Office of the
New York City Comptroller
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GREEN SKIES AHEAD:

A PLAN TO MODERNIZE AND GREEN NEW YORK CITY'S AIRPORTS

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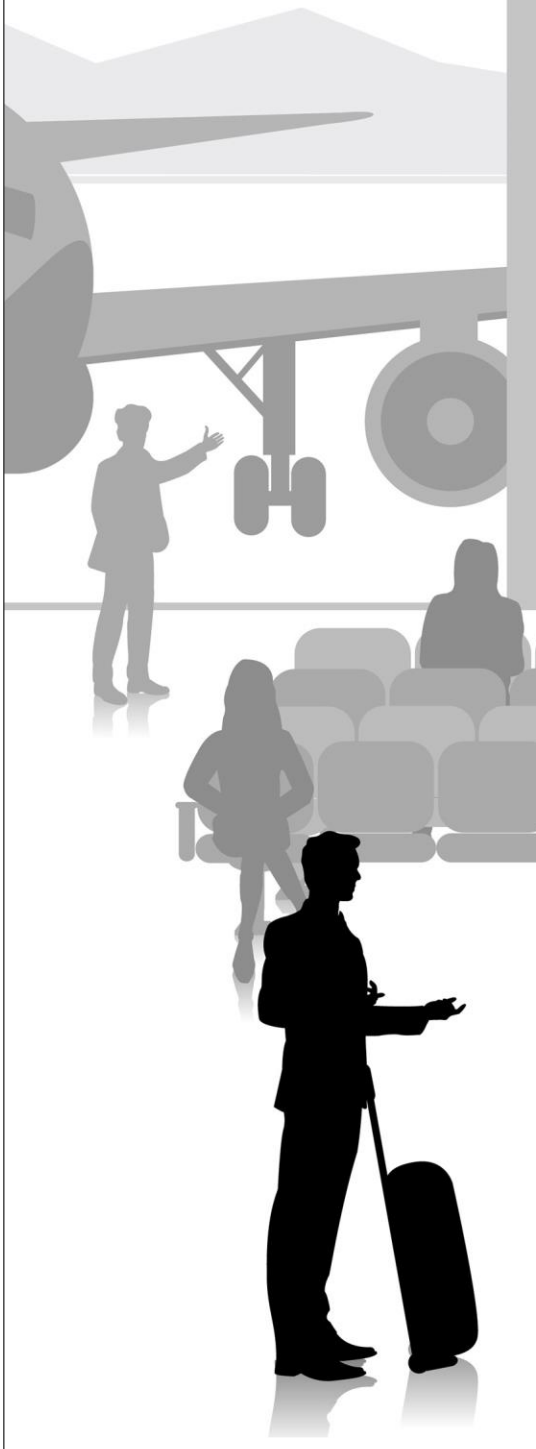


I. EXECUTIVE SUMMARY

New York City's airports—once the envy of the modern world—are now consistently ranked among the worst in the country. From poor mass transit connectivity and endless delays to inefficient design and paltry amenities, LaGuardia (LGA) and John F. Kennedy (JFK) airports are in need of a complete overhaul.

Last month, the Port Authority of New York and New Jersey (PANYNJ) formally approved Governor Andrew Cuomo's Airport Advisory Panel's blueprint for a reconstruction of LaGuardia, which is set to break ground in 2016 and open in 2022. In addition, the Governor has directed the Airport Master Plan Advisory Panel to develop a full master plan for future development at JFK by next year.

These are critical steps in ensuring that LaGuardia and Kennedy operate as engines of economic development. The Port Authority has allocated $5.3 billion to renovate LaGuardia, including $4 billion dedicated just to the construction of a new Terminal B at the airport. But as the public-private planning continues, New York must seek to identify new sources of revenue that can be directed toward this effort.

This report, by Comptroller Scott M. Stringer, proposes one such funding stream: applying the New York City sales tax to the purchase of commercial jet fuel.

For decades, New Yorkers have paid sales tax on gasoline when they fuel up within the five boroughs. However, thanks to a special exemption, big airlines do not have to pay taxes on jet fuel at LaGuardia and JFK. While the value of the exemption may fluctuate according to the price of fuel, current estimates suggest the exemption costs New York City over $100 million dollars a year in reoccurring revenue. In 2012, during a period with higher fuel prices, the most recent year for which the size of the exemption was calculated, airlines received a $227 million break in their sales tax bill, according to the New York City Department of Finance.

New York is one of only 19 states that do not include jet fuel in its sales tax base and is one of only six states whose exemptions on jet fuel cost taxpayers more than $85 million a year – a list including California, Washington, Texas, Ohio, and Illinois.

Exempting jet fuel from the sales tax is not just bad fiscal policy, it is bad environmental policy. The global aviation industry is classed as the single "fastest-growing major source of greenhouse emissions on the planet." Ending the sales tax exemption will incentivize airlines to operate more efficiently and use fewer polluting fuels, while generating revenue that can be used to fund projects that can help offset the carbon footprint of the aviation industry.

The following report outlines a menu of possible projects or initiatives that could be supported with revenue from the City sales tax on commercial jet fuel. These projects offer an unprecedented opportunity to green the operations of our airports and the aviation industry at large by expanding transit access, reducing greenhouse gas emissions, and improving the passenger experience.

- **Building transit access to modern, 21st century airports**:
  - Connecting LaGuardia to the subway via an AirTrain
  - Modernizing and Expanding Airport Infrastructure

- **Improving the environmental sustainability of NYC's airports via**:
  - Installing Green Roofs
  - Expanding Solar Power
  - Improving Energy Efficiency
  - Making Airports more Resilient to Storms and Climate Change

- **Reducing the environmental impact of aviation via**:
  - Expanded Use of Low Emission Biofuels
  - Boosting Fuel Efficiency by Reducing Delays on Taxi, Takeoff, and Landing and Incentivizing Airlines to Green their Fleets

At a time of soaring demand and plunging fuel prices, airlines are making more money than ever. By demanding the industry contribute towards airport improvements, New York will not only ensure the City's economic competitiveness for decades to come, but can also take advantage of an unprecedented opportunity to improve the environmental sustainability of our airports and the aviation industry at large.

II. INTRODUCTION

On November 24, 1934, a Trans-World Airlines (TWA) plane touched down in Newark, New Jersey following a 700-mile journey from Chicago. As the majority of travelers disembarked, one passenger refused to decamp from the plane: New York City Mayor Fiorello LaGuardia.

Work Progress Administration Poster, 1937

Ever the proud New Yorker, the Mayor insisted that his ticket to "New York" entitled him to land in New York. After a "considerable argument," the TWA plane returned to the skies with its recalcitrant passenger, landing a few minutes later at Floyd Bennett Field in Brooklyn, 16 miles away.[1] Disembarking from the plane, LaGuardia told the *New York Times* that "my ticket says New York and that's where they brought me."[2] The incident was repeated the following month.[3]

Soon thereafter, construction began on a municipal airport in New York City; and in 1939, Mayor LaGuardia presided over the opening ceremonies of the airport that now bears his name.[4]

Since then, New York City's two airports—LaGuardia (LGA) and John F. Kennedy (which opened in 1948)[5]—have grown exponentially. In 1993, JFK handled 25.8 million passengers, with LGA following with 19.8 million.[6] By 2015, each facility served a record number of passengers, with 56.8 million travelling through JFK—an increase of 120 percent—and 28.4 million passing through LGA—an increase of 43 percent.[7]

While this growth is a clear sign of New York's expanding tourism industry and economic strength, there is no doubt that the airports are struggling to keep pace with demand. Indeed, despite the central role of the City's two airports in promoting economic growth, Kennedy and LaGuardia have consistently been ranked among the worst airports in the country, with Vice President Joe Biden remarking that LGA was akin to an airport in a "third world country."[8]

This negative assessment is borne out by data. In 2015, only 74.6 percent of flights departing from LaGuardia and 77.9 percent of flights departing from JFK took off on time, placing both airports in the bottom third of major U.S. airports as ranked by the U.S. Department of Transportation.[9] Flying round trip from either New York City airport is likely to entail added delays of between 46-56 minutes per trip, the most of any major airport in the U.S.[10]

Not only are New York City's airports plagued by delays, they are also very difficult to get to, especially by mass transit. A recent study ranked JFK and LaGuardia as last and third-to-last, respectively, in mass transit accessibility among 30 comparable international airports.[11] Indeed, the travel time from central Manhattan to JFK airport can exceed the average flight time from JFK to Washington, D.C.[12]

Revitalizing New York's two major airports is not only a matter of economic competitiveness, but also one of environmental urgency. Currently, airlines account for about two percent of global

emissions[13]– about the same as Germany, which enjoys the world's fourth largest economy.[14] These emissions are expected to triple by the middle of the century,[15] making global aviation the "fastest-growing major source of greenhouse emissions on the planet."[16]

In June 2015, the U.S. Environmental Protection Agency (EPA) released an "endangerment finding" contending that greenhouse gas emissions (GHG) from commercial airlines contribute to global warming and must be regulated under the Clean Air Act.[17]

It's not just the planes that contribute to emissions, it is also the airports. In 2011, buildings at JFK and LaGuardia contributed 63,000 tons of CO_2E to the atmosphere in electrical consumption alone,[18] the equivalent of powering 4,769 average American homes for a year.[19]

While the Port Authority, the legal entity overseeing JFK and LaGuardia as well as the region's other airports, has recently invested in some energy efficiency measures at New York's airports, the combination of dilapidated infrastructure, advancements in technology, and ever increasing flows of passengers requires a wholescale transformation of our airport infrastructure.

Governor Andrew Cuomo recently announced the winning blueprint for a complete overhaul of LaGuardia airport, a $5.3 billion project set to break ground in 2016 and open in 2022.[20] In addition, the Governor has directed the Airport Master Plan Advisory Panel to develop a full master plan for future development at JFK airport by next year.[21]

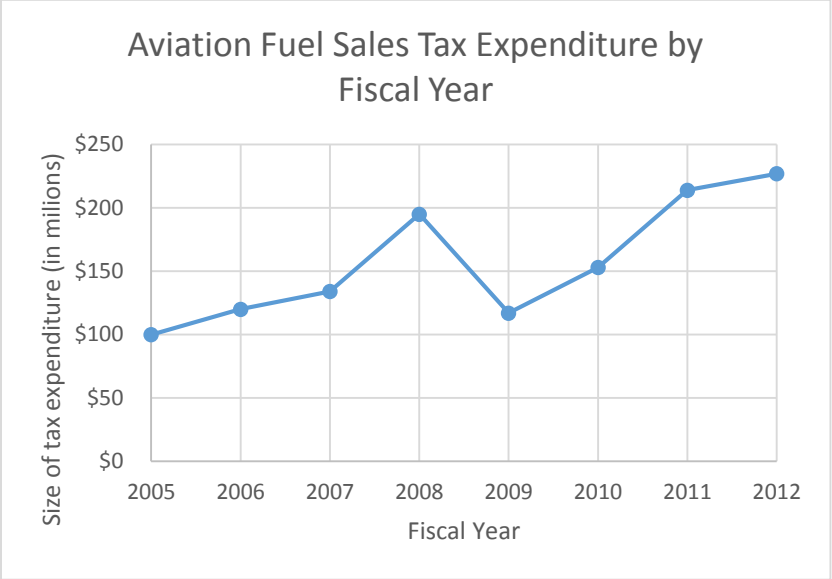
This report, by Comptroller Scott M. Stringer, proposes a new funding stream for these ambitious plans—applying the New York City sales tax to the purchase of commercial jet fuel— that could provide up to $200 million annually to improve the environmental sustainability of our airports and the aviation industry at large.[22]

By investing in green measures, the Port Authority could save money, as well as help save the planet. Projects that improve energy efficiency, build solar capacity, or enhance resiliency are proven to provide a long term return-on-investment that can recoup upfront costs, or provide future revenue.

Drawing from the experience of airports across the world, this report suggests a series of green projects which, implemented either individually or collectively, could make New York's airports leaders rather than laggards.

III. PAYING THEIR FAIR SHARE: APPLYING CITY SALES TAX TO JET FUEL

When New Yorkers buy a sandwich, get a haircut, or fill up at the pump, they are subject to New York City's 4.5 percent sales tax. However, New York State tax law specifically exempts jet fuel sold at New York City airports from City sales tax of 4.5 percent.[23]



The value of the annual tax expenditure resulting from the sales tax exemption varies from year to year. According to a 2016 report by the New York City Department of Finance, airlines received a $227 million exemption on sales tax in 2012, the most recent year in which costs were calculated. [24] The size of the exemption has varied in recent years (as is depicted in the chart below) and is closely tied to the cost of jet fuel and the amount of air traffic emanating from New York's airports. Given that the Department of Finance's most recent estimate was made during a period which saw near record high fuel prices, the size of the exemption today is likely lower. Estimates by the Comptroller's office suggest that the current size of the exemption could be close to $100 million.[25]

New York State does levy a fuel tax on aviation gasoline of 17 cents per gallon, but the tax code also features a tax credit and reimbursement scheme which significantly lowers the rate. In short, the effective state fuel tax rate for commercial airlines buying a $3 gallon of jet fuel is almost negligible.[26]

According to the Tax Foundation, New York is among only 19 states that do not include jet fuel in their sales tax base.[27] As a result, unlike New York drivers who pay sales tax at the pump, the major airlines serving JFK and LaGuardia pay no sales tax on their fuel consumption.

Airlines are reaping this windfall at a time of low fuel prices and record profits. According to the U.S. Department of Transportation, the price of a gallon of jet fuel was $1.27 dollars in January 2016, 36 percent below the price in January 2015 and a 58 percent decline from January 2014. [28] As a result, airlines paid 33 percent less for fuel in 2015 than in 2014, a savings of over $15.5 billion. Lower fuel prices helped to make 2015 the single most profitable year for the U.S. airline

industry since the industry was deregulated in 1978, with the four largest domestic carriers posting profits of $29 billion.[29]

Nevertheless, as Senator Charles Schumer has noted, record profits for airlines have not translated into lower prices for consumers.[30] In 2015, fares of three of the major domestic carriers remained essentially static.[31] Meanwhile, many carriers that imposed "fuel surcharges" as oil prices soared have simply changed the name of such fees to "carrier-imposed surcharges."[32]

The sales tax exemption for airline fuel is unusual, as most sales tax exemptions are granted for essential goods (food, clothing, and medicine), or to non-profit organizations that benefit the public.[33]

Applying local sales tax to fuel sold at JFK and LaGuardia could yield over $100 million annually that can be used for desperately needed airport improvements.

While federal laws and regulations require that any proceeds raised from taxes on the sale of aviation fuel to be spent "only for airport-related purposes," the scope of federal regulations allow wide latitude for different types of projects within airports.[34] Several potential options for this revenue stream are explored below.

Proceeds from the application of the City sales tax on jet fuel can be used to fund ongoing and planned renovations at JFK and LaGuardia, ensuring that ongoing improvements keep our airports modern, efficient, and internationally competitive.

Examples of Goods and Services Exempt from Sales Tax

Drugs and medical equipment

Newspapers

Flags

Clothing and shoes (up to $110)

College textbooks

Internet/Cable TV access

Hearing aids and eye glasses

IV. REAPING THE REWARDS: HOW JET FUEL SALES TAX REVENUE CAN FUND AIRPORT RENOVATIONS

LaGuardia and JFK are in dire need of renovation and modernization, both to meet the demands of the future and to honor a history of civic investment and cutting edge design. Indeed, New York's airports were once best in class facilities that were destinations in and of themselves.

TWA Flight Center

When Eero Saarinen's iconic TWA Flight Center[35] opened in 1962, the *New York Times* reported that the airport was increasingly crowded with "thousands of sightseers" eager to catch a glimpse of the future.[36]

According to the *Times*, new terminals offered the opportunity to couple architecture with functionality, helping to "ease tie-ups and attract business" at the same time as serving as a majestic and modernistic front door to the City. [37]

With concerted investment in new facilities and updated technology, New York's airports can once again become emblems of smart, striking, and functional design—boosting our economy and the vibrancy of our public space.

Currently, a significant portion of airport infrastructure costs are paid for by the imposition of a Passenger Facility Charge (PFC) that collects a fee of up to $4.50 per flight segment.[38] Both JFK and LGA charge the maximum allowable fee. While various parties have lobbied to increase the PFC, including President Obama who proposed raising the cap from $4.50 to $8.00 in his FY 2015 budget, Congress has refused to raise the PFC.[39] With Washington gridlocked, New York State must lead the way in developing new revenue streams—such as imposing the City sales tax on the sale of jet fuel—that support airport modernization.

While airlines would be paying the cost of these renovations through a tax on their fuel consumption, they would also be the direct beneficiaries of any push to modernize airports. Studies show that investments in infrastructure can reduce operating costs for airlines, raise airport capacity, and eliminate inefficiencies.[40] For example, the Port Authority's plan for LaGuardia anticipates "a more efficient circulation of aircraft and reduced taxi-in and taxi-out times, which will yield shorter and fewer gate delays," an obvious boon for both airlines and passengers.[41]

MODERNIZING SECURITY INFRASTRUCTURE

Passengers also stand to benefit from airport redesign. In a survey measuring customer satisfaction, JFK and LGA ranked 25th and 30th respectively out of 31 large U.S. airports.[42] Overtaxed and aging airport infrastructure impacts passenger experience from the front door to the runway. A

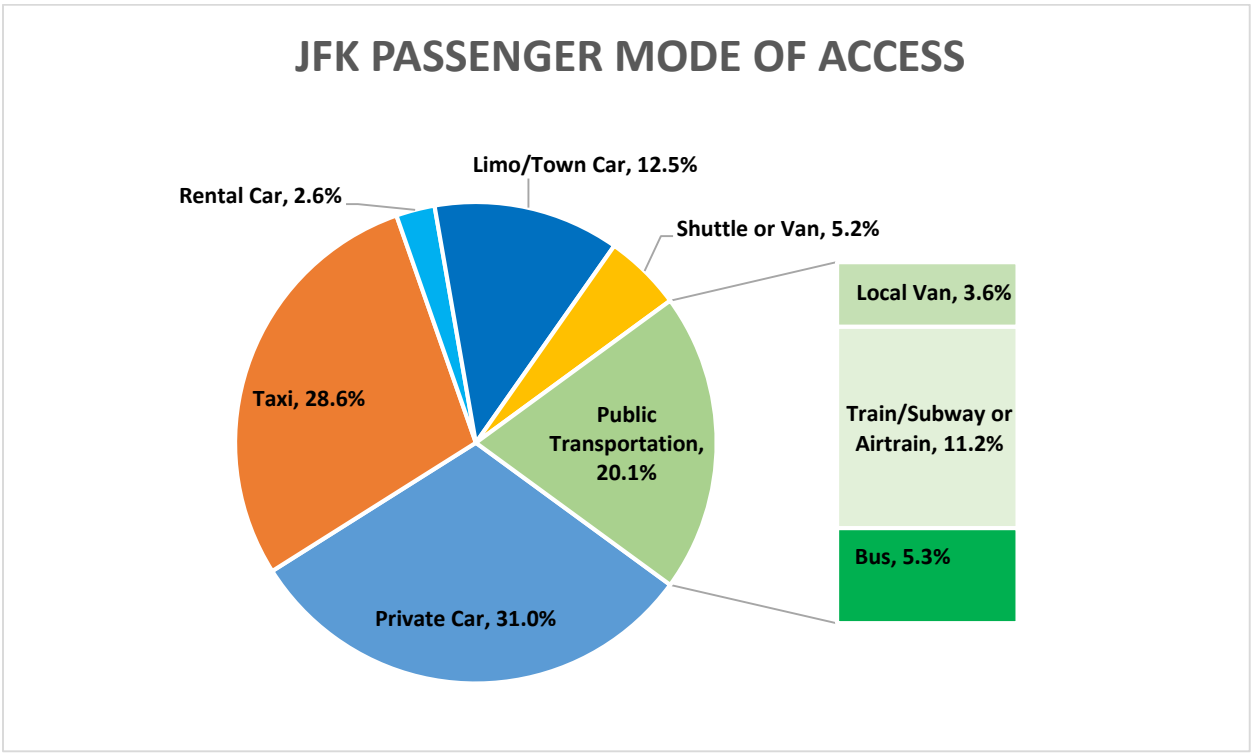
2013 review concluded that LGA's Central Terminal "does not provide the required floor space to meet Transportation Security Administration (TSA) standards for accommodating security personnel, screening processes, and equipment at passenger checkpoints and baggage areas." [43] Modern infrastructure can expand security staging areas and more swiftly steer passengers to their gates.

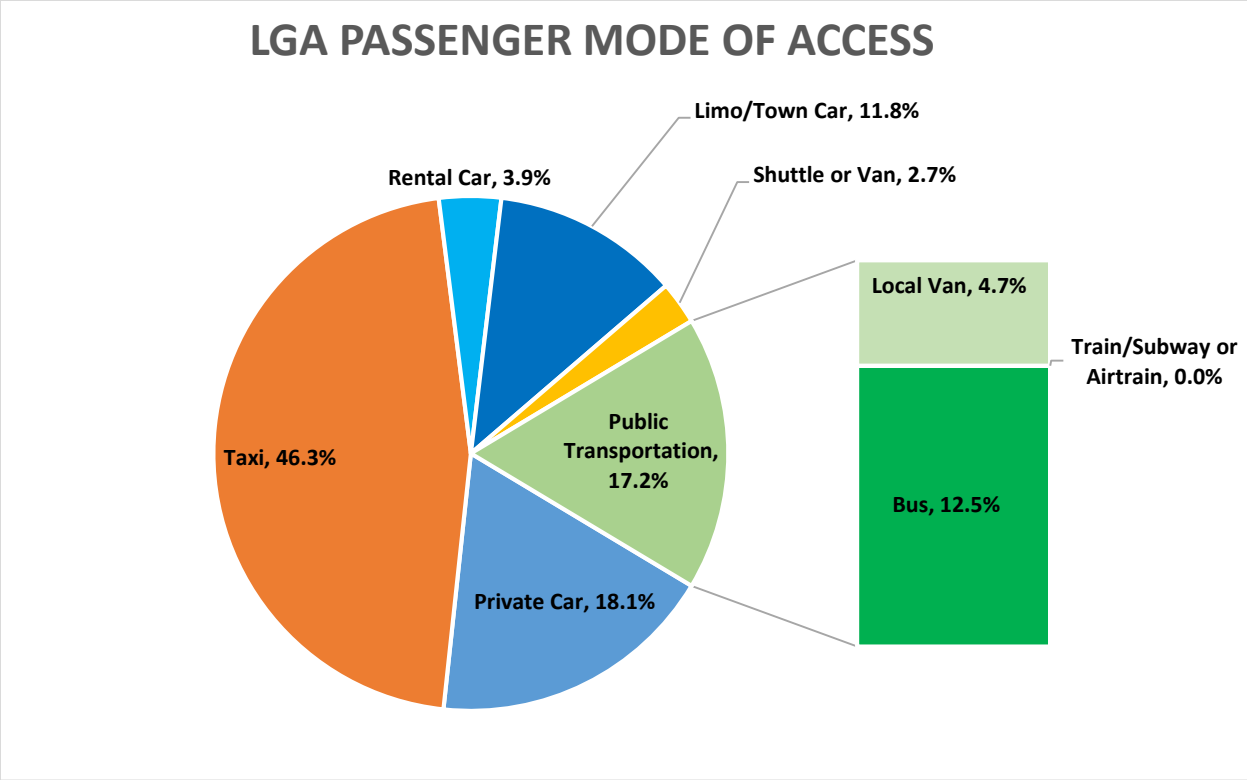
IMPROVING PUBLIC TRANSPORTATION

Collecting sales tax on jet fuel would not only fund improvements to security infrastructure, but would also contribute to the wholesale renovation of these facilities, including an expansion of public transportation links to both airports.

Given the relative inaccessibility of both airports,[44] projects that promote the use of public transit can help improve the daily experience of travelers and airport employees, while simultaneously cutting down on greenhouse gasses.

The primary mode of transit to and from both JFK and LaGuardia is via car – be it a private car, taxi, or town car. In December 2015, 72 percent of passengers at JFK[45] and 80 percent of passengers at LaGuardia airport[46] arrived by use of a private or hired car. In comparison, 16 percent of travelers used public transportation to arrive at JFK and a paltry 12.5 percent of travelers used the bus to access LaGuardia.





For decades, elected officials and advocates have pushed for rail access to LaGuardia. Recently, Governor Cuomo has proposed connecting LaGuardia to New York's transit system by means of an "AirTrain" that would link LaGuardia to the 7 train and Long Island Railroad station at Willets Point in Flushing.

The FAA recently approved a plan to use sales tax revenue to fund a rail system at San Francisco International Airport, including equipment within the airport terminal and a connector between the airport station and Bay Area Rapid Transit (BART).[47] As a result, it is likely that a project linking LaGuardia to the City's subway network could be funded with revenues from imposing the City sales tax on jet fuel.

Sales tax revenue could also go to expanding and maintaining JFK's enormously popular AirTrain. The Airtrain at JFK has set ridership records for ten consecutive years, conveying approximately 6.5 million passengers in 2014.[48] Passenger totals are anticipated to swell further when the MTA concludes its East Side Access project, linking Grand Central Terminal to Jamaica-bound Long Island Railroad lines and by extension, the AirTrain.[49]

Along with the Governor's proposal referenced above, the State and City should also explore using sales tax proceeds from jet fuel to improve connectivity at both airports via buses and ferries.

Revitalizing New York's two major airports will not only improve Gotham's economic competitiveness, but will also provide an opportunity to reduce greenhouse gas emissions and improve the sustainability of air travel in the metro region.

V. GREENING NEW YORK'S AIRPORTS

The Port Authority has developed a program to reduce greenhouse gas emissions by 80 percent from 2006 levels by 2050. This goal includes emissions from operations and from the customers and retail businesses that populate the properties managed by the Port Authority, including JFK and LGA.

Imposing the City sales tax on jet fuel could provide a dedicated revenue stream to further that effort, reducing GHG and improving New York's local environment. The projects outlined below are designed to fit within the FAA's strict guidelines for the proper use of sales tax proceeds.

INSTALLING GREEN ROOFS

Both JFK and LaGuardia should consider equipping their airport facilities with green or white roofs.

A green roof refers to the covering of a roof with a waterproof cover, a growing medium like dirt or gravel, and vegetation. Green roofs provide many benefits including alleviating storm water runoff and improving thermal insulation. A well maintained green roof can double the life expectancy of a roof, absorb carbon emissions, and beautify a building.[50] White roofs are created by applying a white layer of paint that can reflect the rays of the sun, reducing the need for energy intensive cooling systems in the summer.[51]

Chicago's FedEx Sort Building Terminal

Airports in Frankfurt, Chicago, and Amsterdam all sport green roofs. Indeed, the green roof atop Chicago's FedEx Sort Building Terminal[52] is estimated to save the airport $35,000 annually in energy costs, while providing an acoustic buffer that limits the noise of airplanes and reducing storm water runoff by 70-90 percent in the summer.[53]

EXPANDING SOLAR ENERGY

The Port Authority should consider expanding its use of solar energy by identifying sites where solar arrays can be installed.

Neither JFK nor LaGuardia is currently utilizing solar to power a large portion of their operations. Instead, both airports rely on utilities and internal power plants to supply energy. In 2011, emissions from powering JFK airport totaled 52,864 tons of CO_2—the equivalent of burning over 56 million pounds of coal or consuming almost 6 million gallons of gasoline.[54]

Airports are increasingly turning to solar to fill their energy needs. Denver International Airport has installed an array that has reduced GHG emissions by over 10,000 tons per year,[55] and

Indianapolis International Airport owns a 150-acre solar farm that generates more than 31 million kilowatt hours.[56]

While New York's more compressed airports are more constrained in the available real estate they can provide for solar, there is still the potential to install solar systems on the roofs of buildings and parking facilities. Indeed, in 2014, the Port Authority and Con Ed announced the installation of 3,200 solar panels (62,000-square-feet) on Newark Airport rooftops, providing the airport with 817,000 kilowatt-hours of electricity annually and saving the Port Authority approximately $60,000 per year.[57]

Despite its small physical footprint, California's San Diego International Airport was able to find room for solar by topping outdoor parking facilities with photovoltaic panels.[58]

The Port Authority should explore similar installations at JFK and LGA,[59] and follow the lead of the U.S. Department of Defense by using solar powered lighting systems for runway lighting and obstruction lights.[60]

San Diego International Airport

IMPROVING ENERGY EFFICIENCY

As part of planned and ongoing renovations, JFK and LaGuardia should seek to achieve the highest possible energy efficiency standards for its buildings.

According to the Intergovernmental Panel on Climate Change, airports are responsible for five percent of the CO_2 emissions of the aviation industry, which itself is responsible for two percent of global GHG.[61]

The Port Authority has taken several steps to make its airports more efficient, including installing energy efficient lighting and decommissioning vacant buildings and a high-pressure steam plant.[62] However, the Port can and must do more to invest in cutting edge technology to reduce emissions caused by energy consumption.[63]

This could include developing a geothermal system like Denver International Airport, implementing 'smart' energy controls like Dallas Fort Worth Airport, or installing high performance, high efficiency HVAC systems as suggested by the Chicago Department of Aviation's Sustainable Airport Manual.[64]

The Port Authority should also ensure that all new construction at JFK and LaGuardia, including the development of a new Terminal B complex at LaGuardia, meet the highest international standards for building energy efficiency.

One internationally recognized measure of green design and maintenance is the Green Building Council's rigorous Leadership in Energy and Environmental Design (LEED) program. Airport terminals across the world have won LEED designations, including Gold certifications awarded to

San Francisco International Airport Terminal 2 and Delhi's Indira Gandhi International Airport Terminal 3.[65]

San Diego International Airport has set a new standard with a Platinum Certification for its Green Build Terminal 2. The Airport uses high efficiency lighting, low-flow water fixtures, and a large solar array to drastically minimize its environmental impact.[66]

The Port Authority should also consider building new facilities to conform to the principals of passive house design, a standard which seeks to achieve minimal energy usage and a drastically reduced ecological footprint.[67]

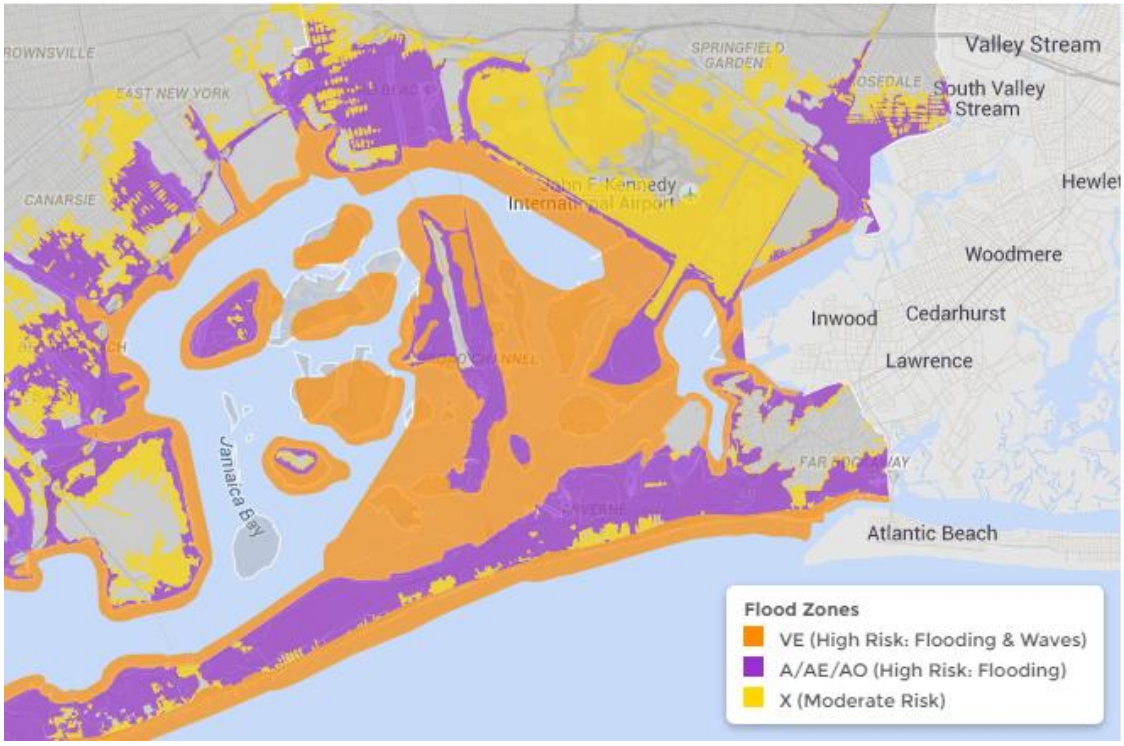
Revenue derived from the proceeds of a City sales tax on jet fuel could fund these types of projects, which will keep both airports current with the most cutting edge technology available.

MAKING AIRPORTS MORE RESILIENT

Revenues from a sales tax on fuel could also support resiliency projects designed to stem rising tides and guard against greater storm events.

During Superstorm Sandy, LaGuardia Airport was closed for two days after being inundated with approximately 100 million gallons of saltwater.[68] JFK is also susceptible to flooding, with a large portion of the airport designated as being at moderate risk by the Federal Emergency Management Agency, as shown in the map.[69]

FEMA Flood Risk Map



Courtesy of the Center for NYC Neighborhoods

Investing in resiliency measures is at once operationally prudent and smart spending. In a 2005 study of federal resiliency spending, the Multihazard Mitigation Council estimated that "$1 spent on mitigation saves society an average of $4."[70]

Both JFK and LaGuardia should explore opportunities to bolster their shoreline defenses to mitigate or prevent flooding on runways and in facilities. For example, JFK could focus on projects that better integrate its landscape into the local environs of Jamaica Bay, whose natural features (such as oyster beds) were able to mitigate the onslaught of the storm surge during Sandy.[71]

VI. GREENING AVIATION

At a time of record profits and plunging oil prices, applying New York City's 4.5 percent sales tax to jet fuel is not expected to result in significant hardship to airlines. However, the Comptroller's proposal does incentivize the airline industry to reduce or eliminate their tax bill by improving efficiency and adopting cleaner fuels.

By utilizing biofuels, reducing unnecessary fuel consumption, devising more efficient flight plans, or upgrading their fleets with more efficient aircraft, airlines can drastically cut their fuel consumption, cutting down on emissions and their tax bill at the same time.

EXPANDING BIOFUELS

New York's airports and the airlines that serve them should explore the expanded use of biofuels to power flight, which can dramatically reduce carbon emissions associated with air travel.

Biofuels are mixtures of plants and natural oils that can substitute for conventional jet fuel, which reduce carbon emissions by 50 to 80 percent compared to traditional fossil fuels.[72] Though questions have been raised about the environmental impact related to the production of biofuels, innovative production techniques could create biofuels that significantly lower the carbon impact of air travel.[73]

Airports and airlines are increasingly trialing biofuels.[74] Seattle-Tacoma International Airport has initiated a joint project with Boeing and Alaska Airlines to develop the infrastructure to bring aviation biofuels to the airport.[75]

Similarly, in 2013, the Port Authority partnered with KLM Royal Dutch Airlines and SkyNRG, a biofuels company, to launch the Green Lane Flight program at JFK. Under the program, planes flying from New York to Amsterdam used biofuels, including batches created from used cooking oil, created by Dynamic Fuels.[76] While fuel costs were higher for the 26 flights participating in the program, total lifecycle emissions were estimated to be down by up to 80 percent. [77]

Integrating biofuels into an airport requires building out new transportation, blending, storage, quality control and pumping systems that meet the specifications required for the fuel. Revenues from the City sales tax on polluting jet fuel can fund the necessary infrastructure for biofuels, reducing pollution and giving airlines a powerful incentive to avoid paying the additional tax by switching over to a more sustainable fuel source.

BOOSTING FUEL EFFICIENCY

Imposing the City sales tax on jet fuel will also provide a strong incentive to improve fuel efficiency.

Despite advancements in aviation technology and engine fuel efficiency, improvements in fuel efficiency have recently slowed. A report by the International Council on Clean Transportation found "no net improvement in fuel efficiency between 2012 and 2013" for U.S. airlines.[78]

Fuel efficiency has improved by about 1 percent per year in recent years,[79] falling short of the 2 percent fuel efficiency goal posed by the International Civil Aviation Organization.[80] Declining fuel efficiency rates are attributable to many causes, including the aging of airline fleets.

The average age of an airline's fleet varies greatly depending on the carrier, with some fleets including planes that are more than 30 years old.[81] The chart below shows the average age of the fleet for the top 10 airlines at LaGuardia and JFK, ranked by the average age of airline fleets.

La Guardia[82]		**Airline Fleet Average Age[83]**
1	Delta	17.1
2	Air Canada	14.2
3	United	13.6
4	Southwest Airlines	12.4
5	American	11.2
6	Frontier Airlines	8.6
7	JetBlue Airways	8.5
8	West Jet	8
9	Virgin America	6.4
10	Spirit Airlines	5.3
John F. Kennedy[84]		**Airline Average Fleet Age[85]**
1	Delta	17.1
2	United	13.6
3	British Airways	12.7
4	Air France	11.8
5	American	11.2
6	JetBlue	8.5
7	Virgin Atlantic	8.4
8	Cathay Pacific	8.1
9	Emirate Airlines	6.4
10	Virgin America	6.4

By investing in more efficient aircraft, airlines can radically reduce their fuel consumption. The two largest airplane manufacturers, Boeing and Airbus, both contend that their new designs reach new heights in energy efficiency.[86]

In addition to purchasing brand new aircraft, airlines can improve fuel efficiency by swapping out old engines for new models on existing airplanes.[87]

Moreover, airlines could also reduce fuel, and their tax bill, by retrofitting existing aircraft with 'winglets'. Winglets are small extensions to an airplane's wing which curl the end of the wing upwards to reduce aerodynamic drag.[88]

Initially developed by NASA in the 1970s, winglets are increasingly used by commercial carriers to cut down on fuel consumption.[89] Outfitted with winglets, a single plane could see its fuel consumption reduced by approximately 45,000 gallons of jet fuel in a year – an amount that is "equivalent to the amount of gasoline an average car would use in 72 years."[90]

Winglets

Adding winglets to all operating aircraft could pay very large dividends, cutting down on carbon and reducing an airline's fuel and tax expenditures.

Imposing the City sales tax on jet fuel is just one way that airlines are being encouraged to green their fleets. By the end of 2016, the International Civil Aviation Organization is expected to mandate new aircraft efficiency standards and emission reduction goals.[91] In addition, the EPA recently issued an "endangerment finding" under the Clean Air Act, which is expected to result in federal rules to reduce aircraft emissions.[92]

The planned redesign of New York City's regional airports is expected to yield considerable improvements in fuel efficiency. At LaGuardia, additional taxiways are expected to "improve aircraft circulation, reduce taxi-in and taxi-out times, reduce gate delays, and decrease harmful carbon emissions from idling aircraft."[93] At Kennedy, the reconstruction and expansion of multiple runways has enabled more efficient takeoffs and landings.[94] And at Newark, four new taxiways will help reduce ground delays, with projected savings of $9.4 million annually in reduced costs for aircraft operations and the value of passengers' time.[95]

Additionally, improvements from the FAA's NextGen program are expected to result in less air-traffic congestion and reduced fuel consumption.[96] As a result, passengers, the environment, and the airlines themselves stand to benefit from directing the proceeds from the City sales tax on jet fuel to airport projects.

VII. CONCLUSION

New York City's association with air travel began long before the opening of LaGuardia and Kennedy or even the clearing of a dirt runway at Floyd Bennett Field.

In 1909, Wilbur Wright brought his famous biplane to the City during the celebration of the 300th anniversary of Henry Hudson's voyage into New York Harbor.

With one million New Yorkers craning their necks along the banks of the Hudson River, Wright flew from Governor's Island to Grant's tomb, and back, with a detour to circle the Statue of Liberty in New York Harbor.[97]

Harper's Weekly presciently declared that there was to be, "a new kind of gull in New York Harbor."[98]

Since Wright's famous flight, the skies over New York have become increasing crowded, as have the City's two airports, which today rank among the worst in the nation for delays and customer satisfaction.

Wilbur Wright Flying by the Statue of Liberty

By levying sales tax on the sale of jet fuel at the same tax rate that is charged on almost all consumer goods, including gasoline, New York can once again stand on the vanguard of aviation by developing modern, functional, and sustainable airports.

In the coming months, City Comptroller Scott M. Stringer will seek legislation that grants New York City this option and will urge the Port Authority and the State to develop a comprehensive plan using a new source of revenue to green its facilities and operations.

VIII. ACKNOWLEDGMENTS

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