back to work on these projects.

#### Loan guarantees good – no spending concerns

Pasztor 11 (Andy, Reporter – WSJ, “New Way to Upgrade Air Control”, Wall Street Journal, 4-4, <http://online.wsj.com/article/SB10001424052748704587004576240992301960976.html>)

On Monday, ITT and Nexa Capital Partners LLC are expected to announce proposals to use about $150 million in federal loan guarantees as seed money to establish a larger, self-sustaining fund to pay for installing upgraded equipment on potentially thousands of U.S. airliners. Controllers at work in LaGuardia Airport's new traffic-control tower, which will replace one that dates to 1964. The goal is to help carriers fund their piece of a delay-plagued effort by the Federal Aviation Administration to create a satellite-based traffic control network. The new network would allow aircraft to fly shorter, more direct routes, thereby saving fuel and reducing congestion, and give pilots greater leeway in choosing routes and keeping their planes separated from nearby traffic. The system, dubbed NextGen, is a satellite-based project slated to replace the nation's current air-traffic control system, which is based on decades-old ground-radar technology and doesn't make the most efficient use of airspace or runway capacity. Expected to cost more than $40 billion overall, the next-generation solution has been stymied by a persistent reluctance by airlines to invest billions of dollars to upgrade airborne devices. Now, after years of delays and futile industry lobbying for direct federal aid, ITT and its partner believe they have found the key to overcoming airline resistance. ITT's objective "was to put forward a positive alternative" for bridging the funding gap, said John Kefaliotis, the company's point man on the topic. In discussions with senior FAA officials, he said in a recent interview, "what we get is interest and agreement that it is a viable concept." Executives at JetBlue Airways JBLU +2.15% Corp, Alaska Air Group Inc. ALK +0.20% and the United Airlines unit of United Continental Holdings Inc. UAL +0.72% have also expressed support for the idea, according to people familiar with the matter, and have engaged in detailed discussions with the fund's creators. No final agreements are in place, but airline executives generally like the concept because the equipment will be leased and therefore won't add debt to their balance sheets. Senior FAA officials, including Hank Krakowski, who heads the agency's air-traffic control organization, have also been briefed about the prospective fund and informally endorsed the concept, according to the people familiar with the discussions. The FAA's leadership looks favorably on ITT's initiative partly because it avoids adding substantially to the government's deficit. The FAA is reviewing various options, and on Sunday, an FAA spokeswoman declined to comment. "It takes into account today's political realities" by focusing on a "private-enterprise approach instead of a grand government giveaway," said James May, a consultant advising ITT and a former head of the Air Transport Association, which represents the country's largest carriers. Monday's announcement is particularly timely because as part of a broad FAA reauthorization bill, the House on Friday adopted a provision prodding the FAA to embrace such arrangements. Lawmakers voted to require the agency to "leverage the use of private-sector capital" to "expedite the equipage of" NextGen technologies. Without a breakthrough, it could take until the end of the decade or longer for industry to purchase the equipment in traditional ways. ITT and its partner said the initiative could prod suppliers to cut costs by $1 billion over the life of the fund. ITT Chairman Steven Loranger has championed the loan-guarantee fund despite initial disinterest—and sometimes even hostility—from various industry players. The most unusual aspect is that airlines would gradually repay the cost of equipping planes only after they start reaping fuel and schedule benefits. Mr. Loranger's dream still faces huge challenges, including formal congressional approval amid heightened public and Capitol Hill opposition to launching any new federal program. But "the debate has matured to the point" that there is a political climate "making this kind of approach possible," according to former FAA chief Marion Blakey, who now heads the Aerospace Industries Association, a trade group representing major aerospace contractors.

#### Congress has confidence – supporting NextGen and FAA

Van Beek 11 (Stephen, member of the FAA Management Advisory Council, “Aviation Policy: NextGen Initiatives Lead the Benefits of H.R. 658”, <http://www.leighfisher.com/new/current/aviation-policy-nextgen-initiatives-lead-benefits-hr-658>) KA

Congress authorized two new positions designed to strengthen FAA management, including a Chief NextGen Officer to direct the agency’s internal efforts and an Associate Administrator of NextGen to coordinate interagency efforts with other federal agencies, including the National Aeronautics and Space Administration and the Department of Defense. These positions are designed to place the FAA more firmly in charge of the federal effort to increase management accountability. H.R. 658 also requires the FAA Administrator to develop a National Facilities Realignment and Consolidation Report within 120 days of the bill's enactment to “support the transition to NextGen and to reduce capital, operating, maintenance, and administrative costs of the FAA.” After a public comment period, the FAA Administrator would be free to realign and consolidate FAA services and facilities unless Congress were to pass a joint resolution of disapproval within 30 days of bill enactment. This process, similar to that used for decommissioned military bases and facilities, could be quite significant and would respond to the recognized political difficulty of closing or consolidating even obsolete FAA facilities.

#### NextGen popular in Congress

Carey 11 (Bill, Senior Editor Avionics Magazine, “Paris 2011: Private Captial Fund Raises $1.5 Billion To Help Kick-start NextGen ATM in U.S.”, <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.”

#### Airline companies love NextGen

Daley 11 (Will, correspondent for Rep. Lipinski, “Nexa Seeks U.S. Loan Backing to Steer Airlines Into 'HOV Lanes'”, <http://www.lipinski.house.gov/dan-in-the-news/nexa-seeks-us-loan-backing-to-steer-airlines-into-hov-lanes/>) KA

While airlines support NextGen, they want the FAA to make better use of equipment already in cockpits, said Jean Medina, a spokeswoman for the Air Transport Association, the lobbying group for the largest U.S. carriers. Delta Air Lines Inc. and other carriers have made significant investments in traffic-control equipment that isn’t yet being used, Chief Executive Officer Richard Anderson said in April. "When we do make those additional investments, which we support, we want to be certain that it results in block time savings and fuel savings and is not just a big sales program by the avionics salespeople,” Anderson said.

#### Airline companies support NextGen – just need more funding

Michaels 10 (Dave, reported for the Dallas Morning News, “Air traffic modernization on Congress' radar but funding isn't”, <http://www.dallasnews.com/news/transportation/20100310-Air-traffic-modernization-on-Congress-6990.ece>) KA

But FAA officials and lawmakers say air traffic modernization is the most crucial feature of the bills because the radar-based system won't be able to handle the expected traffic growth over the next 15 years. The FAA's latest estimate says the modernization effort will reduce total flight delays 21 percent by 2018. The new system will enable more efficient flight paths, which will save 1.4 billion gallons of jet fuel over the same period, the FAA says. But travelers and businesses won't get those benefits if planes don't adopt the technology. While the FAA expects to issue a proposal by May that would mandate adoption of the avionics by 2020, the Senate bill sets the date at 2015. Airlines' push Airlines argue it's a difficult time for them to make expensive investments that might not yield cost savings. After striking out on the stimulus, the carriers are again lobbying for the government to cover those costs, which could exceed $4 billion for all aircraft. "I am still dumbfounded that there was no support for air traffic control infrastructure, particularly equipage, in the stimulus legislation," American Airlines chief executive Gerard Arpey said Tuesday in a speech in Washington. "The airlines have invested billions to acquire state-of-the-art equipment," he said. "The government has not. The net loser is the economy, which suffers from the diminished productivity of one of our greatest assets." Some airlines, including Southwest, are also pushing for the government to reward their earlier modernization investments, which include avionics and training that allows them to fly more direct routes. Such "rewards" may involve asking the FAA to clear a path for Southwest to fly the more direct procedure, which could require other carriers, which aren't capable of flying the more direct routes, to alter their routes, said David Newton. He has directed Southwest's efforts to implement the procedures, known as Required Navigation Performance, or RNP. American has invested in RNP as well. "The real benefits to ADS-B require that everybody adopt it so that everybody is sharing this increased surveillance," Newton said. "RNP, on the other hand, we can do that tomorrow." Arpey said American's new costs under the FAA bill would be in the "hundreds of millions of dollars." Incentives Sen. Kay Bailey Hutchison, R-Texas, said Wednesday evening that senators are discussing a provision that would allow, but not direct, the FAA to pay for the carriers' equipment. Hutchison, the senior Republican working on the bill, said it's unclear if that would succeed. If Congress doesn't allow funding for the technology, it may authorize incentives, such as a "best-equipped, best-served" policy, which would grant airspace and runway priority to jets that have the gear. The Senate bill also would allow the FAA to work with up to five states to offer loans to aircraft owners to adopt the gear. Arpey said he likes a "best-equipped, best-served" policy, but worries it would hurt general-aviation pilots, who may not have the money to upgrade their avionics. "Is that fair?" Arpey asked. "Is that the best way to allocate a scarce resource?" Steven Brown, director of operations for the National Business Aviation Association, said aerospace companies and private aircraft owners recommended to an FAA rulemaking committee that subsidies would be needed to accelerate their purchase of equipment. The funding options being discussed include direct payments, loans and tax benefits, FAA Administrator Randy Babbitt said. FAA officials say all aircraft - commercial and private jets - need the technology to reap the full benefits of modernization. They acknowledge that funding for owners of business aircraft will probably attract criticism. "Incentivizing equipment is of interest to all of us, and a big step forward if we can engage in it," Babbitt told a conference on Tuesday. "We need the entire community to come forward with support."

#### Government support for loan guarantees for NextGen

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."

### AT: General Aviation DA—Link Turn

#### **NextGen k2 general aviation**

JPDO 9 (The Joint Planning and Development Office, *NextGen Topics*, http://www.jpdo.gov/Nextgen\_Topics.asp) LA

The Next Generation Air Transportation System (NextGen) will benefit the General Aviation (GA) community in the following ways: Preservation of Small Airports The JPDO recognizes the importance of the 5,000-plus airfields that support the GA community and the valuable capacity that they add to the National Airspace System (NAS). Better Weather Information Better weather information will help disseminate weather situational awareness and create a common weather picture for all pilots. Equivalent Visual Operations in Marginal IMC With NextGen, bad weather will have less of an adverse impact on flight. In most situations, pilots and controllers will collaborate in real-time to adjust routes and maneuver around storms. Greater Access to Terminal Airspace Flexible management of the airspace, coupled with improved weather forecast accuracy, new communications, and surveillance and navigational capabilities, allows access to more airspace, more of the time, with reduced impact on traffic flows. This will maximize access for all traffic, while rewarding those aircraft with advanced capabilities that support the air traffic management system. In addition, because of the reduced "footprint" required for these operations, classic Visual Flight Rules (VFR) operations will have more access around major airports. Security Targeted to Risk The assessment of risks under NextGen provides a prioritized list of vulnerabilities and potential mitigation. For example, external attacks on aircraft may be an issue at some airports, requiring mitigation. Fortunately, this means that most GA airports will not be as vulnerable to these risks.

#### See Warming Core for Impact Defense

### AT: 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 United States 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.

#### 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.

#### 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 prereq

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: States CP

#### Federal oversight and resources are key

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 United States. 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 United States, 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.

#### State action in aviation will be struck down

Weigand 1 (Tory A., Partner – Morrison, Mahoney & Miller, “Air Rage and Legal Pitfalls for

State-Based Claims Challenging Airline Regulation of Passenger Conduct During Flight”, Boston Bar Journal, May / June, 45 B.B.J. 10, Lexis)

However, many courts, including the First Circuit, have found implied preemption over various aspects of air safety. n22 Indeed, the Second Circuit in Abdullah v. American Airlines, Inc. recently held that the Aviation Act's safety purpose and scheme preempts all state standards in the area of safety. According to the Court, "the evident intent of Congress that there be federal supervision of air safety and from the decisions in which courts have found federal preemption of discrete, safety related matters . . . [establishes] that federal law preempts the general field of aviation safety." n23 The Court in Abdullah found that only a federal standard of care could apply, although state law could provide for a damage remedy if one is not available under the federal scheme. n22 French v. Pan Am Express, Inc., 869 F.2d 1 (1st Cir. 1989). n23 Abdullah, 181 F.3d at 371. Under Abdullah, a substantial argument can be made that the FAA regulatory scheme preempts any state action regulating or providing for a standard of care for the removal of passengers or diversion of flights based upon passenger conduct. The FAA has, in fact, enacted significant regulation granting considerable discretion to the airline, particularly the pilot, in controlling aberrant passenger behavior. The regulatory scheme includes: - prohibiting anyone from interfering, intimidating or threatening a crew member or interfering with his or her duties; - granting to the pilot's sole judgment the right to divert a flight due to concerns of safety; - granting to the pilot complete control over and responsibility for all passengers and crew, "without limitation;" - granting to the pilot final authority as to all aspects of the operation of the aircraft; and - requiring the pilot to ensure that there is no "activity during a critical phase of a flight which could distract any flight crew member from the performance of his or her duties or which could interfere in any way with the proper conduct of those duties." n24

#### Solvency Deficit–A) Federal loans are key to availability of funding

McCartney 8 (Scott, Reporter – WSJ, “Do Government Bailouts Work? Ask the Airlines”, Wall Street Journal, 9-22, http://blogs.wsj.com/middleseat/2008/09/22/do-government-bailouts-work-ask-the-airlines/)

But there’s little debate that the loan program did its intended job. By offering to guarantee loans to airlines, Congress sent a strong message that shored up airline finances. Many airlines that couldn’t get credit before the loan program were able to borrow more on their own after the program was approved. The psychology of the credit markets changed. In the end, the Air Transport Stabilization Board only issued $1.6 billion worth of guarantees, and by the time that debt was retired, the board had earned a $300 million profit for taxpayers. The board rescued America West Airlines and US Airways Group Inc. and helped facilitate a merger of the two. That move saved tens of thousands of jobs and kept a big competitor in the air. Without the loan guarantees, both airlines likely would have been liquidated before they got the chance to merge. It’s worth noting that the loan board was quite stingy in handing out guarantees, and turned down seven airlines, including UAL Corp.’s United Airlines, which applied twice. The ATSB, made up of a representative from each of the Department of Transportation, Treasury and the Federal Reserve, insisted that carriers present viable business plans and show they couldn’t get loans on their own in commercial markets. The government also extracted a hefty price for its services, collecting $220 million in fees, and demanded airline stock in return for the financial support. Not all the loans that were guaranteed were a success: the ATSB lost money on loan guarantees to now-defunct ATA Airlines. Aloha Airlines was another failed government loan guarantee recipient. But the program achieved its goal – stabilizing an industry seemingly in a death spiral – and did it without costing taxpayers.

#### B) Can’t solve the case—too expensive without a federal commitment

NAM 11 (National Association of Manufacturers, “From NextGen to NowGen”, http://www.nam.org/~/media/9D17E31A28104FE69FBBE244FEEB59E9/NextGen\_to\_NowGen.pdf)

Encouraging Investment in Equipment: Investing in avionics and other equipment and training in support of the NextGen system is a multi-billion-dollar investment that airlines and operators are unable to justify when the government has not made a clear commitment that the supporting NextGen air traffic equipment and services will be deployed in the near-term. A federal program or initiative that would incentivize early purchase decisions for NextGen airbone capability will support a business case to equip by reducing investment risk and making NextGen a stronger certainty.

### AT: States CP—Europe Addon

#### SESAR needs to coordinate with NextGen to achieve full potential – plan helps Europe

SJU 11 (SESAR Joint Undertaking, the agency that is implementing Europe’s new ATC system, “SESAR and interoperability”, 6-4-11, http://www.sesarju.eu/programme/highlights/sesar-and-interoperability)

As the world’s two most complex airspace blocks – Europe and the United States – develop new, modernised ATM systems, the question of their interoperability becomes paramount. Global interoperability is an essential goal when planning the development of ATM air/ground applications and systems and is consequently one of the key requirements of SESAR. SESAR, Europe’s ATM modernisation programme takes place in the context of the International Civil Aviation Organisation’s (ICAO) Global ATM Operational Concept, which provides governments and industry with objectives for the design and implementation of ATM and supporting communication, navigation and surveillance systems. “Working together on a global scale early in the life-cycle of a new concept or technology is the only way to achieve effective and efficient coordination”, explains Peter Hotham, Chief for Technology and Innovation of the SESAR Joint Undertaking (SJU). “The SJU and its member organisations are already in close contact with ICAO and aviation authorities around the world, as well as standardisation bodies such as EUROCAE and RTCA, to inform them of the technology and procedures we are developing in the framework of SESAR. This is set to continue as SESAR development gathers pace.” Common standards It is evident that harmonisation is necessary to ensure the same aircraft can safely fly throughout the world with a single airborne equipment interoperable with any ground ATM system. This is also one of the key requirements towards new air traffic management systems from airspace users. Interoperability requires internationally agreed standards and SESAR will deliver the technical basis for defining them through ICAO SARPs (Standards and Recommended Practices) and coordinated industry standards. The existence of such common standards will also lower costs for the manufacturing industry which will be able to design equipment for a global market. During the ATCA Convention in October 2009, J. Randolph Babbitt, FAA administrator, underlined the importance of interoperability for the NextGen programme. “We must make sure that interoperability is at the order of the day”, said Mr. Babbitt and continued, “The Obama Administration and Secretary LaHood are enthusiastic about the potential for international linkage, such as the links between NextGen/SESAR.” Currently, a memorandum of cooperation between the FAA and the European Community on cooperation in basic ATM research is being prepared covering among others the areas of information management, trajectory management, CNS and airborne interoperability, environmental issues, etc. “We seek further meaningful alignments between NextGen and SESAR as we move forward, while at the same time we have already started to collaborate with other regions in the world facing similar ATM challenges – now or in the foreseeable future”, says Peter Hotham. The technical and operational dimension We have to recognise that different regions of the world can have very significant differences in the way they organise air traffic management. It thus may make little sense to try and have the same solutions applied everywhere. Interoperability must therefore be achieved in both the technical (system) and the operational (common procedures) dimensions.

#### SESAR is a key part of Europe’s strategy to reduce GHG emissions

Barrot 05 (Jacques, Vice-President of the European Commission and Commissioner for Transport will be at Eurocontrol tomorrow to launch the SESAR industrial project, “SESAR: Europe modernises air traffic control”, 11-16-05, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/1435)

Growth forecasts for air traffic in Europe show that traffic is set to double by 2025, and even triple in some areas. This growth will not be possible without a complete overhaul of the air traffic control infrastructure to optimise air routes and eliminate congestion. SESAR will also enhance air transport safety, which today is hampered by ageing technologies and fragmented air traffic control. Lastly, SESAR will reduce greenhouse gas emissions by 4% to 6% per flight. SESAR is the technological part of the single European sky initiative, launched in 2004 to reform the organisation of air traffic control. It will introduce new communication, control and computing technologies between the ground and aircraft which will optimise the work of air traffic controllers and pilots. Today, while the cockpit is becoming increasingly automated, controllers and pilots still communicate by radio.

#### It is illegal for states to enter into Agreements or Compacts with foreign powers unless Congress approves it. That would link into any politics DA.

US Constitution 1787 (framers, Article 1 Section 10, http://www.usconstitution.net/const.txt)

No State shall enter into any Treaty, Alliance, or Confederation; grant Letters of Marque and Reprisal; coin Money; emit Bills of Credit; make any Thing but gold and silver Coin a Tender in Payment of Debts; pass any Bill of Attainder, ex post facto Law, or Law impairing the Obligation of Contracts, or grant any Title of Nobility. No State shall, without the Consent of the Congress, lay any Imposts or Duties on Imports or Exports, except what may be absolutely necessary for executing its inspection Laws: and the net Produce of all Duties and Imposts, laid by any State on Imports or Exports, shall be for the Use of the Treasury of the United States; and all such Laws shall be subject to the Revision and Control of the Congress. No State shall, without the Consent of Congress, lay any duty of Tonnage, keep Troops, or Ships of War in time of Peace, enter into any Agreement or Compact with another State, or with a foreign Power, or engage in War, unless actually invaded, or in such imminent Danger as will not admit of delay.

### AT: T—Investment

#### Equipage loan guarantees are “investment”

Blakey 11 (Marion C., President and CEO – Aerospace Industries Association, “The Future of NextGen”, Congress Blog – The Hill, 2-15, http://thehill.com/blogs/congress-blog/economy-a-budget/144119-the-future-of-nextgen)

The best means of addressing the gridlock to come is acceleration of the full deployment and implementation the Next Generation Air Transportation System. That makes funding NextGen a government investment, not government spending. Even in these tough economic times, it makes more sense to accelerate NextGen than slow it down. Cutting NextGen will ultimately cost the government and our economy much more than it will save. One of the larger challenges facing our ability to realize NextGen’s enormous benefits is the issue of establishing a sound business case for equipping civil aircraft with upgraded avionics systems. Quite frankly, without equipage there is no NextGen. Innovative and careful structuring of government support for equipage can help resolve the obstacles to full implementation of NextGen. However, with the nation’s need to address the growing federal deficit, it is important also to look at ways to leverage the available private-sector capital markets. To this end, AIA recommends language in the FAA Reauthorization bill that encourages funding equipage with the participation of private-sector investment capital. FAA should have the authority to enter into government-guaranteed loan arrangements that can be used in innovative ways to incentivize the retrofitting of commercial and general aviation aircraft with NextGen avionics equipment.

#### NextGen defined as part of infrastructure- FAA and Federal government agree

FAA 7—FAA fact sheet, accessible at http://www.faa.gov/news/fact\_sheets/news\_story.cfm?newsid=8145, retrieved 6-23-12

At this early stage of NextGen, it is critical to better define operational concepts and the technologies that will support them. For the first time, in FY08, FAA is requesting funding for these defining activities. This funding will support two demonstrations and a series of infrastructure development activities. The primary purpose is to refine aspects of the trajectory-based operations concept.