**AIRPORT COMMISSION AGENDA:**
01/14/19

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

# Memorandum

**TO: AIRPORT COMMISSION** **FROM:** John Aitken, A.A.E.

**SUBJECT: DOWNTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY REPORT FINDINGS AND RECOMMENDATIONS** **DATE:** January 10, 2019

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## RECOMMENDATION

Recommend to the City Council approval of:

1. Acceptance of a completed Downtown Airspace and Development Capacity Study, with selection of Scenario 4, which would affirm the City's development policy to use Federal Aviation Administration (FAA) Terminal Instrument Procedures (TERPS) surfaces to determine maximum building heights in the Downtown Core and Diridon Station.
2. Direction to the Administration and City Attorney's Office to explore, and report back to Council on, the feasibility of establishing a "Community Air Service Fund" to financially mitigate any adverse air service impacts that might arise from implementation of Scenario 4 of the Downtown Airspace and Development Capacity Study.
3. Direction to the Administration to consider potential refinements to the development review process for projects subject to a FAA TERPS airspace determination including:
    a. Requiring applicants to have the technical data on the FAA submittal forms be prepared by a licensed civil engineer and that the forms identify the location and elevation of the highest points of the proposed building, including any mechanical rooms, screens, antennas, or other accessory structure.
    b. Requiring applicants to also identify the location and elevation of the highest points of the proposed building and accessory extensions thereof, on their City development permit application plans, including any mechanical rooms, screens, antennas, or other accessory structure.
    c. Require that a construction survey prepared by a licensed civil engineer be submitted by applicants to the FAA upon completion of the high-point of the structure and accessory extensions thereof, prior to City issuance of an occupancy certification.

   d. Requiring a development permit amendment application for any proposed modification or addition to an existing or approved building that would create a new and/or relocated roof-top high point.
   e. Develop a construction crane policy in the Downtown Core and Diridon Station area to minimize impacts on airline service during construction.
4. Direction to the Administration to initiate amendments, as determined applicable, to the General Plan and other key policy documents to incorporate the above recommendations and conduct outreach with the downtown development community to provide information and guidance on development height restrictions.

## OUTCOME

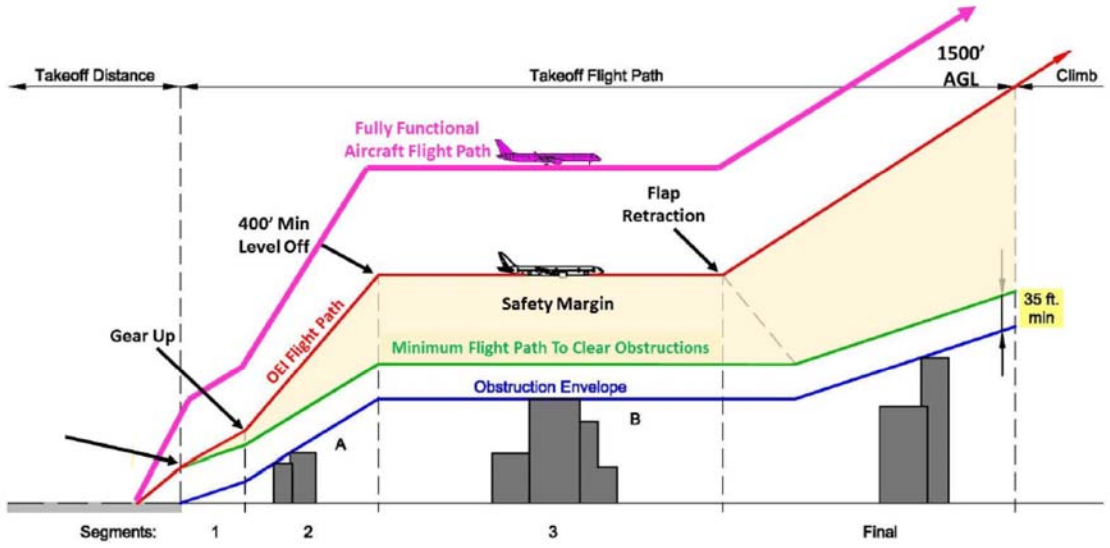
City Council approval of the above recommendations would allow for maximum safe development heights and associated economic benefits in the Downtown and Diridon Station areas.

## BACKGROUND

Two of the City's primary economic priorities are the continued development of Downtown and growth in air service at Mineta San Jose International Airport (Airport). The Airport and Downtown are within two miles of each other and the primary aircraft approach and departure paths for the Airport are directly over Downtown, which places limitations on Downtown building heights.

The Federal Aviation Administration (FAA) protects airspace around airports through the application of Federal Aviation Regulations (FAR) Part 77 and Terminal Instrument Procedures (TERPS). These regulations define various airspace "surfaces" or slopes which radiate out from an airport's runway and mandate FAA review of any proposed structure which exceeds one or more of these surfaces. In San Jose, as in most local land use jurisdictions, proposed structures subject to FAA review are typically required to obtain a "determination of no hazard" clearance from the FAA prior to, or as a condition of, City development permit approval.

While FAA applies Part 77 and TERPS to safely operate the airspace around an airport, it does not consider airline emergency procedures as part of the review. Under Part 25 of the Federal Aviation Regulations, airlines are required to have emergency flight procedures in place for every departure in the event of an engine power loss during take-off. These emergency flight procedures are known as "one-engine inoperative (OEI)" procedures and are designed so that an aircraft can gain sufficient altitude immediately upon takeoff even if an engine loses power, follow a prescribed flight path over any obstacles and surrounding terrain, and safely circle back to the airport for an emergency landing. Each airline develops its own OEI procedures based on guidelines set forth by the FAA and the International Civil Aviation Organization (ICAO). The diagram below illustrates the requirements in these guidelines.




Protecting for OEI emergency procedures can limit maximum building heights around an airport more severely that the FAA evaluations conducted under FAR Part 77 and TERPs. The FAA believes that airlines can mitigate OEI airspace obstructions by revising their emergency procedures or by reducing takeoff weight to improve climb performance to safely clear obstructions. However, implementing takeoff weight restrictions by reducing passengers, cargo, or fuel can impact the economic viability of airline service. Even small weight penalties can affect the feasibility of airline service to a destination, most notably transcontinental and transoceanic destinations typically serviced by large, heavy aircraft. Therefore, obstructions within the surrounding airspace can be a factor in an airport's ability to attract or retain desired air service.

The City's 2007 Airport Obstruction Study mapped out airline OEI protection surfaces and associated building elevation limits around the Airport (note: aircraft depart to the south under certain weather conditions that occur approximately 13% of the time annually). The 2007 study identified two OEI corridors used by the airlines: one over the Downtown core (east of Highway 87 and referred to as the straight out corridor) and one over the Diridon area (west of Highway 87 and referred to the west corridor). Airlines determine which corridor they will use – straight out or west corridor– depending on the aircraft being flown, the aircraft's destination, and the airline's pilot training program. Those airlines using the west corridor in their OEI procedures do so to avoid the existing high-rise buildings in the Downtown core. Since the OEI west corridor requires a shallower aircraft climb rate due to the turning maneuver, OEI building height limits in the Diridon area are more restrictive that in the Downtown core. Toward the southern end of Downtown, the FAA TERPS surfaces become more restrictive than the OEI procedure surfaces.

Beginning in 2007, the Administration has successfully implemented an informal OEI protection practice through the development review process by attempting to limit proposed maximum building heights to the elevations mapped out in the study. To date, with developer cooperation, all approved high-rise building projects in the Downtown core and Diridon area have been consistent with the OEI surfaces.

In June 2017, City Council directed staff to update the 2007 study and include an economic analysis to identify the trade-offs between maintaining OEI protection surfaces and potential increased building heights under a no-OEI protection or alternative policy. Pursuant to that direction, the Office of Economic Development and the Airport Department have conducted the Downtown Airspace and Development Capacity Study. Landrum & Brown, a national aviation planning/engineering consultant with extensive experience working for the City on OEI and other airport technical issues, was contracted to perform the technical work on the study, with assistance from the economic analysis firm of Jones, Lang, & LaSalle. A project Steering Committee, comprised of the downtown stakeholder representatives including the San Jose Downtown Association, SPUR, Silicon Valley Organization, Silicon Valley Leadership Group, Santa Clara & San Benito Counties Building and Construction Trades Council, and Airport Commission was convened to provide review and input on the technical analysis and resulting strategy. City staff participation on the Steering Committee included representatives from the Mayor's Office, Councilmember Peralez's Office, Planning, Building and Code Enforcement Department, Office of Economic Development, and the Airport Department. The project Steering Committee met eight (8) times over the course of the study to review extensive technical materials and provide input and comments during the study process.

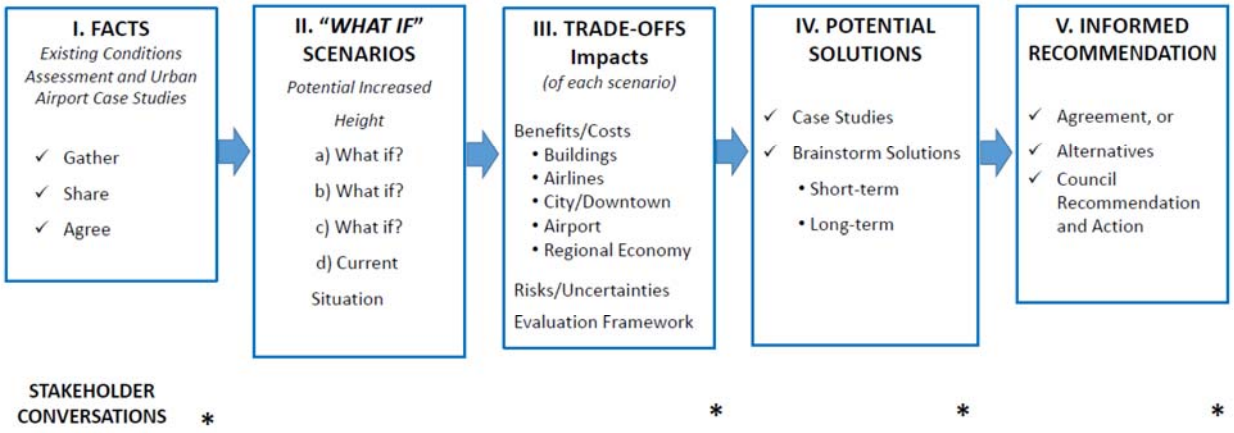
Separately, in addition to the project Steering Committee, three broader downtown stakeholder information meetings were held during the study, once at the initial launch of the study, once to report on study progress and initial findings, and once to present a proposed strategy. The stakeholder meetings were well attended and served as opportunities for the development community to ask questions and provide input into the study.

## ANALYSIS

The Downtown Airspace and Development Capacity Study consisted of three major tasks:

- Task 1 Existing Condition Assessment
- Task 2 OEI Feasibility Studies and Impact
- Task 3 Economic Analysis

The technical scope was augmented by the following collaborative framework developed with the project Steering Committee:




Task 1:

The technical consultant evaluated and updated the City's Downtown and Diridon Station area obstruction data, existing airline OEI procedures, critical aircraft for SJC current and anticipated air service, and the FAA's 30+ TERPS arrival, departure, and circling procedures to the south of the Airport.

In addition, a weather analysis over the last 15 years was completed, which confirmed that the Airport in south flow operations (departures to the south) an average of 13% of the time on an annual basis, most likely to occur during winter months and morning hours. All-day southflow operations occurred an average of 17 days annually.

Task 2:

Ten conceptual airspace protection "scenarios" were formulated to test various alternative combinations of OEI and FAA/TERPS airspace surface protections on maximum building heights. With input from the project Steering Committee, four of the ten scenarios were selected for detailed analysis:

- Scenario 4: No OEI protection (FAA/TERPS only)
- Scenario 7: Straight-out OEI protection with no OEI west corridor protection
- Scenario 9: No OEI protection plus potential elevation increase to some FAA/TERPS procedures
- Scenario 10 (A–D): Straight-out OEI protection with four alternative OEI west corridor surface protections

The following table displays the range of increased maximum building heights for each scenario compared to OEI protection conditions:

| Scenario | Additional Height Downtown Core | Additional Height Diridon Area |
|---|---|---|
| | | |
| No OEI (Scenario 4) | 5' - 35' | 70’ to 150’ |
| Straight-out OEI protection with no OEI west corridor (Scenario 7) | 0' | 70'-150' |
| No OEI protection plus increased FAA/TERPS surfaces (Scenario 9) | 35'-100' | 80'-220' |
| Straight-out OEI projection with alternative west corridor protection (Scenario 10) | | |
| Option A | 0' | 15'-25' |
| Option B | 0' | 30'-55' |
| Option C | 0' | 45'-85' |
| Option D | 0' | 65'-115' |

After determining the potential building height increases in the study areas, a technical analysis was then conducted to assess the aircraft performance impact (weight penalties) under each scenario using various combinations of aircraft types, destinations, and seasonal temperatures. The following set of charts illustrates the ability of specific aircraft to serve selected existing non-stop markets in the summer and winter months.

After much discussion with the project Steering Committee, Scenario 4 was selected as the most promising option to the an OEI protection policy. Scenario 4 demonstrates that the transcontinental market (represented by New York), Europe markets (represented by Frankfurt), and Hawaiian markets (represented by Honolulu) would have minimal weight penalties, if any. The Asian market (represented by Beijing) would have passenger and/or cargo penalties under south flow conditions (13% of annual operations). The Steering Committee discussed the possibility of creating a “Community Fund” that could compensate an airline for OEI-related weight penalties when incurred. The City itself is prohibited by federal regulations from using Airport funds to fund such Community Fund, but other airport proprietors have offered a similar air service fund by a separate agency, such as a Chamber of Commerce.

## Transcontinental – New York Market – Assessment of Potential Weight Penalties

| New York - JFK Winter (63° F) | | A320-200 (150 seats/2,384 lbs. cargo) | | B737-800 (175 seats/1,604 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | - | 1,067 | - | - |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | - | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | - | - | - |
| | Opt 10B: 115' - 224' AGL | - | - | - | - |
| | Opt 10C: 129' - 240' AGL | - | - | - | - |
| | Opt 10D: 146' - 260' AGL | - | 106 | - | - |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 8 | 2,384 | - | 583 |

| New York - JFK Summer (81.3° F) | | A320-200 (150 seats/2,384 lbs. cargo) | | B737-800 (175 seats/1,138 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | 3 | 2,384 | - | - |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | - | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | - | - | - |
| | Opt 10B: 115' - 224' AGL | - | - | - | - |
| | Opt 10C: 129' - 240' AGL | - | - | - | - |
| | Opt 10D: 146' - 260' AGL | - | 1,378 | - | - |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 13 | 2,384 | 3 | 860 |

## Hawaii – Honolulu Market – Assessment of Potential Weight Penalties

| Hawaii - HNL Winter (63° F) | | A321 NEO (189 seats/18,481 lbs.) | | B737-800 (173 seats[1]/No Cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | - | - | - | - |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | - | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | - | - | - |
| | Opt 10B: 115' - 224' AGL | - | - | - | - |
| | Opt 10C: 129' - 240' AGL | - | - | - | - |
| | Opt 10D: 146' - 260' AGL | - | - | - | - |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | - | 2,537 | 3 | - |

| Hawaii - HNL Summer (81.3° F) | | A321 NEO (189 seats/21,658 lbs.) | | B737-800 (175 seats/1,599 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | - | 593 | - | - |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | - | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | - | - | - |
| | Opt 10B: 115' - 224' AGL | - | - | - | - |
| | Opt 10C: 129' - 240' AGL | - | - | - | - |
| | Opt 10D: 146' - 260' AGL | - | - | - | - |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | - | 3,565 | 1 | 1,599 |

## Europe - Frankfurt Market - Assessment of Potential Weight Penalties

| Frankfurt - FRA Winter (68° F) | | B787-9 (290 seats/26,198 lbs. cargo) | | B777-300ER (370 seats/62,240 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | - | 21,580 | - | 4,400 |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | 15,338 | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | 10,000 | - | - |
| | Opt 10A: 100' - 195' AGL | - | - | - | - |
| | Opt 10B: 115' - 224' AGL | - | 9,349 | - | - |
| | Opt 10C: 129' - 240' AGL | - | 14,096 | - | - |
| | Opt 10D: 146' - 260' AGL | - | 19,282 | - | 2,027 |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 29 | 26,198 | - | 11,735 |

| Frankfurt - FRA Summer (81.3° F) | | B787-9 (290 seats/23,514 lbs. cargo) | | B777-300ER (370 seats/62,240 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | 2 | 22,911 | - | 7,811 |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | - | 16,407 | - | - |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | 4,217 | - | - |
| | Opt 10B: 115' - 224' AGL | - | 9,353 | - | - |
| | Opt 10C: 129' - 240' AGL | - | 14,270 | - | - |
| | Opt 10D: 146' - 260' AGL | - | 19,612 | - | 3,876 |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 41 | 23,514 | - | 15,397 |

## Asia – Beijing Market - Assessment of Potential Weight Penalties

| Beijing - PEK Winter (68° F) | | B787-9 (290 seats/10,853 lbs. cargo) | | B777-300ER (370 seats/56,089 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | 51 | 10,853 | - | 19,278 |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | 25 | 10,853 | - | 11,801 |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | 4,534 | - | 5,479 |
| | Opt 10B: 115' - 224' AGL | - | 9,408 | - | 6,673 |
| | Opt 10C: 129' - 240' AGL | 13 | 10,853 | - | 10,537 |
| | Opt 10D: 146' - 260' AGL | 34 | 10,853 | - | 16,929 |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 93 | 10,853 | - | 26,672 |

| Beijing - PEK Summer (81.3° F) | | B787-9 (290 seats/9,542 lbs. cargo) | | B777-300ER (370 seats/55,588 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | 56 | 9,542 | - | 20,597 |
| Scenario 7 | Straight-Out ICAO OEI surface protection without West OEI Corridor | 30 | 9,542 | - | 13,268 |
| Scenario 10 | Existing Conditions: 85' - 166' AGL | - | - | - | - |
| | Opt 10A: 100' - 195' AGL | - | 3,933 | - | 5,293 |
| | Opt 10B: 115' - 224' AGL | - | 8,725 | - | 10,223 |
| | Opt 10C: 129' - 240' AGL | 15 | 9,542 | - | 11,020 |
| | Opt 10D: 146' - 260' AGL | 36 | 9,542 | - | 17,545 |
| Scenario 9 | TERPS only with increased TERPS departure climb gradients and approach procedure minima | 95 | 9,542 | - | 28,076 |

The airline service analysis conducted for the selected existing destinations, as illustrated above, was expanded to consider potential SJC markets that could be served in the future. For domestic markets, Boston, Miami, and Anchorage were analyzed, and the charts below show that 737-800 service to these destinations would not sustain any significate weight penalty under Scenario 4.

### Additional Domestic Markets - Assessment of Potential Weight Penalties

| Anchorage - ANC Summer (81.3° F) | | A320 (150 seats/1,379 lbs. cargo) | | B737-800 (175 seats/7,100 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | - | - | - | - |
| Scenario 4 | TERPS Only | - | - | - | - |

| Boston - BOS Summer (81.3° F) | | A320 (150 seats/0 lbs. cargo) | | B737-800 (175 seats/0 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | 7 | - | 1 | - |
| Scenario 4 | TERPS Only | 23 | | 1 | - |

| Miami - MIA Summer (81.3° F) | | A320 (150 seats/0 lbs. cargo) | | B737-800 (175 seats/0 lbs. cargo) | |
|---|---|---|---|---|---|
| | | PAX Penalty | Cargo Penalty (lbs.) | PAX Penalty | Cargo Penalty (lbs.) |
| Scenario 1 | Existing airspace protection | 1 | - | 3 | - |
| Scenario 4 | TERPS Only | 17 | | 3 | - |

For international air service markets, Rio de Janeiro (6,575 miles), Taipei (6,499 miles), Hong Kong (6,957 miles), Delhi (7,731 miles), and Dubai (8,120 miles) were analyzed, using aircraft typical on such international routes. The analysis indicated that the maximum route distance that could possibly be served from SJC under Scenario 4 is approximately 6,500 miles, as illustrated in the charts below.

**Long Range Markets Stress Test - Assessment of Potential Weight Penalties**

| **Rio de Janeiro - GIG Summer (81.3° F)** 6,575 miles | A330-200 (284 seats/39,344 lbs cargo) | | A350-900 (325 seats/37,963 lbs cargo) | | B777-300ER (370 seats/48,211 lbs cargo) | | B787-9 (290 seats/7,144 lbs cargo) | |
|---|---|---|---|---|---|---|---|---|
| | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) |
| Existing Straight Out OEI* | | | | | | | 51 | |
| West OEI Corridor | | | | | | | | |
| TERPS Only | | 20,072 | | 23,528 | | 18,975 | 60 | 7,144 |

| **Taipei - TPE Summer (81.3° F)** 6,499 miles | A330-200 (284 seats/28,577 lbs cargo) | | A350-900 (325 seats/27,582 lbs cargo) | | B777-300ER (370 seats/35,569 lbs cargo) | | B787-9 (290 seats/0 lbs cargo) | |
|---|---|---|---|---|---|---|---|---|
| | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) |
| Existing Straight Out OEI* | | | | | | | 89 | |
| West OEI Corridor | | | | | | | 12 | |
| TERPS Only | | 1,976 | | 23,195 | | 18,742 | 96 | |

| **Hong Kong - HKG Summer (81.3° F)** 6,957 miles | A330-200 (284 seats/18,283 lbs cargo) | | A350-900 (325 seats/17,182 lbs cargo) | | B777-300ER (370 seats/20,785 lbs cargo) | | B787-9 (290 seats/0 lbs cargo) | |
|---|---|---|---|---|---|---|---|---|
| | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) |
| Existing Straight Out OEI* | | | 15 | | | | 128 | |
| West OEI Corridor | | | | | | | 51 | |
| TERPS Only | 5 | 18,283 | 23 | 17,182 | | 17,980 | 134 | |

| **Delhi - DEL Summer (81.3° F)** 7,731 miles | A330-200 (284 seats/5,014 lbs cargo) | | A350-900 (325 seats/3,132 lbs cargo) | | B777-300ER (370 seats/106 lbs cargo) | | B787-9 (290 seats/0 lbs cargo) | |
|---|---|---|---|---|---|---|---|---|
| | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) |
| Existing Straight Out OEI* | 48 | | 69 | | 62 | | 178 | |
| West OEI Corridor | | | | | | | 103 | |
| TERPS Only | 55 | 5,014 | 77 | 3,132 | 72 | 106 | 184 | |

| **Dubai - DXB Summer (81.3° F)** 8,120 miles | A330-200 (284 seats/3,537 lbs cargo) | | A350-900 (325 seats/2,688 lbs cargo) | | B777-300ER (370 seats/1,828 lbs cargo) | | B787-9 (290 seats/0 lbs cargo) | |
|---|---|---|---|---|---|---|---|---|
| | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) | PAX Penalty | Cargo Penalty (lbs) |
| Existing Straight Out OEI* | 57 | | 71 | | 62 | | 184 | |
| West OEI Corridor | | | | | | | 107 | |
| TERPS Only | 65 | 3,537 | 79 | 2,688 | 72 | 1,828 | 191 | |

* Existing Straight Out OEI Corridor calculations uses different cargo capacity numbers than the West OEI and TERPS Only.

As a reality check for the technical analysis described above, the study consultant also reached out to all the airlines serving SJC to request their independent analysis of how each of the four scenarios would impact their current and future air service markets at SJC during south flow conditions. Out of 18 airlines, 13 airlines responded, highlighted as follows for Scenario 4:

- Alaska, American, Aeromexico, Delta, Southwest, and Volaris reported no weight penalties to any of its destinations below a temperature of 92º F.
- Hawaiian and United reported only minor cargo penalties, and potentially minor passenger penalties and larger cargo penalties depending on specific destination and aircraft.
- Federal Express reported no significant cargo penalties.
- British Airways reported no weight penalty impacts on its London service.
- ANA reported minor cargo penalty impacts and no passenger penalties for its Tokyo service.
- Hainan reported the most significant impacts for its Beijing service, resulting in a significant reduction in cargo and passenger payload (up to 50+ passengers for B787-900).

Overall, these airline responses are consistent with the consultant's technical analysis.

Task 3

The economic impacts to the Downtown Core, Diridon Station area, airlines, and SJC were calculated based on the net new development that may be able to occur between OEI-restricted heights and the current FAA/TERPS surface heights. For the Downtown Core area, the findings indicate that there is already significant density available under the OEI height limits, so setting allowable heights up to the FAA/TERPS limits would not have a significant aggregate beneficial impact for a long period of time, although certain specific development sites might experience small gains.

The most significant net new economic gains from no OEI protection are expected to occur in the Diridon Station area. Development capacity in this area under Scenario 4 is estimated at a net building addition of 8.6 million square feet, resulting in net new construction value and taxes of $4.4 million and $5.5 million, respectively. In addition, there would be net increases in new employees (4,700) and new residents (12,800) as well as one-time fees collected for building, development, park impact, and school district purposes.

The economic impacts for SJC and the airlines was studied for the year 2024, the estimated time that impacts would occur as new development is built. In 2024, Scenario 4 would result in potential airline losses of $802,000 in seat revenue and compensation to passengers as compared to a scenario where building heights were limited to the OEI surfaces. These losses could grow to slightly over $1.2 million in 2032 and to $1.5 million by 2038 as the market, costs, and load factors increase over time. The potential establishment of an ongoing Community Fund by 2024, and a funding mechanism to support ongoing international air service, particularly to Asia, could serve to offset these airline economic losses.

The economic impacts over time to the Airport Enterprise Fund would be minimal, consisting mainly of lost PFC revenue and terminal concession spending. The aviation-related impacts are significantly outweighed by the Downtown Core and Diridon Station area real estate impacts with continuing increases in construction and other local taxes throughout the years.

## Summary

The Downtown Airspace and Development Capacity Study analysis was one of the most extensive studies that the City has conducted on how the Airport and the Downtown Core and Diridon area can all thrive as economic drivers of the greater community. With the dedicated involvement of the project Steering Committee, staff is recommending that the City move forward with the study's Scenario 4 and allow development height to be governed by FAA TERPS surfaces. However, to protect the viability of current and future international air service markets, particularly to Asia, staff also recommends that Council approval of Scenario 4 be accompanied by efforts to work with the development community to establish a Community Air Service Support Fund to mitigate the occasional airline economic penalties during south flow conditions and to support retention and expansion of transoceanic airline service.

In addition, it is recommended that the Council actions include direction to the Administration to implement refinements to the development review process for projects subject to the FAA TERPS surface elevations, and implement a construction crane policy that addresses the prolonged usage of very tall construction cranes that airlines must account for in their departure weight calculations.