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CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: John Aitken

SUBJECT: **DOWNTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY REPORT**

DATE: March 8, 2019

Approved Kim Walesh Date March 8, 2019

SUPPLEMENTAL

REASON FOR THIS SUPPLEMENTAL

Item 6.2 on the February 26, 2019 City Council meeting agenda provided Councilmembers the opportunity to hear and discuss staff's recommendation to use Federal Aviation Administration (FAA) obstruction evaluation criteria (FAA-mandated limits) to determine maximum building height limits in the Downtown Core and Diridon Station Area, rather than airline one-engine inoperative emergency procedures (OEI-based limits). The purpose of this supplemental memorandum is to address Councilmember questions that were not answered fully at the February 26 meeting.

This memorandum addresses the following six questions:

1. Do other cities have similar OEI building obstructions and how are building height limits addressed in these cities?

2. What are the airline responses to staff's recommendation? Would Council's adherence to the FAA-mandated limits affect airline's willingness to sign the 10-year airport lease agreement?

3. What is the role of the Air Line Pilots Association, International (ALPA) and what is their concern regarding the staff recommendation?

4. How would the proposed community-funded Air Service Support Fund work? Have other cities implemented such a fund?

5. What prompts airlines to up-gauge from a smaller to a larger aircraft for a specific route?

6. What are the differences between the staff recommendation (Scenario 4) and Scenarios 10B and 10D?

STAFF RESPONSE

1. Do other cities have similar OEI building obstructions and how are building height limits addressed in these cities?

FAA-mandated limits are the primary consideration for development heights around airports in the United States. Only a few other commercial service airports besides SJC are in communities with additional restrictions on development heights in order to protect airlines from economic impacts associated with their OEI procedures. Three examples are McCarran (Las Vegas), Reagan Washington National Airport (DCA), and Miami International Airport (MIA). Many more airports require airlines to have specific OEI procedures to avoid natural terrain; examples include Aspen and Burbank.

As part of the work scope developed and reviewed by the Steering Committee, Landrum and Brown provided case study information about Miami International and Reagan Washington National to understand ways to deal with airspace protection and high-rise development.

Miami International Airport (MIA)

Miami's downtown is located approximately 4-6 miles to the east of the airport. Miami generally uses FAA-mandated limits, but has some more restrictive OEI-protected corridors. To encourage local development, the County Height Zoning Code established "high structure-set aside districts" (HSAs) to allow high-rise development in certain areas. These ceilings were raised to 1,049 feet above mean sea level in 2014 through collaboration between the airlines and the development community. The County Height Zoning Code is explicit and does not permit any developments that exceed the airspace heights established as part of the code.

Reagan Washington National Airport (DCA)

Given the unique security needs of federally protected airspace in the Washington Metro region, the options for OEI corridor alignments are very restrictive. Airspace protection around DCA is not governed by law or enforced by ordinance, rather it is policy-based and used as a planning tool by the airport to protect the airspace from obstacles which may have an adverse impact on aviation operations. The airport authority works with airlines operating at DCA to maintain OEI airspace protection corridors. In general, OEI protection is not an issue the primary flight tracks follow the Potomac River and regular FAA airspace protection surfaces limit heights of building developments. During the evaluation process the airport authority will sometimes petition the FAA to lower the determination height to help protect OEI corridors.

The complete study is available at
https://sanjose.legistar.com/View.ashx?M=F&ID=7056103&GUID=F70273AF-4408-4DF9-B75A-0E494B9D2DD3

2. What are the airline responses to staff's recommendation? Would Council adoption of the FAA obstruction limits affect airline's willingness to sign the 10-year airport lease agreement?

Staff has received assurance from all but four airlines that Council's decision to adopt the FAA-mandated obstruction limits is not a factor affecting airline's willingness to extend their leases at SJC. Of those four airlines, based on our analysis, staff does not believe any of those four airlines will have concerns preventing them from signing the proposed new lease.

The follow table provide the responses by the airlines to the four scenarios examined.

Airline	**Response**
Alaska Airlines	At a lease renewal meeting, Alaska Airlines stated that the proposed scenario 4 was not a problem.
American Airlines	At a lease renewal meeting, American Airlines stated that the proposed scenario 4 was not a problem.
ANA	"We made a flight plan based on the weight that ANA is currently operating at San Jose Airport. In comparison, I checked how much payload would be reduced in each scenario by making a flight plan. As a result, payload has not change so much except for scenario 9. Payload becomes considerably small in the scenario 9, we tried not to reduce the number of passengers as much as possible. • ANA has some chance to operate B787-900 on SJC-TYO route, looking back to our history and also toward future, and therefore providing the B787-900 data is important for us. • ANA is hoping a safest logical scenario from airline's operational and commercial perspectives. • For your reference, in scenario 4, our penalty risk with B787-900 is 9,900 to 11,000 lb. • Our typical passengers' check-in baggage volume per flight is 10,000 lb, meaning we have to fly with leaving passengers baggage behind if this may happen. • ANA definitely supports the city's development, as well."
British Airways	• "Scenarios 4 and 7 have no impact to our current operation or the payloads we can achieve. • Scenario 10 has no impact on 12L, however a payload and engine impact for 12R. • Scenario 9 has the greatest impact to our operation from both runways. • Our emergency turn procedures in the case of engine failure are unaffected by any of the proposed scenarios."

Airline	**Response**
Delta	"Currently we depart straight out to a DME fix with a turn back northbound and do not take any advantage of the west OEI corridor so my analysis reflects this."
FedEx	"Overall the different obstacles for all except scenario 9 did not add any additional penalties to our operating aircraft. Scenario 9 for runway 12L did have a very large impact and would not recommend this option."
Hainan Airlines	"We follow the CAAC and ICAO OEI surface protection rules. So we select the obstacles base on ICAO OEI Surface and use the scenario 4 obstacles height. For scenario 4, 12L takeoff weight has not impact, 12R takeoff weight and payload will be decrease."
Hawaiian Airlines	"The bottom line is that the least desirable scenario is number 9, described as "No OEI protection (TERPS only), increased FAA height limits". The next least desirable scenario is number 4, described as "No OEI protection (TERPS only)". Otherwise, the rest of the scenarios have no impact. Scenario 10 has no impact on our takeoff performance because the obstacle in question is located outside of the obstacle splay of our departure flight patch (i.e. the FAA Advisory Circular 120-91 Obstacle Accountability Area)."
Southwest Airlines	"At or below the temperatures indicated on the table (sent last time), the takeoff weight penalty is zero, as the limit is not based on performance but rather the AFM structural maximum. Because of this, and because of the high temperatures required to force a performance limit, we considered the analysis complete."
United Airlines	"I've checked our historical loads to DEN, IAH and ORD for the 737s we fly out of SJC. At the moment I can't see that these scenarios would have any great impact on us for these fleets. I have updated the previous spreadsheet to indicate the worst case for any future destinations that we currently don't know of. Therefore it is based on us having to utilize the maximum capacity of the aircraft. The analysis is a bit rough but that is what we can do at the moment. Hope this helps."
Volaris	"Considering that Volaris operations are currently of SJC-MLM, SJC-GDL and SJC-ZCL, taking into account the information that was sent to us, about the analysis of obstacles in routes mentioned before, even considering the most critical condition of the obstacles, operation that the VOI assigned with A320 Fleet, performs in R-126 ° runway heading. Our operations are not affected for the current operating conditions, even considering the longest route that would be SJC-MLM."

Airline	**Response**
UPS	"As mentioned earlier in the week, we typically operate below the max weight and the proposed change would not impact us. If that were to change over time, then we would have to reduce payload as indicated. At this point, we do not see that as a concern."

As communicated on February 26, only the current Hainan Airlines flight to Beijing is meaningfully impacted by adopting the FAA-mandated obstruction limits to determine building heights. This flight, if 85% full, may need to offload seven passengers if the flight is departing during the time when the airport is in south flow. As stated at the February 26 Council meeting, data indicate that, applying historical averages, this affects less than .05% of Hainan's departing passengers each year. The Airport believes this potential impact is manageable, and that it does not fundamentally change the attractiveness of SJC or the viability of the flight. To the extent that the Beijing flight can grow and up-gauge over time from a 787 to an alternate aircraft there may be even fewer impacts.

3. What is the role of the Air Line Pilots Association International (ALPA) and what is their concern regarding the staff recommendation?

Air Line Pilots Association International (ALPA) is the major union of airline pilots in the United States and Canada, representing pilots' views on airline operational procedures. The ALPA letter submitted to City Council on Feb 27 expressed concern that a new city policy adopting the FAA-mandated limits would reduce safety margins. The FAA determines required safety margins, and there is no difference in the required safety margins between San Jose's current OEI-based practice restricting building heights and the staff recommended FAA-mandated limits.

At the February 26 meeting, Councilmembers Foley and Khamis expressed a desire to receive ALPA's analysis on the City's potential change around OEI airspace protection surfaces. Airport staff received a letter from ALPA on February 27, 2019, requesting "all available information concerning the current proposals for land development in San José, which would have any bearing on aircraft operations at Norman Y. Mineta San José International Airport." City staff provided ALPA with the documents requested; they responded on March 5 to advise that they are reviewing it.

4. How would the proposed community-funded Air Service Support Fund work? Are there other cities have implemented such a fund?

As part of its Recommendation to Council, staff seeks Council direction to explore and report back to Council on the feasibility of establishing a privately-funded Air Service Support Fund.

The idea, discussed during the Steering Committee and stakeholder meetings, is for a third-party entity to manage a fund that could help mitigate risk for airlines if increased building heights impact the viability of certain routes. The fund could offset direct passenger costs to an airline if the airline needs to offload passengers.

Staff anticipates that this program would not be needed for at least five years (the earliest any tall buildings might be built in the Diridon Station Area) and estimates that the fund amount could be in the range of $800,000-$1.5 million.

Funds could be raised from stakeholders who benefit from the air service, and/or generated potentially through some time of payment from property owners benefiting from additional height.

Presently, staff is not aware of any community air service support funds that exist for the expressed purpose of mitigating potential OEI costs to airlines (most airports and communities follow FAA-mandated limits). Most air service funds exist to attract air service to a specific market or to help smaller-sized airports remain competitive. In San Jose, the City and the private sector have a history of working together to recruit and retain airlines at SJC and therefore Steering Committee members, including the SVO and San Jose Downtown Association, believe the idea of an air service support fund should be explored and could be feasible.

Given that the feasibility needs further study, staff would caution against making any decision on OEI predicated on the creation of an Air Services Fund.

5. What prompts airlines to up-gauge from a smaller aircraft to a larger aircraft on a specific route?

The up-gauging of an aircraft by an airline is dependent on several general factors, with the specific factors considered unique and proprietary to each airline. Some of these factors may include:

- Demand for passenger traffic on the route--influenced by the number of passengers traveling the route, the average price per ticket that the route can support, and seasonal travel patterns.
- Market to carry air cargo
- Availability of aircraft
- Profitability of an available aircraft on one route vs. another route
- Competition from other airlines.

6. What is the difference between the staff recommendation (Scenario 4) and Scenarios 10B and 10D?

The following tables outline the differences between Scenarios 4, 10B and 10D with respect to air service (to address a specific question about service to China) and with respect to impacts on development capacity.

As stated during the February 29 Council meeting, there is no change to FAA mandated air surface protections under Scenario 4, 10B or 10D and the required safety margin between an aircraft and a building, should one of its engines fail, remains the same under each scenario.

Airlines will off-load passengers or cargo from an aircraft before takeoff to maintain the FAA-mandated safety margin.

Table 1 outlines the feasibility of non-stop routes to representative Chinese cities from SJC by aircraft type in south flow, assuming Hainan's aircraft specifications and OEI procedures[1]. Green indicates no significant weight penalties, orange indicates some passenger and/or cargo weight penalties and red indicates significant weight penalties depending on the load of the plane.

Table 1 – Potential Weight Penalty Impacts by Plane

Current Condition		**Scenario 4**	
Shanghai	Shenzhen/ Hong Kong	Shanghai	Shenzhen/ Hong Kong
B787-8	B787-8	B787-8	B787-8
B787-9	B787-9	B787-9	B787-9
B777-300ER	B777-300ER	B777-300ER	B777-300ER
A350-900	A350-900	A350-900	A350-900

Scenario 10B		**Scenario 10D**	
Shanghai	Shenzhen/ Hong Kong	Shanghai	Shenzhen/ Hong Kong
B787-8	B787-8	B787-8	B787-8
B787-9	B787-9	B787-9	B787-9
B777-300ER	B777-300ER	B777-300ER	B777-300ER
A350-900	A350-900	A350-900	A350-900

A major difference between the Scenario 4 (recommended by staff and the Steering Committee) and Scenarios 10B and 10D is the amount of new development capacity, and the associated positive outcomes for the community because of the increased height. The City and the community have long supported as much density as possible in the Downtown, including the Diridon Station Area, since more density translates directly into more positive outcomes for the community. Each increased floor of development brings capacity for more housing, more net tax revenue for city services, more community benefits, more public spaces, more vibrancy, more transit users, more airport passengers, and a more interesting skyline. Table 2 shows the impact of each scenario, with Scenario 4 allowing for the most substantial density increases in both the Downtown Core and Diridon Station Area. In the context of San Jose's relatively small city center, and the airspace that must be protected for safe arrivals to SJC, every floor makes a difference in these positive community outcomes.

[1] Hainan's current and planned long-haul fleet includes the Boeing 787-8, Boeing 787-9 and Airbus A350-900 aircraft. The Boeing 777-300ER is included in this chart based upon separate, non-carrier-specific analysis indicating that aircraft's performance capability is such that it would not be impacted by higher development proposed in any of the scenarios presented.

Table 2 – Development Impacts of Various Airspace Protection Scenarios

	Scenario 4	**Scenario 10B**	**Scenario 10D**
Height Increase: Downtown Core	5' to 35'	None	None
Height Increase: Diridon Station Area	70' to 150'	30’ to 56’	62’ to 118’
Net New Square Footage Diridon Station Area*	9.5M	3.3M	7.3M
Potential New Jobs	30,600	10,200	22,800
Potential New Housing Units	2,800	1,000	2,200

*Assumes buildout at 65% commercial and 35% residential ratio, comparable to the current Diridon Station Area Plan.

/S/
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