To: Community & Economic Development Committee – San Jose

From: The Sunnyvale-Cupertino Airplane Noise Group

Date: Jan 25, 2019

RE: Meeting Jan 28, 2019

Comment regarding Agenda Item 5. One Engine Inoperative Airport (CC18-419)
One Engine Inoperative (OEI) study & the corresponding recommendation as outlined in the memo to the Community & Economic Development Committee from SJC Director Aitken (Subject: Downtown Airspace And Development Capacity Report Findings And Recommendations)

Below is a statement from the Sunnyvale-Cupertino Airplane Noise Group.

Our group understands that San Jose recently commissioned a study to determine the feasibility of taller building heights in the downtown San Jose and Diridon areas. This study focused on departing flights only, and did not consider any impact on arrivals. As you know, normal flow arrivals fly directly over downtown San Jose, and these arrivals are partly impacted by the current building heights. Decisions regarding taller building heights will have repercussions for decades to come, and these important decisions should not be based on a clearly incomplete study that is missing a major piece of analysis. Without a proper study regarding the arrival flight paths, it is unclear whether the frequency of SJC normal flow or south flow operations (reverse flow) will be impacted in any way by the proposed taller building envelope. Any unintended impact could have major consequences to the airport, the city of San Jose, and surrounding communities.

San Jose Airport typically operates under normal flow operations, where arrivals are flying over downtown San Jose. In contrast, when the wind direction changes to South or East and the wind speed is greater than 5 knots, the direction of operation changes to south flow operations (often called reverse flow). An increase in south flow operations would not only impact the quality of life for your neighbors in Sunnyvale, Cupertino, Mountain View, and Palo Alto - An unintentional increase in south flow operations would have a detrimental impact to airline profitability, airport operations, and FAA safety. Yet an analysis of SJC arrivals was never conducted regarding increased building heights. Normal flow is the preferred path for safety reasons, airline financial benefits, and efficiency. For this reason, a study regarding SJC arrivals and any impact on south flow operations is warranted, and is in the airport's and San Jose's best interest.

Based on an FAA meeting in March 2017 at Congressman Ro Khanna's office, we already know that the south flow trigger is impacted partly due to the existing tall buildings in downtown San Jose. An excerpt from that meeting "*San Jose's runway is too short. Part of the reason that it is too short is the buildings in downtown which make a piece of that end of the runway unusable*

(planes can't drop down until they are past those buildings)." It is unclear whether the proposed taller building envelope will have a downward pressure on the current south flow trigger, causing an increase in south flow operations over Sunnyvale and Cupertino – Potentially exacerbating an already contentious airplane noise situation.

We request that any San Jose vote that would ultimately result in taller buildings in downtown and/or the Diridon area be temporarily postponed until a supplemental aviation study is commissioned by San Jose, and the FAA is consulted to confirm any potential impact to the SJC south flow trigger. It is possible that the proposed building height changes will have no impact on the trigger. However, this assumption should be confirmed in writing by the FAA and an aviation expert prior to any approval.

To summarize, any San Jose approvals that would result in taller building heights should be delayed until the FAA and an experienced aviation consultant have completed a supplemental report confirming no impact to arrivals and the current south flow trigger (Current trigger > 5 knots south/east wind speed). The current aviation study is incomplete, and further analysis of the arrival flight path over downtown San Jose needs to be completed in order to make a fully informed, proper decision regarding building heights.

Thank you for your help regarding this matter.

Sincerely,

Tony Guan

Jennifer Tasseff

And members of the Sunnyvale-Cupertino Airplane Noise Group
Over 500 members strong

Below is supplemental information and diagrams that were compiled by the Sunnyvale-Cupertino Airplane Noise Group, and which may be helpful in understanding the issue. [Continued]

Supplemental Materials regarding taller building heights in San Jose Downtown and Diridon Area (Document prepared by the Sunnyvale-Cupertino Airplane Noise Group)

Background Information:

Due to FAA flight path changes, tens of thousands of residents in Sunnyvale, Cupertino, and Mountain View are now detrimentally impacted by loud airplane noise during south flow operations. Complaint numbers at San Jose Airport have skyrocketed due to increased airplane noise during south flow operations over these cities. Could taller San Jose buildings indirectly increase the frequency of south flow operations, by forcing the FAA to reduce the south flow wind speed trigger from 5 knots to a lower wind speed threshold? The answer is uncertain, and requires further study.

Excerpts from the March 22, 2017 FAA meeting conducted at Ro Khanna's office:

Original Question submitted during meeting Mar 22, 2017:

> "*As many citizens have noted, San Francisco Airport has a waiver from the 5-knot wind standard, allowing that airport to direct aircraft to land with up to a 10-knot tailwind. What would it take to get San Jose Airport that kind of waiver? If south flow were used only at wind speeds above 10 knots, it would be used much less often and the noise over these neighborhoods would drop.*
>
> *Answer: FAA Flight Standards Program Manager Chris Harris explained that this approach cannot be used at San Jose Airport for two reasons:*
>
> *1. the usable runway for landing is too short for planes to land safely with that strong of a tailwind (SFO's runways are substantially longer), and*
>
> *2. San Jose Airport is used by many general aviation aircraft (small propeller planes) which could not land safely at those wind speeds under any conditions*."

Additional clarification regarding the tall building heights in downtown San Jose, and how these tall buildings currently impact the ability to raise the wind speed trigger for south flow from 5 knots to 10 knots. This information has also been confirmed through supplemental conversations with FAA personnel.

> Response from Director Moylan based on additional info:
>
> "*At the March 2017 meeting that I organized, FAA said that there were two reasons why San Jose Airport would not be granted a waiver of the 5-knot standard for landing with a tailwind. The first is the length of the runway, because it takes more runway to land with the wind at your back. San Jose's runway is too short. Part of the reason that it is too short is the buildings in downtown which make a piece of that end of the runway unusable (planes can't drop down until they are past those buildings). But that was not the whole cause of the runway being too short. It was too short anyway. The other reason is that small planes aren't safe to land in a tailwind no matter how much runway you have. San Francisco can get a waiver because it has only large jets and a long runway. We have small planes and a short runway*."

Commissioned study by San Jose included no analysis regarding possible impact to the south flow trigger:

The studies commissioned by San Jose considered the financial implications of taller buildings for the city at large, the SJ airport, and the airlines. The study also considered various FAA rules and regulations, including OEI (one engine inoperable), FAR Part 77, etc.

In contrast, there was no clear analysis to determine whether taller buildings would impact SJC arrivals and the south flow trigger in any way. The commissioned report specified financial and FAA impacts based directly on DEPARTURE flight paths in relation to building heights. No consideration was given to arrival flight paths. The south flow trigger is partly impacted by the current building heights in downtown San Jose (based on an FAA meeting March 2017).

A supplemental study or consultation with the FAA may be necessary to confirm no impact to the south flow trigger from the proposed taller building envelope. This analysis may require analysis of the arrival flight path during normal-flow operations.

Recommendations under Scenario 4 TERPS include minimal increases in height – Could minimal height increases have impact on the south flow trigger?

Without an analysis by the FAA, the answer is unclear.

Yes, in some areas the recommendations under Scenario 4 call for minimal height adjustments, especially over downtown San Jose. Proposed height adjustments over downtown San Jose under Scenario 4 TERPS are between 5 and 35 feet; Increased heights in the Diridon area are significantly larger deltas (70 – 150 feet).

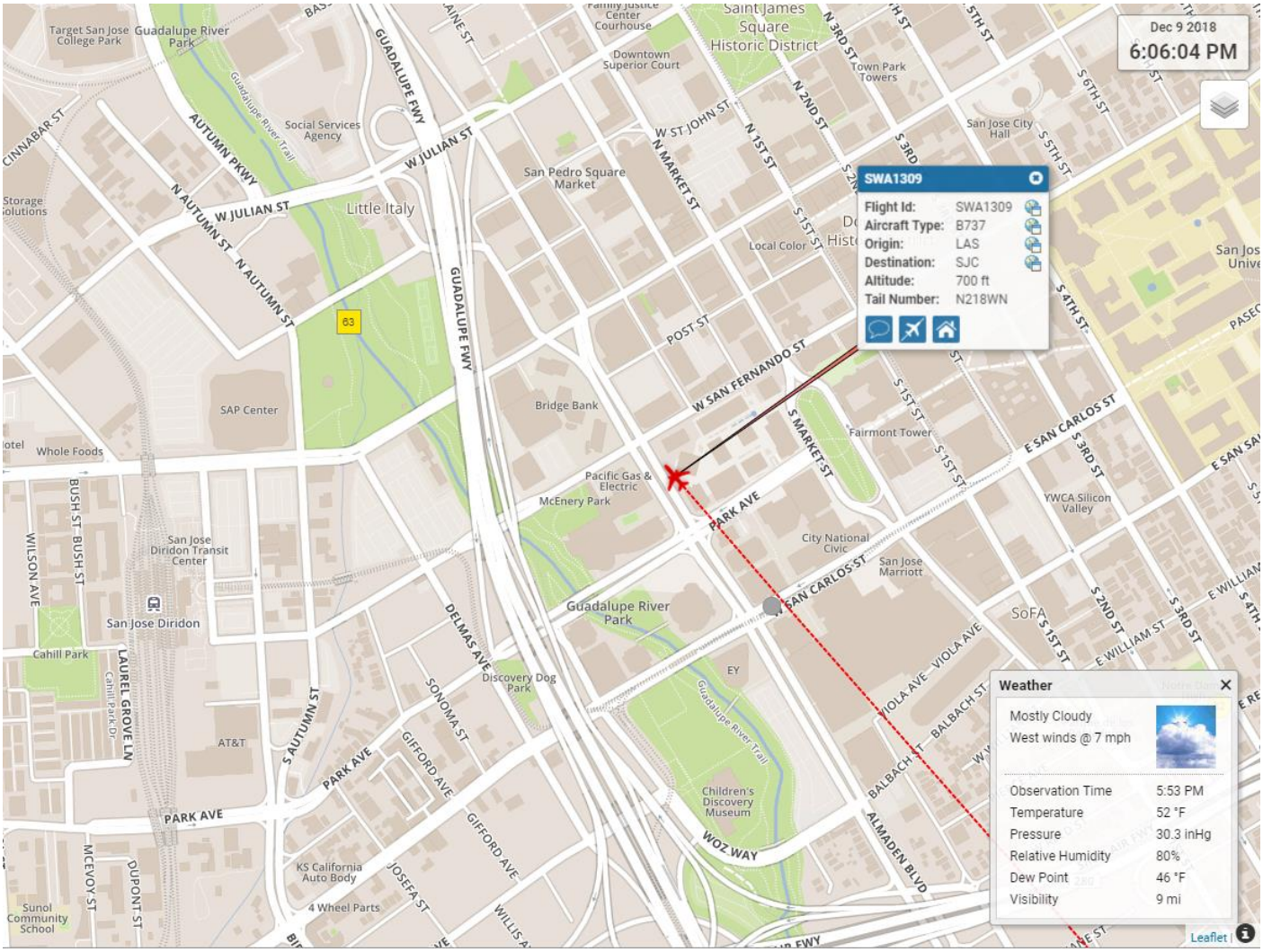
Based on San Jose Web tracker & FAA flight plates, the normal-flow arriving flights use a "straight in" flight pattern for each of the two runways 30L and 30R (during North flow). In many cases (based on San Jose web tracker altitude information), these arriving flights appear to be flying less than 500 feet above the high points of the San Jose downtown buildings.

For example, the Adobe tower at the corner of Park Ave and San Fernando Ave has a recorded height of 260 feet (per Wikipedia). Arriving flights routinely fly over this corner (per web tracker) at approx. 700-foot altitude. Although Web tracker may have some slight discrepancies in the altitudes, these normal-flow arrivals do appear to be flying very close to the tops of the current buildings. (See sample flight pictures next 2 pages.)

This might imply that even small height increases in buildings directly under the two arrival normal-flow flight paths could indirectly force the FAA to lower the south flow trigger criteria, especially if these changes result in the need for a steeper descent slope or closer proximity to building roof tops & other associated obstacles. A 35-foot change might be considered significant if arriving flights are indeed flying closer than 500 feet from the tops of the downtown buildings, which is what SJC flight tracker altitudes seem to indicate.

Only analysis by the FAA or an experienced aviation consultant can confirm whether the proposed small adjustments to height will impact the south flow trigger.

Sample flight flying right next to the Adobe tower at an altitude of 700 feet. The Adobe tower is 260 feet, so height delta is approx. 440 feet between the plane and the top of the building. (Approach to runway 30R)



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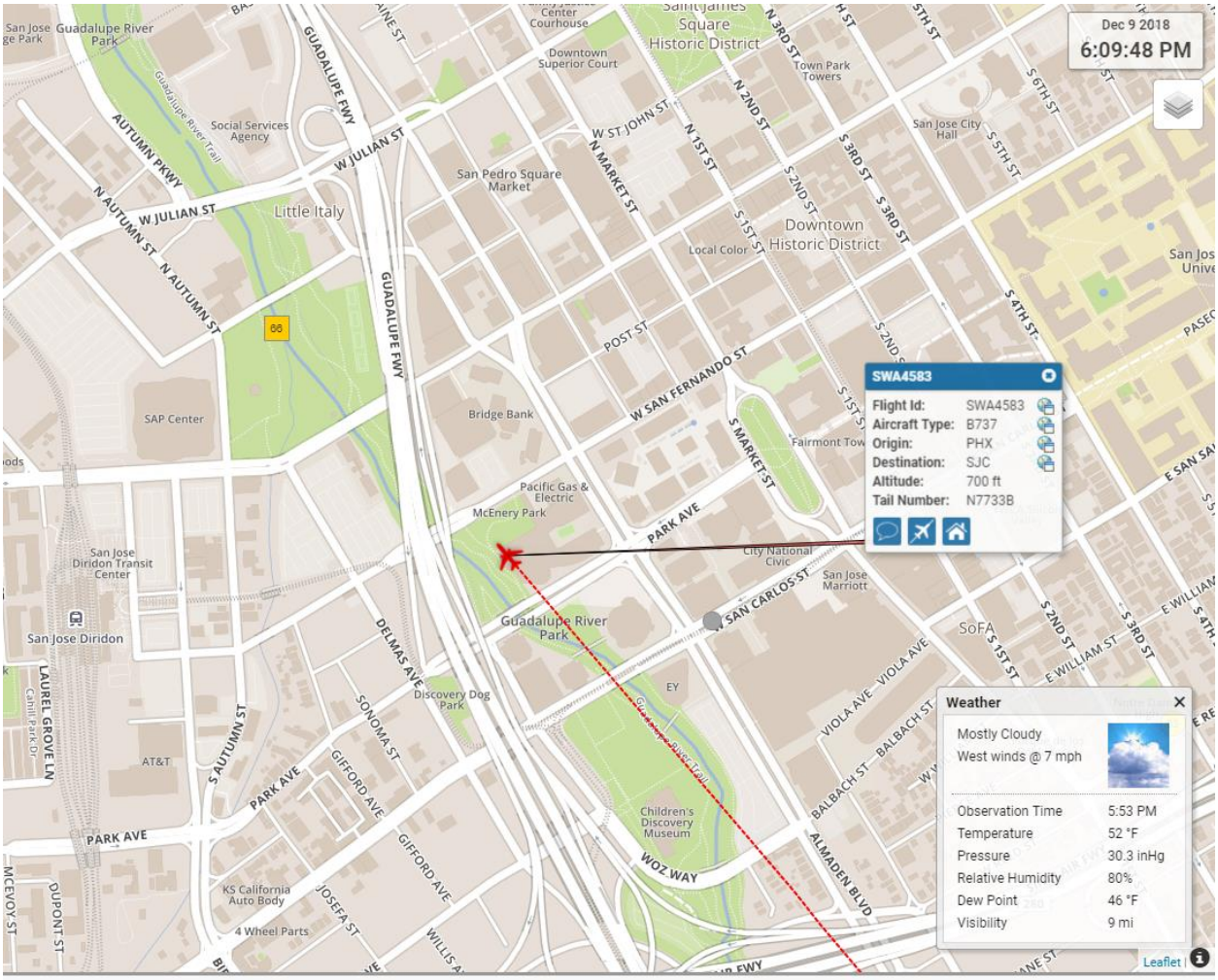
The two approach flight paths straddle the Adobe towers on each side (Approach to runway 30L). Flight at 700 foot altitude over Adobe Tower, which is 260 feet building height. Delta 440 feet (700 – 260).



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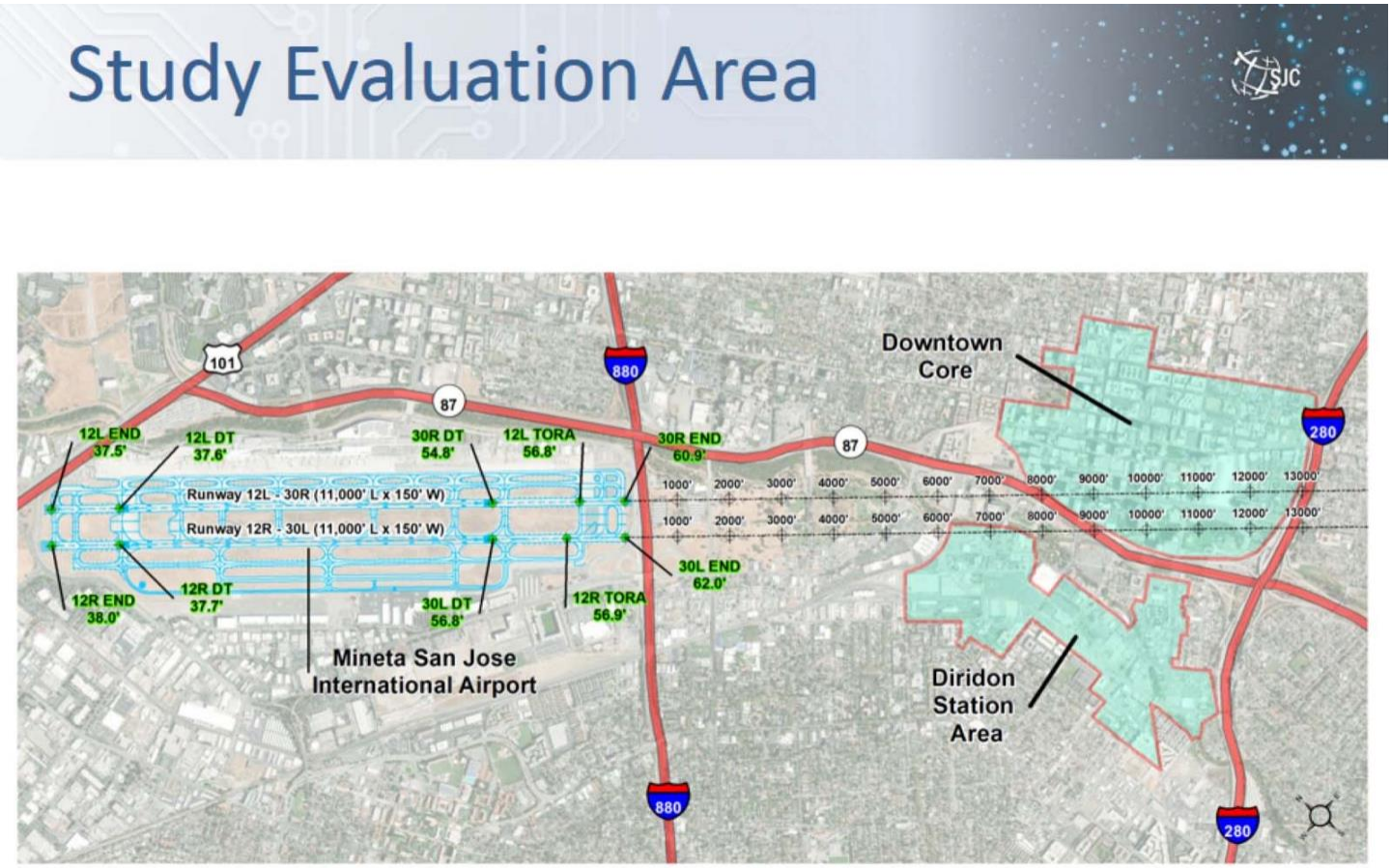
Proposed increases in building heights include taller buildings directly below the two normal-flow arrival flight paths (30L and 30R).



The two normal-flow arrival flight paths correspond to the two black lines extending beyond each of the two SJC runways, and showing the distance in feet from the end of each runway (30R and 30L).

The arrival flight paths extend directly into the downtown core, and into a small section of the Diridon evaluation area.

CONTINUED

Meeting packet for the San Jose Airport Commission meetings on Jan 14 & Jan 24:

Meeting Link for Jan 14, 2019 San Jose Airport Commission meeting:
https://www.flysanjose.com/node/5086

Meeting Link for Jan 24, 2019 San Jose Commission meeting:
https://www.flysanjose.com/node/5136

Memo regarding newly proposed height recommendations from airport (from Director Aitken):
https://www.flysanjose.com/sites/default/files/commission/Airport%20Commission%20Memo%20OEI%20for%20January%2014%202019%20final.pdf

OEI Slide presentation on Jan 14, 2019:
https://www.flysanjose.com/sites/default/files/commission/1%20%2014%2019%20Airport%20Commission%20OEI%20Presentation.pdf

SJC Airport, the airlines, and FAA benefit from limited south flow operations at SJC:

An unintentional increase in south flow operations would not be favorable for the FAA, the airlines, nor San Jose Airport. It appears that normal flow is the preferred path for safety reasons, airline financial benefits, and efficiency.

During the San Jose Airport Ad Hoc Committee meetings on south flow arrivals, FAA staff presented that a south flow arrival approach is a more complicated procedure than north flow given its proximity to other flight procedures for SFO traffic, and as such, it is a less preferred procedure when compared with north flow. The preferred approach is north flow, where planes approach SJC from the south flying north, as there is less air traffic from other airports.

Additionally, the south flow flight path is a longer flight path than the normal flow path. For this reason, it is likely not the preferred flight path for the airlines. The south flow arrival approach is longer, often resulting in as much as 30- 50 miles additional flying distance. Longer flight distances increase airline fuel costs, cut into airline profits, and can impact arrival times. Increases in airline fuel costs and/or impacts to arrival times associated with an increase in south flow operations, could indirectly factor into an airport's ability to attract or retain desired air service, therefore potentially impacting the profitability of the airport.

Finally, an unintended increase in south flow operations would further impact cities like Sunnyvale, Cupertino, Mountain View, and Palo Alto and would exacerbate an already contentious airplane noise problem.

Could the proposed building height increases impact any possible improvement currently being considered for the south flow trigger?

Perhaps.

We understand that the FAA has been working on its' response to the San Jose Airport Adhoc Committee recommendations and questions. It is expected that an FAA response will be available soon after the government shut down ends.

One of the requests in the adhoc report includes a question regarding the south flow trigger, and whether it is feasible for the FAA to slightly increase the south flow wind speed threshold (i.e. from the current 5 knot threshold to a wind speed threshold of 6 or 7 knots). An FAA response is pending.

It is likely that an increase in the proposed building height envelope in certain areas of downtown San Jose and the Diridon area directly below the normal-flow arrival flight path might impact any ability to raise the south flow wind speed trigger in the future. Already the FAA states that the trigger is partially impacted by current tall buildings in downtown SJ.

For this reason, we would recommend no adjustments to the previous building height envelope for areas directly below the normal-flow arrival flight path. In other words, current city codes regarding maximum building heights directly below the "straight in" normal flow arrival flight path would remain unchanged; In contrast, newly proposed height increases for areas a specified horizontal distance AWAY from the normal flow arrival flight path would be fine to implement – assuming the FAA has no objection and no impact to the south flow trigger is identified for these new locations.

Future Airline Technology and its possible impact to south flow operations:

For fuel efficiency purposes, newer airlines are generally being engineered with shallower descent profiles.

General questions that we may wish to pose to the FAA:

- Does the FAA anticipate that future aircraft designs and potential shallower descents would place downward pressure on the south flow trigger, thereby potentially increasing the frequency of south flow flights?
- For the following question assume that the FAA has confirmed no current impact to the south flow trigger based on the proposed taller building envelope in San Jose:
    - Assuming this is the case, then could the proposed taller San Jose buildings in conjunction with a trend toward airline shallower descents cause potential FUTURE impact on the south flow trigger? In other words, is there a synergistic effect between the proposed taller buildings and shallower descent rates that could require a lowering of the south flow trigger wind speed in the future?

END OF SUPPLEMENTAL DOCUMENT

SPUR
San Francisco | San Jose | Oakland

January 28, 2019

Re: Item CC 18-419 on January 28, 2019 Community & Economic Development Committee

Chair Khamis and Councilmembers:

On behalf of SPUR, I am writing to support the completed Downtown Airspace and Development Capacity Study and **recommend acceptance of Scenario 4, which would use the Federal Aviation Administration's own safety standards to determine maximum building height limits in the Downtown Core and Diridon Station Area.**

For the past couple of years, SPUR has actively looked at the possibilities to increase height limits in downtown and the Diridon Station Area. Over the next ten years the downtown and station area will become large transit hubs for BART, Caltrain, high-speed rail and VTA light rail. It is imperative that these future projects be coupled with world-class mixed-use developments that generate transit riders.

Maximizing the amount of jobs and housing within walking distance of the station will connect lots of residents and workers to high-quality transit and help to alleviate the congestion of workers flowing north by creating a regional job center for the South Bay. With $10 billion of public investment going into these transit improvements, we must ensure they have the ridership to support them.

Perhaps more importantly, maximizing development will generate more fees to support the creation of thousands of affordable housing units as well as community benefitting amenities, such as parks.

That's why a cross-sector committee of business, labor and civic organizations sought to examine downtown airspace and development capacity in the first place. With the technical support of the city's own aviation consultant, Landrum and Brown, we evaluated several possible scenarios that would allow for increased floor area ratio (FAR) in downtown with the least negative impact on airport operations.

By removing the economic—not safety—procedures followed by airlines, development within the Downtown Core and Diridon Station Area will be able to build at a height allowance that will help us achieve our commercial and residential growth numbers and community development goals.

SPUR
San Francisco | San Jose | Oakland

After more than a year of intensive research, coordination with airlines and consideration on how to maximize community benefit, SPUR strongly supports adopting Scenario 4 and urges the City Council to allow this new policy to go into effect immediately to spur development within these two districts.

As this policy is further developed, we believe the city has the opportunity, and responsibility, to capture the value of these height increases. The incentive for increased FAR should require that development be of world class urban design. Commercial and residential properties should incorporate privately-owned public open spaces (POPOS) and ensure access for all of San Jose. New development should use this density bonus to invest deeply in blue and green infrastructure and create a model eco-district that helps further the city's ambitious and vitally important climate aspirations.

We strongly believe that a healthy and vibrant downtown along with a well-operated and growing regional airport will further the success of San Jose. This is our opportunity to bring our vision for the future into action today.

Thank you for the opportunity to comment on this item.

Sincerely,

Teresa Alvarado
San José Director

SPUR
San Francisco | San Jose | Oakland

February 21, 2019
Submitted electronically

Hon. Mayor Liccardo and City Council
San Jose City Hall
200 E. Santa Clara
San Jose, CA 95113

Re: 18-1944 Actions Related to the Downtown Airspace and Development Capacity Study

Dear Mayor, Vice Mayor and City Council:

Thank you for discussing the Airspace Capacity Study. This session is an important opportunity for the community to learn about and contribute to the conversation about increasing the development capacity of the greater downtown while ensuring we continue to have a safe and successful San Jose International Airport. Both are critical regional assets.

Over the next ten years the downtown and station area will become transit hubs for BART, Caltrain, high-speed rail and VTA light rail. It is imperative that these projects be coupled with mixed-use developments that generate riders. With $10 billion of public transit investments, we must ensure they have the ridership to support them.

That's a major reason why a cross-sector committee of business, labor and civic organizations, as well as a representative of the city's Airport Commission, sought to examine downtown airspace and development capacity. With the technical support of the city's aviation consultant and feedback from the airlines, we evaluated several possible scenarios that would increase development with the least negative impact on airport operations.

The committee recommends using the Federal Aviation Administration's own safety standards, as reflected in Scenario 4, for those rare times that planes must—due to weather conditions—depart to the South. This would allow for modestly taller buildings, at most an additional 150 feet.

In addition to more transit riders, maximizing development will generate more fees to support the creation of thousands of affordable housing units as well as community amenities, such as parks.

Oftentimes, saying yes to one opportunity means saying no to another. This time, we can achieve what downtown advocates and airport advocates want and maximize the opportunity and safety of both of the greater downtown and SJC.

Sincerely,

[redacted]

Teresa Alvarado, San Jose Director

Statement from the Sunnyvale-Cupertino Airplane Noise group

Presented during public comment at San Jose Community & Economic Development Committee meeting on Jan 28, 2019

Agenda Item #5 - One Engine Inoperative Airport (CC18-419)

Public comment recorded in video beginning at 2:12:27 to 2:14:33

Group comment presented by Jennifer (Member Sunnyvale-Cupertino Airplane Noise Group)

I am here representing the Sunnyvale-Cupertino Airplane Noise Group.

Due to recent FAA flight path changes, the cities of Sunnyvale and Cupertino are now heavily impacted by airplane noise during San Jose Airport reverse flow, also called south flow operations.

Now San Jose is considering taller buildings in downtown and Diridon.

What is NOT clear is whether these taller buildings could indirectly impact the frequency of south flow operations over our cities – In other words, resulting in MORE south flow operations.

The San Jose building height study considered departure flights, but never studied arrivals. Yet normal flow arrivals fly directly over downtown San Jose. And based on a 2017 FAA Congressional meeting, we already know that these arrivals are partly impacted by the existing tall downtown buildings.

We ask that ANY San Jose vote that will ultimately result in taller buildings in downtown or Diridon be postponed until a supplemental aviation study is commissioned by San Jose, and the FAA is consulted to confirm no possible increase in south flow traffic. For example, no possible lowering of the south flow wind speed trigger.

Again, any San Jose approvals should be delayed until the FAA and an aviation consultant have completed a report confirming no possible increase in the frequency of south flow operations.

Decisions regarding building heights will have repercussions for decades, yet decisions are being based on an incomplete study that missed any analysis regarding arriving flights.

A formal letter from our group was submitted under public comment.

The current aviation study is incomplete, and further analysis is necessary.

Thank you for your time.

From: Ken Pyle < >
Sent: Friday, February 22, 2019 11:37:13 AM
To: City Clerk
Cc: Hendrix, Catherine; Greenlee, Raymond; Connolly, Dan
Subject: Public Record Additions for Item 6.2 for the 02-26-19 Ciy Council Agenda

Please add the following documents to the public record for Item 6.2 for the 02-26-19 Agenda. This is **18-1944** *Actions Related to the Downtown Airspace and Development Capacity Study*.

The following documents are attached:

filepp18-103-connolly-greenlee-hendrix-pylecommentsonairportmasterplan

Recommendation FINAL 10B Approved by Airport Commission STAMPED 01-24-19

OEI Questions

OEI Process Concerns - Bullets

Why the Rush to Adopt Scenario 4

Who will benefit most from Raising OEI Limits

Why are the Temperature Assumptions Lower in 2018 than in 2007

Thank you,

Ken

--

Ken Pyle
Managing Editor

City of San Jose
200 East Santa Clara Street, 3rd Floor Tower January 31st, 2019
San Jose, CA 95113-1905
Attention: City of San Jose Council, Planning Commission and Planning Staff

Subject: File No. PP18-103 Amendment to the San Jose International Airport Master Plan

Messrs. Keyon and Greene

This letter represents comments from the individuals listed at the bottom of this correspondence regarding the proposed amendment to the **Mineta San Jose International Airport Master Plan (File PP18-103)**. Although they are Mineta San Jose International Airport Commissioners, the views are their own. These comments are split into three sections;

- Vision, which talks about the importance of understanding the Airport's expansion plans interact with other San Jose developments.
- Premises – discusses some of the changes we can expect by the year 2037 due to technological and economic changes.
- Comments – reference the proposed changes

Vision:

"Begin with the end in mind," is the wisdom Stephen Covey taught us decades ago. It is important to have a clear and common vision that serves to align the strategies and tactics necessary to accomplish something big and bold. When we look at the proposed changes to the Airport Master Plan, we see a capacity planning exercise, not a vision.

Watch the video at https://youtu.be/OoBV64h7A0Y

What we don't see is how this incredible community asset ties into other nearby assets such as the adjacent Guadalupe River and its associated park, downtown and Diridon Station to the south, the Santa Clara train station to the west, BART to the East and the economic engine of North San Jose.

It's time to reimagine the airport as more than just a place that facilitates the movement of people and goods. It can be so much more than that and can be an integral part of the community as a place to live, work, shop, and play.

The author of the blog Airport Urbanism, Professor Max Hirsch indicates that this happening today in places like the Netherlands, Finland and Singapore. He suggests that creative use of

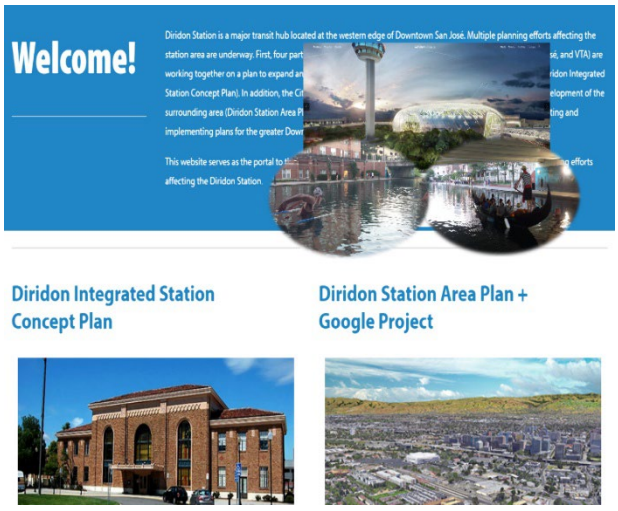
airport land can help an airport's finances by dampening the economic volatility of the airline industry. Hirsch writes,

> "Leading global hubs like Amsterdam Schiphol, for example, generate up to 20% of their overall income—and more than a third of their profits—through landside real estate. That's because the profit margins on commercial developments are considerably higher compared to aeronautical charges."

The 20-million passenger Helsinki Airport, located in the nearby city of Vantaa, Finland is creating a dense, urban walkable city center, Aviapolis, where people from bag handlers to knowledge workers will be live. It will also provide foreign visitors a first impression of Finland. Tapping the creativity of the crowds, Vantaa held an international competition to elicit ideas on how to shape this innovate urban airport district.

When you look at SJC's strategic location on a river next to a park - really the Central Park of San Jose - near transportation hubs, it is in a good position to help alleviate some of San Jose's housing, commercial office space, transportation, and limited parkland issues.

We have several activities going on that should be considered as inputs to the master plan, including the one engine inoperative study, the upcoming community meetings for the Diridon Station Area - aka the Google village - the airline lease negotiations. All these things will impact each other, and they are especially going to impact the Master Plan's projections for future growth.



As the community and city participate in these activities, it is important to have a mindset of what will be in 2037 and beyond, not what is today. From air taxies to shared electric, autonomous vehicles to the standardization of modularized, car-free, micro-housing, both mobility, and the built environment are going to be significantly different in 20 years.

Whether this means reduced parking demands or new feeder routes from on-demand air taxies, technology and operational improvements will have impacts on both the landside and airside operations of the airport. None of these potential changes are addressed in the master plan.

it's time we tie those things together with a vision; a vision that will align seemingly disparate projects into a cohesive community; making for a better San Jose and a better Silicon Valley.

Premises:

The proposed changes to the SJC Airport Master Plan extend the plan to the year 2037. Before we look forward, let's look back 18 years ago. In 2001, there was no smartphone, Facebook's Mark Zuckerberg was still in high school, AOL was the World Wide Web for many people, and GE was the world's most valuable company as measured by market capitalization.

Fast-forward two decades from now and we are sure to see similar changes in mobility and the built-environment based on the technological developments occurring today.

Figure 1, The Future at CES2019

Some of these developments include:

- **Autonomous Electric Air Taxies** are likely to be mainstream at some level, given the interest from major companies, such as Airbus, Bell Helicopter, Uber (PDF) and start-ups like Airspace Experience Technologies, Joby Aviation, and Lilium. Bye Aerospace is projecting operating costs for its electric trainer plane, slated for 2020 delivery, of approximately **$3 per hour or 2 cents per mile**. This promises cleaner transportation at a tenth of the current operating cost. The Air Taxi services will most like be intercity transit (e.g. San Jose to San Francisco) as alternatives to traditional transit and/or vehicles, as envisioned, may be as likely to be from building to building, as it is airport to airport.
- **Autonomous Vehicles** – The industry may currently be in the so-called "deflated expectations", just as the broadband ecosystem was with the demise of Webvan, Pets.com, and others at the turn of the century. In the meantime, start-ups and established companies are working on solutions for the operational issues that will be

required for autonomous driving to scale. Policy at the local, state and national will be critical to determining whether the future is shared autonomous or zombie cars; the so-called heaven or hell scenarios. In either scenario, there is likely going to be less demand for parking on a per passenger basis in 2037 as compared in 2019.

- **Boring** – Elon Musk's December 2018 unveiling of his 1+ mile tunnel in Hawthorne, CA was widely derided by transportation experts as being unfeasible as a potential subway alternative. The real break-through was an order of magnitude reduction in cost for boring, compared to traditional methods. The techniques he employed for boring, along with low-cost, autonomous electric shuttles, which will become common by 2037, could make point-to-point transit projects financially viable, such as a connector between the Santa Clara train station and SJC. For a high-level analysis of one such scenario, please **click here.**

- **Solar, Energy Storage & Microgrids** – The cost of electricity from alternative energy sources and associated storage continues to drop and is already close to parity with electricity from fossil fuel powered generators (see this article as a recent example). By combining power generation and storage, it is possible to create a microgrid, independent from the larger grid, providing resilience in the event of an outage from a manmade or natural disaster.

Example of solar panels on/next to a fence

- **Land will Become More Valuable** – Unless there is an economic Armageddon, Silicon Valley land will continue to become more precious and will be reflected in the cost of housing. If we want to have a middle class, we will need to more efficiently utilize the land already devoted to housing, mix-use to reduce vehicle miles traveled and look at ways to better use land now dedicated to automobiles. **Patrick Kennedy of Panoramic Interests** puts it well with his statement that we need high-quality designs that are micro, modular and car-free if we are going to begin to tackle the high cost of housing.

Comments on the EIR

The following comments are made in the context of the above premises for how things will be different in 2037.

1. Do the air traffic growth projections account for possible reduction in international and transcontinental service that will likely result, if the City of San Jose adopts the Airport's recommendation in its January 10th, 2019 memo?
2. What is the plan to accommodate electric vertical take-off & landing (VTOL) and other air taxis that may become both an airport connector (e.g. SJC-SFO, like the helicopter shuttles that flew between those airports in the 1960s), as well as an alternative shuttle to get to the airport (air taxi, such as what Uber proposes)? Specifically,
    1. What will be the impact on the airside operations (e.g. new pads to accommodate electric VTOL shuttle take-off and landings for inter-airport flights)?
    2. What will be the impact on the landside operations? For instance, will the airport need to build new pads, say, on top of a parking lot, to accommodate electric VTOL air taxi take-off and landings for air taxi service (e.g. building to-airport flights, where the passengers check-in and pass through screening after being dropped off by an Air Taxi)?
3. Could **T-8** be more generalized to include other types of buildings, such as hotel, workforce housing, offices, etc.? This might require zoning that isn't possible in today's code (e.g. housing on airport property).
4. Could the scope of **T16** (hotel) include the flexibility to include things such as building above a parking lot? Could it also include a bridge over the road that separates it from the terminal? This bridge might also be part of the building, effectively using the space above the road for offices (e.g. SJC admin offices), hotel rooms and, potentially, workforce housing.
5. Is a connector between the SJC and the Santa Clara train station included in the General Plan changes? A transit connector is part of VTA's 2040 plan (T-18, referenced on page 38 in the VTA plan), but it doesn't seem to be in this plan? Does the terminal need to be included in the General Plan change? See this post for a fresh look at this challenge and how to potentially create a connector that pays for itself.
6. What about the property that is just north of De LaCruz/Trimble that had the Radar field. That should be looked at for some activity, such a solar power field.
7. Regarding solar power and energy storage, what opportunities are there to integrate solar power (e.g. ring the fences with solar collectors, as an example) and does this need to be mentioned in the General Plan?

Sincerely,

Dan Connolly, D10 Airport Commissioner
Raymond Greenlee, D6 Airport Commissioner
Catherine Hendrix, D9 Airport Commissioner
Ken Pyle, D1 Airport Commissioner

TO: **SAN JOSE AIRPORT COMMISSION**
JOHN AIKEN, A.A.E., DIRECTOR

For C.E.D. Committee 1/28/19
and San Jose City Council

FROM: AIRPORT COMMISSIONERS
Ken Pyle – District 1
Raymond Greenlee – District 6
Catherine Hendrix – District 9
Dan Connolly (Chair) – District 10

SUBJECT: **MINETA SAN JOSE AIRPORT COMMISSION'S RESPONSE TO THE DOWTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY REPORT FINDINGS AND RECOMMENDATIONS MEMORANDUM DATED JANUARY 10, 2019**

DATE: JANUARY 24, 2019

RECOMMENDATION

By San Jose Airport Commission 01/24/2019

Recommend to the City Council approval of:

1. **Scenario 10B** as identified in the Downtown Airspace and Development Capacity Study which would affirm the City's development policy to use Federal Aviation Administration (FAA) Terminal Instrument Procedures (TERPS) and retains One Engine Inoperable (OEI) protection for departure safety.

   a. **Scenario 10B** provides OEI protection for safety. Mineta San Jose International Airport (Airport) must have OEI protection preserving the ability for disabled aircraft to enter the airspace over the existing West Corridor (Diridon Station area) or proceed straight out in the event of an engine failure on departure.
   b. **Scenario 10B** allows for modest increases in safe building heights in the Diridon Station Area.
   c. **Scenario 10B** offers economic benefits of increased development of the Downtown and Diridon Station areas.
   d. **Scenario 10B** preserves the current, transcontinental and transoceanic (European and Asia service) and allows for future air service expansion in these rapidly growing markets.
   e. **Scenario 10B** allows the Airport to preserve the classification of a medium-hub airport, providing domestic origin-destination service with increasing levels of international air service.
   f. **Scenario 10B** mitigates and eliminates negative air service impacts (weight penalties) as identified in the Downtown Airspace and Development Capacity Study.
   g. **Scenario 10B** eliminates the need for City of San Jose staff to explore the feasibility of establishing a "Community Air Service Fund" designed to subsidize airlines for financial or adverse air service impacts (weight penalties) suffered during south-flow departures for some flights.
   h. The Airport Commission supports the consideration of refinements to the development review process for future development to be built in the Downtown and Diridon Station areas to ensure aviation safety as outlined on Page 1 and 2 of Director Aitken's A.A.E. January 10, 2019 memorandum. **Attachment A.**
   i. **Scenario 10B** allows the airport to offer economically viable service to China, Far East Asia and Europe now and in the future during south flow operations. **While OEI is designated as an economic issue for airlines, the Airport Commissioners believe strongly that OEI airspace must be preserved and safeguarded to protect human life.** If or when an OEI event occurs, during a South Flow takeoff, the City of San Jose must provide the pilots flying that plane, the passengers on board, and the

residents in that flight path the safety cushion provided by unencumbered airspace. According to Boeing, "Pilot error is the leading cause of commercial airline accidents, with close to 80% percent of accidents caused by pilot error."[1]

OUTCOME

City Council approval of **Scenario 10B,** as identified in the Downtown Airspace and Development Capacity Study, would allow for maximum safe development building heights and their associated economic benefits that could be realized in the Downtown and Diridon Station areas.

BACKGROUND

As stated in Director Aitkin's A.A.E January 10, 2019 memorandum to the Airport Commission, in June 2017, City Council directed staff to update the 2007 Obstruction Clearance Study to include an economic analysis to identify tradeoffs between maintaining current OEI protection surfaces and potential increased building heights under a no-OEI protection or alternative policy.

A Steering Committee was formed but the members of the committee did not contain any airlines, pilots or individuals with practical operational experience flying into or out of the Airport nor did it include a representative from the County of Santa Clara Airport Land Use Commission which was established under Article 3.5 Airport Land Use Commission Section 21670 Creation; Membership; Selection of California Public Utilities Code. The Airport Land Use Commission is an important body that promotes the overall goals and objectives of California's airport noise standards and prevents the creation of new noise and safety problems.

E. Ronald Blake, a pilot, serves as a Commissioner for both the Airport Commission and he sits on the County of Santa Clara Airport Land Use Commission. E. Ronald Blake was not selected as a stakeholder nor invited to participate on the Steering Committee. Dan Connolly, Chairperson of the Airport Commission, recommended Commissioner Raymond Greenlee to participate in the Steering Committee. Captain Greenlee has over 35 years of civilian and military flying experience with an extensive background in operations, training and flight standards. The Chairperson's recommendation was not accepted by Airport Staff and Staff appointed Airport Commissioner Julie Matsushima to the Steering Committee for her experience as an Airport Commissioner and to ascertain her perspective as a Downtown resident.

The Steering Committee selected four of the ten conceptual airspace protection scenarios for detailed analysis which was conducted by Landrum & Brown, a national aviation planning/engineering consultant who has done previous work at the Airport:

- Scenario 4: No OEI protection (FAA/TERPS only)
- Scenario 7: Straight-out OEI Protection with no OEI West Corridor/Diridon Station Protection
- Scenario 9: No OEI protections plus potential elevation increase to some FAA/TERPS procedures

[1] BBC Travel May 22, 2013 http://www.bbc.com/travel/story/20130521-how-human-error-can-cause-a-plane-crash

- Scenario 10 (A-D) Straight-out OEI protection with four alternative OEI West Corridor/Diridon station surface protections

    Note: Existing Conditions: Building Heights 85' – 166' Above Ground Level
    1. Scenario Option 10A: Building Heights 100' – 195' Above Ground Level
    2. **Scenario Option 10B**: Building Heights 115' – 224' Above Ground Level
    3. Scenario Option 10C: Building Heights 129' – 240' Above Ground Level
    4. Scenario Option 10D: Building Heights 146' – 260' Above Ground Level

Generally speaking, the hotter the weather, the lighter the aircraft needs to be to safely depart the Airport. This is especially critical during south flow operations should an engine fail. Also, more aviation fuel is required to take off in the winter than the summer making the aircraft heavier. Additionally, due to increased headwinds during the winter months, departing aircraft are required to add additional fuel when flying to Pacific destinations. Higher temperatures from climate change will only make this problem worse, as evidenced by a study in the journal *Climate Change*.

> "The authors estimate that if globe-warming emission continue unabated, fuel capacities and payload weights will have to be reduced by as much as 4 percent on the hottest days for some aircraft. If the world somehow manages to sharply reduce carbon emissions soon, such reductions may amount to as little as 0.5 percent, they say. Either figure is significant in an industry that operates on thin profit margins. For an average aircraft operating today, a 4 percent weight reduction would mean roughly 12 or 13 fewer passengers on an average 160-seat aircraft. This does not count the major logistical and economic effects of delays and cancellations that can instantly ripple from one air hub to another, said Horton."[2]

While an engine failure is exceptionally rare, pilots train for an engine out scenario as a standard component of flight simulator training. The most common reasons for engine failure are foreign object ingestion (including birds), mechanical component failure, or bad fuel.

Planning for an engine out prior to take off is mandatory to avoid obstacles (such as cranes and tall buildings) in the event of an engine failure on departure. When an engine fails during takeoff two scenarios may occur, often together: 1) the aircraft may not lift off until it is close to the departure end of the runway; and 2) the aircraft may climb at a minimum rate. Therefore, for safety, procedures must be in place to avoid obstacles in the event of an engine failure considering applicable aircraft performance operating limitations.

The Airport Commission received an update on the Downtown Airspace and Development Capacity Study Report at its Special Airport Commission meeting on January 14, 2019. A copy of the final Downtown Airspace and Development Capacity Study Report was requested but, per the Assistant Director of Aviation July Ross, the final report is not available at this time.

[2] "Surging heat may limit aircraft takeoffs globally", EurekAlert, 7-13-2017, https://www.eurekalert.org/pub_releases/2017-07/teia-sh071217.php

The Director of Aviation, John Aitken, A.A.E is recommending to the Community & Economic Development Committee and City Council the selection of Scenario 4 - No OEI protection (FAA/TERPS only). This shortsighted recommendation puts draconian restrictions on the Airport and may prevent the Airport from continuing some critical long-haul service, transcontinental and transoceanic (European and Asian service) and stifles the opportunity for increased international service in the future. ***Under Scenario 4, the Airport likely will never be a transoceanic, international airport.*** The Airport's existing classification as a medium-hub airport may be reduced to a regional airport and likely restricts the ability of providing air service to Asia, the fastest growing market. The Airport's passengers will be forced to utilize Oakland and San Francisco Airports to get to certain destinations.

ANALYSIS

The mission of the Mineta San Jose International Airport is to connect, serve and inspire. The vision of the Airport is to transform how Silicon Valley travels. In our opinion, Scenario 4 voids the Airports mission and vision statements while **Scenario 10B** supports both the mission and vision of the Airport and provides the City benefits of increased building heights in the Diridon Station area.

1. Before the City Council considers adopting Scenario 4, City Council should be provided with a copy of the final Downtown Airspace and Development Capacity Study Report so an informed decision can be made.

a. The Downtown Airspace and Development Capacity Study to the Airport Commission dated January 10, 2019 outlined the following airline solutions to the problem of increased building heights in the OEI areas (Page 6).

Airline Response to Obstacles

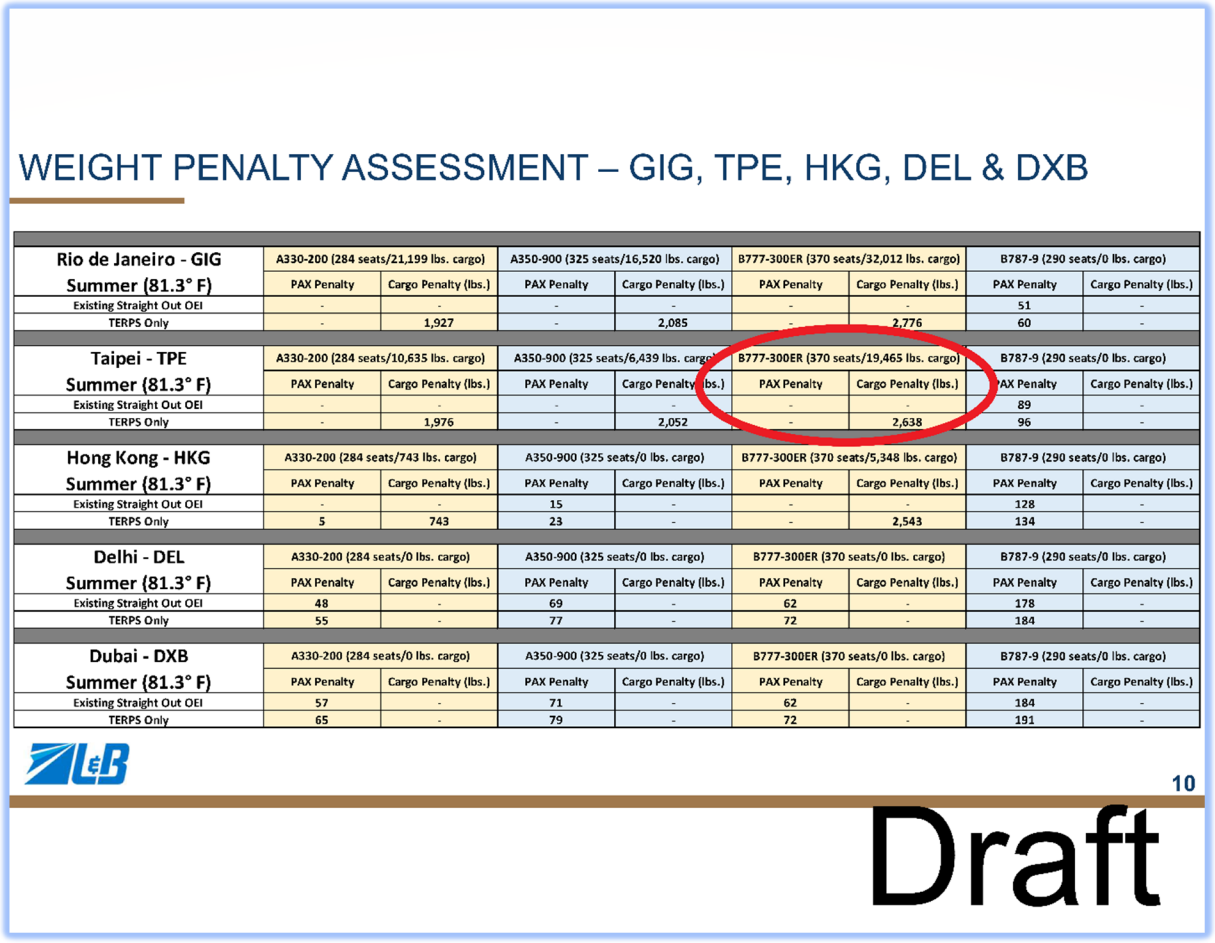
- Request another runway (wind, weather, air traffic permitting)
- Off-load passengers and/or cargo (weight penalty)
- Make a refueling stop
- Cancel current day's flight
- Change aircraft
- Change OEI procedure
- Cancel air service if payload loss affects financial viability

Pragmatically, all of these options increase airline costs or decrease profitability and in many instances may effectively eliminate the financial viability of transcontinental and transoceanic service.

b. Aircraft gross weight limitations during south flow departures under Scenario 4 will make many current and future flights economically nonviable. Additionally, the study used Boeing temperature numbers that are 85% reliable. Airport temperatures are often quite higher than those stated in the OEI presentation. Additionally, as seen in Figures 1 and 2 below, there are discrepancies between the December 2018 presentation and the January 10th, 2019 Memorandum regarding the Weight Penalty Assessment. As an example of one inconsistency, using a B777-300ER from Taipei,

which was a former commercial route from SJC, the December 2018 presentation suggests a cargo penalty of 2,638 pounds, while the January 10, 2019 suggests an 18,742-pound penalty.

Figure 1, Weight Penalty Assessment from December 2018 Presentation



WEIGHT PENALTY ASSESSMENT – GIG, TPE, HKG, DEL & DXB

Rio de Janeiro - GIG	A330-200 (284 seats/21,199 lbs. cargo)		A350-900 (325 seats/16,520 lbs. cargo)		B777-300ER (370 seats/32,012 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	-	1,927	-	2,085	-	2,776	60	-

Taipei - TPE	A330-200 (284 seats/10,635 lbs. cargo)		A350-900 (325 seats/6,439 lbs. cargo)		B777-300ER (370 seats/19,465 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	-	1,976	-	2,052	-	2,638	96	-

Hong Kong - HKG	A330-200 (284 seats/743 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/5,348 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	5	743	23	-	-	2,543	134	-

Delhi - DEL	A330-200 (284 seats/0 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/0 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	55	-	77	-	72	-	184	-

Dubai - DXB	A330-200 (284 seats/0 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/0 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	65	-	79	-	72	-	191	-

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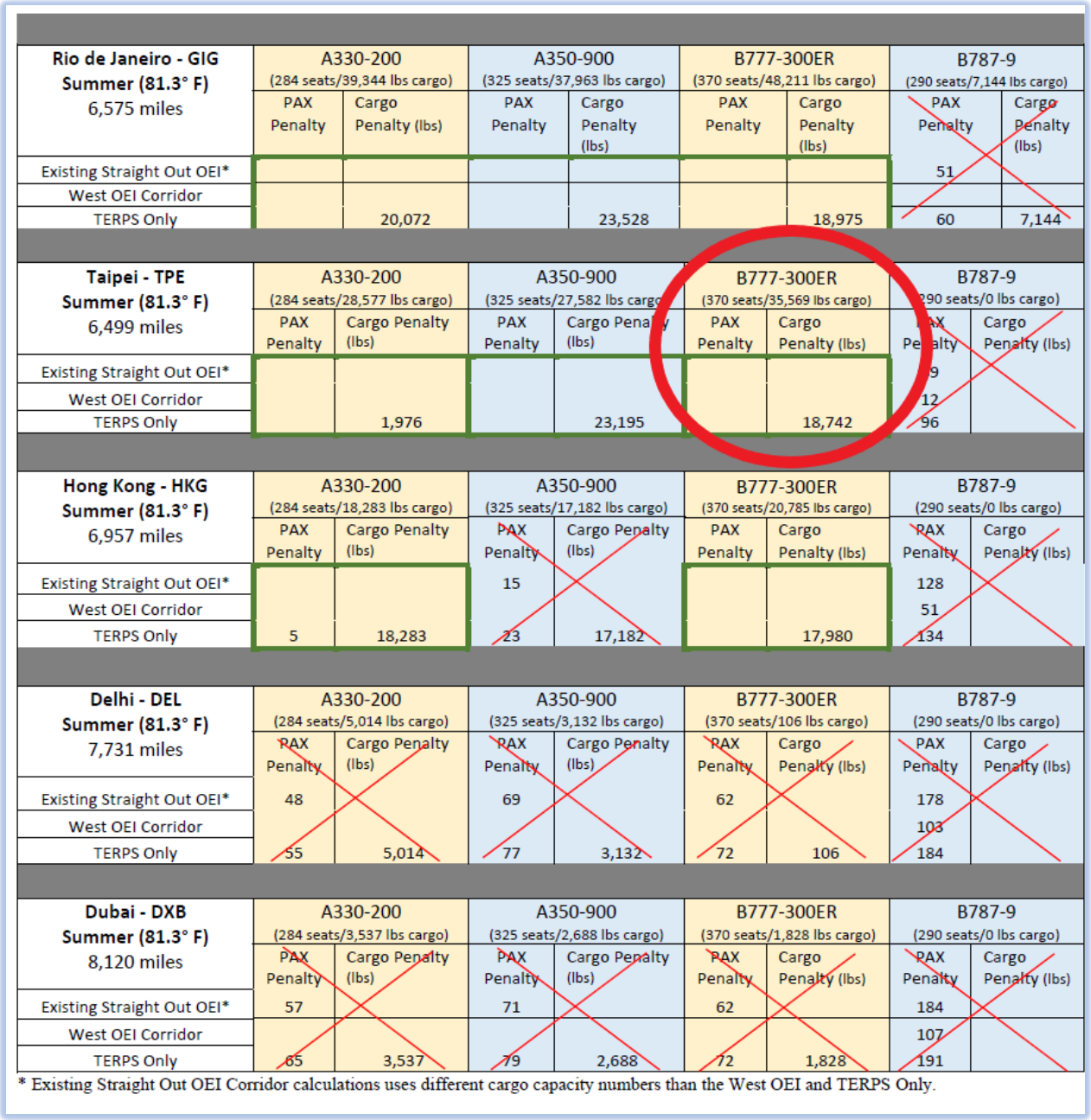
Figure 2, Weight Penalty Chart from the January 10, 2019 Memorandum



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*							9	
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.

c. The Downtown Airspace and Development Capacity Study is incomplete. There is no detailed information for Scenarios 7, 10A, 10B, 10C or 10D. Only Scenarios 4 and 9 were fully analyzed. **Before deciding on a path forward**, an analysis should be made for each scenario as to how it would affect current and future air service at the Airport. **Potential loss of airport service is not modeled in the study for domestic and international markets.**

2. The following table shows significant financial penalties to airlines suffering weight penalties realized under Scenario 4. Some flights could be deemed unprofitable which creates the need for Staff to explore the feasibility of establishing an ongoing "Community Air Service Fund" to offset any adverse

air service impacts to the airlines. Under Scenario 4 (TERPS Only) the amount of loss is staggering at any load factor while **Scenario 10B** (With TERPS and OEI surface protections) results in no financial loss. Therefore, there is no need to establish a "Community Air Service Fund" under **Scenario 10B.**

SUMMARY OF 20-YEAR CUMULATIVE DIRECT IMPACTS LOAD FACTOR SENSITIVTY TEST

Cumulative Summary of Losses		Baseline Load Factor	85% Load Factor	90% Load Factor	95% Load Factor
Scenario 1	Existing airspace protection	$0	$0	$0	$0
Scenario 4	TERPS Only	$26,034,000	$89,217,000	$148,827,000	$203,596,000
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	$0	$2,031,000	$47,238,000	$101,472,000
Scenario 10	Existing Conditions: 85' - 166' AGL	$0	$0	$0	$0
	Opt 10A: 100' - 195' AGL	$0	$0	$0	$0
	Opt 10B: 115' - 224' AGL	$0	$0	$0	$0
	Opt 10C: 129' - 240' AGL	$0	$0	$2,255,000	$49,906,000
	Opt 10D: 146' - 260' AGL	$0	$19,636,000	$76,975,000	$131,655,000
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	$211,596,000	$285,294,000	$385,051,000	$455,005,000

Source: November 13, 2018 Steering Committee Report

3. The City of San Jose stands to realize significant economic benefits under the selection of Scenario 4, but at the cost of crippling the Airport. Economic benefits can be realized under **Scenario 10B** without restricting the Airport's current or future air service. Scenario 4 allows for an increase in buildings heights from 5' to 35' in the Downtown Core and 70' to 150' in the Diridon Station area. According to the December 2018 presentation, these building height increases produce the largest gross economic benefit to the City of San Jose of $747,000,000, but, as seen in Table 1, below, the net benefit will not be as great. **Scenario 10B** does not allow for building height increases in the Downtown core but does allow for an increase in building heights from 30' to 55' (115' to 224' AGL) in the Diridon Station area and significant economic gains of $438,000,000.

   The Airport Commission has specific questions in the following categories pertaining to economic impact, employment projections, incremental commercial and residential square footage, incremental commercial and residential units, incremental valuation based on building heights, tax revenue, one-time park revenues and airport service impacts.

   Economic Impact

   Table 1, Total Economic Impact Summary (2038), summarizes the potential positive and negative impacts for both Aviation and Real Estate as found in the November 2018 and December 2018 presentations. It is unclear whether these impacts include the costs of a "Community Air Service Fund". It is important to note that although a "Community Air Service Fund" would be separate from

the airport, it still represents an opportunity cost in that these funds could be providing some other community benefit.

The estimates for this fund ranges from $800,000 in 2024 to $1.2M in 2032 to $1.8M in 2038.[3] This figure does not seem to be included in the total impact and on a cumulative basis would add another $10+M in negative impact to Scenario 4. To be clear, the necessary subsidy amount could be much greater than suggested and up to **$18M per year per flight, as shown in the section Aircraft Technology, Selection and Fuel Economy**.[4]

Table 1 Total Economic Impact Summary (2038)

		Airspace Scenario 4	**Airspace Scenario 10B**
Total Economic Impact Summary (2038) Gain/Loss[5]	Aviation Impact	-$26M to – $203M[6]	$0[7]
	Real Estate Impact	$747M[8]	$438M[9]
	Net Impact	**$544M - $721M**	**$438M**

Employment Projections

The employment projections are provided in the November 2018 and December 2018 presentations, as well as the January 10th, 2019 memo. As seen in Table 2, Employment Projections, there are discrepancies between the November and December 2018 presentations. For Scenario 4, the difference is less than 4% (173/4,700) and is insignificant, while the 50% (800/1,600) difference for **Scenario 10B** is significant.

Why is there a significant difference in the number of jobs between the November and December presentations for Scenario 10B?

Table 2 Employment Projections

Employment		**Airspace Scenario 4**	**Airspace Scenario 10B**
	Page 23 of 12/18 presentation	4,873[10]	2,400[11]
	Page 8 of 11/18 presentation	4,700	1,600

[3] Page 11 of the January 10, 2019 Memorandum
[4] See the section "Aircraft Technology, Selection and Fuel Economy", below, which discusses the extra fuel costs for flying a larger B777 series aircraft as a substitute for a more fuel efficient B787 series aircraft.
[5] This is provided on page 23 of the December 2018 presentation and is cumulative over the period ending in 2038.
[6] Page 30 of the November 2018 presentation. Impact to the airport is directly related to Load Factor. The baseline Load Factor results in a $26M negative impact, while it increases to $203M as the Load Factor goes to 95%
[7] ibid
[8] Page 23 of December 2018 presentation.
[9] ibid
[10] This is figure is net of the 27 aviation job losses. Page 11 of the January 10th, 2019 memo suggests a potential increase in employment of 4,700 and residences of 12,800 for Scenario 4.
[11] ibid

Incremental Commercial and Incremental Square Footage

Table 3, Incremental Commercial & Residential Square Footage, summarizes a combination of data from the November 2018 presentation, as well calculated data based on assumptions from that presentation and/or other data sources. As reference, the 2014 Diridon Station Area Plan approved by the City Council assumed a build out of 5.37M square feet of commercial industrial, retail and/or restaurant, along with 2,588 residential and 900 hotel rooms.[12]

How is it that the net additional square feet could more than double (5.37M to 13.97M square feet) without doubling the height of the buildings?

Table 3 Incremental Commercial & Residential Square Footage

		Airspace Scenario 4	**Airspace Scenario 10B**
Incremental Commercial & Residential Square Footage	Net New Square Feet[13]	8,600,000 square feet	3,100,000
	Net New Commercial[14]	869,500 square feet	296,000
	Net New Residential[15]	7,730,500 square feet	2,804,000

Table 3 above provides the incremental square footage by apparently raising building heights. This raises several questions, including:

What is the baseline square footage that is assumed for the Diridon Station Area and for the Downtown area? Is it the same square footage (5.37M) as what is assumed in the 2014 Diridon Station Area Plan?

All the scenarios seem to assume that all the area/buildings are built to the maximum height. Is that a realistic assumption?

How much surface area (acres/square miles) is assumed for the Diridon Station Area and in the downtown area? Is it the 240-acres outlined in the 2014 Diridon Station Area Plan?

Did the analysis look at opportunities to be more efficient from a density standpoint? Ideas such as;

a. *Creating a car-free area in the Diridon area (e.g. putting cars at the edge, with personal and shared electric shuttles for last-mile transport).*
b. *Building above rails, freeway and roads, both to better utilize property, as well as to connect divided neighborhoods, while accruing other benefits such as the attenuation of transportation noise.*

[12] See https://www.diridonsj.org/diridon-stationarea-plan
[13] Page 5 of the November 2018 presentation.
[14] Calculated based on the number of projected additional employees (4,700 for Scenario 4 or 1,600 for Scenario 10B as per page 8 of the November 2018 presentation) and assumes 1 employee per 185 square feet per page 33 of the November 2018 presentation.
[15] Calculated by subtracting the commercial space from the net new space.

Incremental Commercial & Residential Units

The number of net residential units in the Diridon Station Area would increase by 9,095 units in Scenario 4 and 3,299 for Scenario 10B, respectively. In both cases, these numbers are additive to and significantly larger than the estimated 2,588 residences that were assumed in the 2014 Diridon Station Area Plan[16].

Another implication in the assumptions is that these domiciles, on average, would not house families with children, as the number of residents per household is assumed to be 1.43, compared to the existing 2.4 to 2.9 residents per household in the 95126 and 95110 ZIP codes, respectively.[17] At 596 square feet per resident, the average dwelling size would be 850 square feet.[18]

Does the 596 square feet per resident, include "overhead" for things such as stairwells/elevators, common space, hallways, etc.?[19]

Multiplying the average construction cost per dwelling of $534.31 per square foot, yields a construction cost of $454k per dwelling.[20] As noted on page 33 of the November 2018 presentation, construction costs do not include land costs, so the price offered to the homeowner would have to be even higher than projected in Table 4, Incremental Commercial & Residential Units.

Do the construction costs include the various taxes (e.g. New Construction Residential Taxes) and fees or would those be additive to the total price?

Are there other costs that would have to be included to get to a market price?

The estimated housing cost, based solely on the cost of construction, will not be affordable for Low Income and, once other costs are factored, residents at Area Median Income levels.

An important question regarding affordability is what year is the $534.31 construction cost figure assumed?

Is the $534.31 per square foot construction cost measured in 2019 or 2038 dollars?

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[16] 2,588 being the potential number of units that could be developed as indicated in the 2014 Diridon Station Area Plan.
[17] City-data/census data for the 95126 and 95110 ZIP codes can be found at: http://www.city-data.com/zips/95126.html and http://www.city-data.com/zips/95110.html. As another point of reference, according to the City-Data.com site, the average California household size is 3.0.
[18] The 1.43 people per unit figure is consistent with the 1.51 people per unit that the typical downtown residential unit has according to SJ Economy http://sjeconomy.com/downtown-progress-report-mid-year-2018/
[19] If it does, then the effective living space per unit would be reduced by the amount of overhead.
[20] To see the calculations for this, please refer to the worksheet "New Commercial & DU Avg Cost" at https://sanjoseca-my.sharepoint.com/:x:/g/personal/airportcom1_sanjoseca_gov/EfVJmH19pM1PhOZBmLGjF4sBfz4KkgBQe6qI3Ul7ewk-_w?e=Qgl3or

The footnote on page 33 of the November 2018 presentation suggests a 3% inflation rate is assumed for construction costs. If $534.51 is 2019 figure, then the cost of construction in 2038 would be $936.92. If the $534.31 figure refers to the cost of construction in 2038, then that translates into $304.71 per square foot in 2019 dollars.

Another concern about the construction costs per dwelling is whether the projects are even feasible. The April 20th 2018 *Report on the Cost of Development in San Jose* Memorandum suggested that projects in Downtown San Jose with similar assumptions and a construction cost of $622,000 per dwelling unit would be unlikely to be developed.[21] Granted, the $454k estimate is significantly lower than in that report, but it is important to know what assumptions are different between that report and this study to understand feasibility.

Table 4 Incremental Commercial & Residential Units

		Airspace Scenario 4	**Airspace Scenario 10B**
Incremental Commercial & Residential Units	Additional Residents[22]	12,800	4,700
	Additional Number of Residential Units	9,095	3,299
	Number of Residents/Residence	1.43	
	Average Residential Size	850 square feet	
	Average Construction Cost of Residential Unit	$454k	

Incremental Valuation Based on Building Height Increases

Table 5, Incremental Valuation Based on Building Height Increases, provides the total valuations based on what was provided in the November 2018 presentation as the final numbers and then calculated based on the value per square feet and the projected amount of square feet. It is important to note that these numbers represent the ultimate build-out and assumes it would get there as "a straight-line increase in office and residential development based on historical absorption/delivery pace."[23]

Table 5 Incremental Valuation Based on Building Height Increases

Valuation		**Airspace Scenario 4**	**Airspace Scenario 10B**
	Commercial Valuation[24]	$ 274,577,000	$ 134,709,600
	Residential Valuation[25]	$4,112,252,685	$1,410,658,660
	Total Valuation (calculated)	$4,386,829,685	$1,554,368,160
	Valuation[26] (11/18 presentation)	$4,380,000,000	$1,590,000,000

[21] Please see page 22 of the April 20th, 2018 memo from Kim Walesh and Rosalynn Hughey https://sanjoseca-my.sharepoint.com/:b:/g/personal/airportcom1_sanjoseca_gov/EfoOhN9ehO9BsxNj6jGDzGQBlO1TqYPQSJSzSoDt8NA9Cw?e=qhDaSL

[22] The calculated number of residents based on 596 rentable square feet per new resident is 12,971 and 4,705, respectively.

[23] Page 35 of the November 2018 presentation.

[24] Calculated based on $303.40 per square feet as assumed on page 33 of the November 2018 presentation. Note, doesn't count cost of land, but does assume $40,000 per parking space.

[25] Calculated based on $534.51 per square feet as assumed on page 33 of the November 2018 presentation. Note, does not include cost of land, but does include cost of parking spaces.

[26] These are the estimates provided on page 6 of the November 2018 presentation.

Tax Revenue

What is important is how the above valuations translates into revenue for the City. Rows 1 and 2 in Table 6, Annual Incremental Tax Revenues, represents numbers that were provided in the November 2018 presentation.[27] The third row assumes that the tax revenue given in the table on page 35 is additive year-to-year and increases as the Diridon Station Area is constructed. The final row bases the annual incremental taxes based on a 1% property tax and that the City receives 9% of that total. Of course, this assumes a completely built-out configuration which could be decades from now and does not include sales and other taxes.[28]

This raises several questions including:

Why the large discrepancies between the estimated annual tax revenues?

What is the baseline annual tax revenue that is expected (e.g. the original Diridon Station Area plan)?

Table 6 Annual Incremental Tax Revenues

		Airspace Scenario 4	**Airspace Scenario 10B**
Incremental Tax Revenues	Based on Page 6 of Nov 2018 Presentation, [29]	$5,550,000	$2,020,000
	Based on Page 35 of Nov 2018 Presentation	$450,600 starting in year 15 & $450,600 in year 20	450,600 in year 15 dropping to $19,200 in Year 20
	Based on Page 35 of Nov 2018 Presentation, but cumulative	$450,600 starting in year 15 & $2,703,600 in year 20	450,600 starting in year 15 & $2,003,200 in year 20
	Based on Property Tax of Valuation	$3,942,000	$1,431,000

4. **Airport Service Markets Not Modeled**

The potential **negative Net Impact** on the airport could be much greater for Scenario 4, as hinted at on page 22 of the December 2018 presentation,

"Potential losses of airport service markets are not modeled."

[27] These calculations are in the Worksheets titled "Annual Taxes" and Annual Taxes Based on Construct" found here https://sanjoseca-my.sharepoint.com/:x:/g/personal/airportcom1_sanjoseca_gov/EfVJmH19pM1PhOZBmLGjF4sBfz4KkgBQe6qI3Ul7ewk-_w?e=plsCsI

[28] Based on March 2012 memo from the office of the mayor http://www.sanjoseca.gov/DocumentCenter/View/3162

[29] According to page 6 of the November 2018 presentation. Note, it doesn't indicate at what year these dollar amounts will be achieved. It also doesn't indicate whether these figures include the Local Sales Tax estimates provided on page 23, which estimates $110,000, $206,800 & $253,000 for years 2032, 2036 and 2038, respectively, for scenario 4 and $110,000, $206,800 & $226,800 for those years respectively, for scenario 10B.

The implication is that if an international airline does not see the Airport as sustainable, they will not provide service at the Airport.

If Scenario 4 (TERPS Only) is selected, the Airport may never capture the Asian Market because it may not be able to accommodate air service to China. Buildings will be too high in the Diridon Station area during south flow rendering the flights unsafe unless weight penalties are incurred.

According to a recent article in "*The Telegraph"* dated April 11, 2018, Oliver Smith, Digital Travel Editor, reports that in less than two decades, China has grown to be the world's most powerful market with 136.9 million overseas visits in 2016 and this number continues to increase according to The China Outbound Tourism Research Institute (COTRI). Chinese tourists overseas spent $261.1 billion dollars in 2016. **By 2030 1.8 billion people from China are predicted to travel, accounting for a quarter of international tourism**. Destinations include Thailand, Japan, South Korea, Singapore, the United States and Italy. This is a growing market the Airport will not be able to serve.

5. **The Santa Clara County Airport Land Use Commission**

The Santa Clara County Airport Land Use Commission was not made a partner in the Downtown Airspace and Development Capacity Study. The following description was copied from the Santa Clara County Airport Land Use Commission's website:

The Airport Land-Use Commission (ALUC) was established to provide for appropriate development of areas surrounding public airports in Santa Clara County. **It is intended to minimize the public's exposure to excessive noise and safety hazards, and to ensure that the approaches to airports are kept clear of structures that could pose an aviation safety hazard.**

The Airport Commission recommends involving the Santa Clara County Airport Land Use Commission in further discussions surrounding the Downtown Airspace and Development Capacity Study as this study may lead to land use decisions that will severely impact the Airport.

6. **Commitments to Partners**

In the Spring/Summer of 2019 the Airport will be asking current and future airlines to sign the revised AIRLINE-AIRPORT LEASE AND OPERATING AGREEMENT FOR NORMAN Y. MINETA SAN JOSE INTERNATIONAL AIRPORT for a term of 10 years with two, five-year options.

Per Article 8 of this Agreement entitled Operation and Maintenance of the Airport, Section 8.02.2

> "City shall, to the extent it is legally able so to do, use reasonable efforts to keep the Airport and its aerial approaches free from ground obstruction for the safe and proper use thereof by Airline."

If Scenario 4 is selected this could be seen as a direct violation of the Agreement. In addition, the airlines may decide they cannot accept the restrictions provided under Scenario 4 and could decline to sign the Agreement.

The Airport has a robust capital program and considerable capital investments have been made to the Airport. Because of these investments, the Airport's runways can handle long-haul flights and aircraft for many international destinations. Terminal B and a new parking garage were built and improvements to roadways were made. These capital investments were made with the goal of creating a world class international airport. If Scenario 4 is selected, these investments could be underutilized, and future capital investments could be deemed unnecessary or scaled back.

Many projects at the Airport are funded with FAA Grants. As a condition of the FAA grant, Airport Sponsors must meet over 30 FAA Grant Assurances. FAA Assurance for Airport Sponsors dated March 2014 outlines the grant requirements. If Scenario 4 is selected it is possible that FAA Grants could be at risk. The text of FAA Assurance 21 is stated below:

> "FAA Assurance 21 Compatible Land Use. **It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.** In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended."

7. **<u>Aircraft Technology, Selection and Fuel Economy</u>**

In the March 14, 2007 Obstacle Clearance Study conducted 12-years ago, Section #5.3 on Page #32 states:

> "While aircraft performance has improved over the years, further technology improvements may not solve this problem. Such aircraft performance improvements have enabled two-engine to serve markets previously served by only four-engine aircraft. Also, given increases in fuel prices, aircraft manufacturers are focusing on fuel efficiency rather than takeoff performance. The aircraft most affected by these OEI Issues are amount the newest aircraft (such as the Boeing 777, Airbus A320 and A330) as well as some of the oldest aircraft (such as the MD-80)."

The above statement was indeed prophetic, as it accurately predicted the aircraft in use today. The majority of overseas flights utilize newer more fuel-efficient aircraft, sacrificing added takeoff performance for lower operating cost. Opening new or operating existing overseas markets require that airlines be nimble and cost efficient with the equipment they purchase, as well as realistically predict the number of passengers and cargo they will fly. In the past year, international flights from the Airport have utilized primarily the B787-8/9 Dreamliner and the A330-200.

An underlying assumption being made is that these international carriers can simply bring in larger aircraft such as the B777-300 series to meet new OEI requirements, if Scenario #4 is chosen by the City. This assumption is not realistic. Currently no Boeing 777's fly out of San Jose, and if there were

sufficient bookings of passengers, bringing existing flights to an over capacity situation, the airlines would have already committed those resources.

Cost Estimate Example: For an airline to move from a B787-900 ($281.5M) to a B777-300ER ($361.5M) there is an $80M increase in equipment costs. Due to the stage length of China and further Asian routes from SJC, each single daily operation **requires <u>two</u> aircraft and the additional equipment cost of $160M.** A B777 uses approximately **735 ADDITIONAL** gallons of fuel **per hour**. A 10-hour flight would cost approximately an additional $38,000 per trip. If the carrier operated five days per week (round trip), the airline could have roughly **$1.5 Million dollars PER MONTH** in <u>additional</u> fuel expense for that route. Looking at current and historic passenger loads, it is unrealistic to believe international air routes would be economically feasible, if they had to utilize larger equipment in order to fly out of the Airport.[30]

8. **<u>Customer Inconvenience</u>**

The selection of Scenario 4 (TERPS Only) does not consider the severe inconvenience to customers who utilize the Airport and the potential for increased noise in the Downtown and Diridon Station areas. To reduce weight an airline may reduce the amount of fuel, eliminate cargo and/or remove passengers. If passengers are removed from a flight the general feeling is passengers are made whole by the airlines if they are compensated with a meal voucher and a hotel room. This treatment of the Airport's passengers is unacceptable and a total disregard to the traveling public. Additionally, there will be an increase in noise from Scenario 4 to residents and commercial interests in the Downtown and Diridon Station areas.

9. **<u>Legal Ramifications</u>**

Before any changes are made to existing air space configurations, the Airport Commission is interested in the potential legal ramifications of making any change to existing airspace protections.

<u>SUMMARY</u>

The Airport Commission acknowledges two of the City of San Jose's top economic priorities are the continued development of Downtown and growth in air service at the Airport. The Airport Commission believes a compromise is necessary to satisfy these two important priorities.

Scenario 10B allows the Airport to preserve the classification of a medium-hub airport, providing domestic origin-destination service with increasing levels of international air service.

Scenario 10B eliminates the need to explore the feasibility of establishing a "Community Air Service Fund" as identified in Scenario 4 as a financial solution to subsidize airlines penalized when they cannot operate at full weight capacity out of the Airport during some south-flow operations.

[30] See Fuel Expense Worksheet at https://sanjoseca-my.sharepoint.com/:x:/g/personal/airportcom1_sanjoseca_gov/EfVJmH19pM1PhOZBmLGjF4sB-jqRMcbqM43ZVLHByPzSgA?e=NonNYL

The Airport Commission urges City Council to fully consider the negative impacts to the Airport if Scenario 4 (No OEI) is selected as the preferred option. If the Airport's airspace is not protected, long-haul flights such as transcontinental, transoceanic, and other international service will negatively impact or possibly prevent flights to Europe and Asia and constrain nonstop flights to the East coast and Hawaii. Scenario 4, if implemented will serve as a significant disincentive for airlines to start new airline service or continue some existing service.

The Airport Commission recommends **Scenario 10B,** as this option provides a reasonable compromise protecting the downtown airspace and maintaining airline safety procedures for aircraft departures. This compromise directly benefits the Airport while allowing for increased development capacity in the Diridon Station area. **Scenario 10B** also allows the airport to retain and continue to attract air service while allowing for safe increase in building heights and supports development and provides reasonable economic benefits desired by the City of San Jose.

Attachment A – January 10, 2019 Memorandum to the Airport Commission Downtown Airspace and Development Capacity Study Report Findings and Recommendations from John Aitken, A.A.E.

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

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

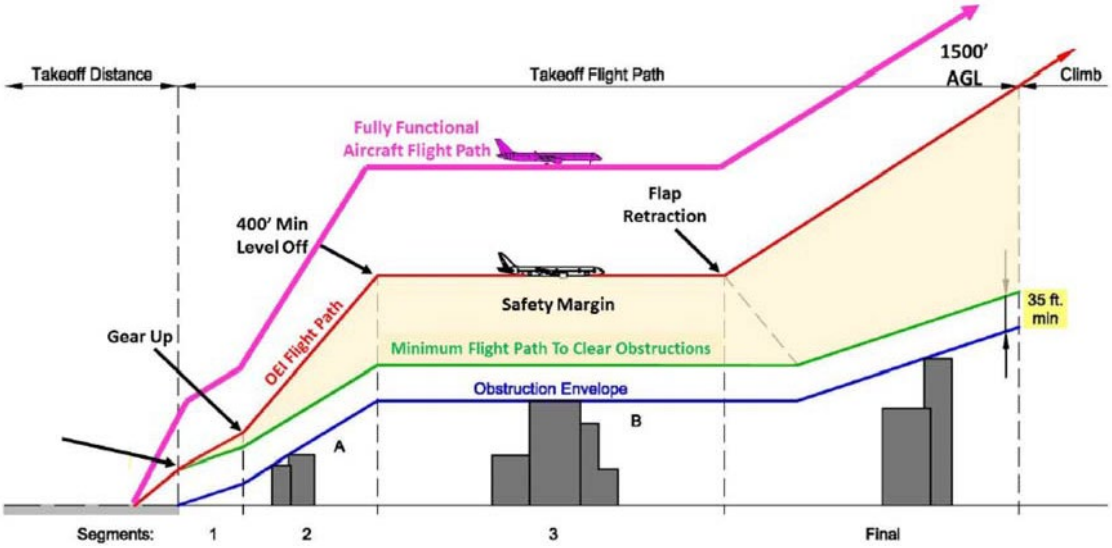
City Council approval of the above recommendations would allow for maximum safe development heights and associated economic benefits in the Downtown and Diridon Station areas.

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.

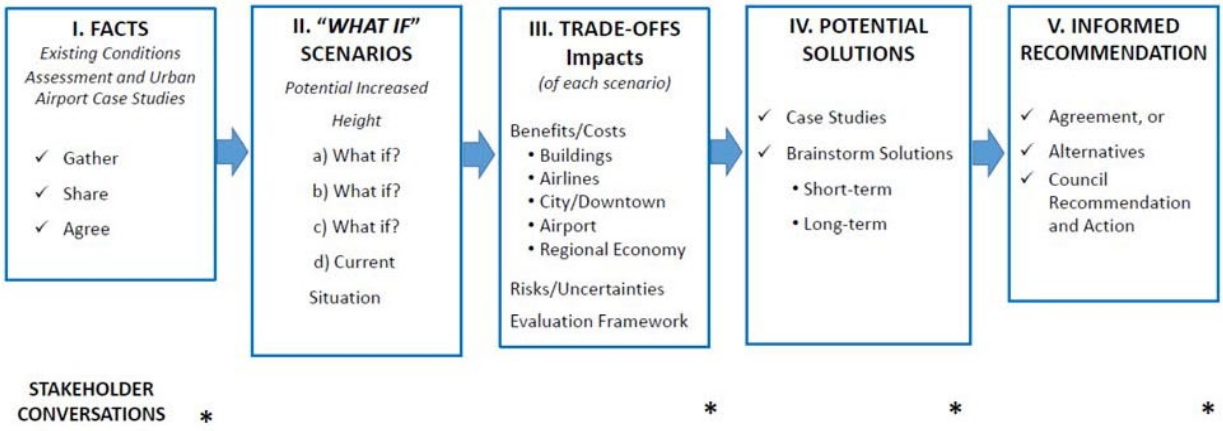
Separately, in addition to the project Steering Committee, three broader downtown stakeholder information meetings were held during the study, once at the initial launch of the study, once to report on study progress and initial findings, and once to present a proposed strategy. The stakeholder meetings 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.

Questions Regarding the 2018 OEI Study

1. What is the difference between the 2007 OEI study and today?
    a. How do these FAQs change based on current information?
    b. How can the use of lower temperatures in the study be justified, given that the City of San Jose is planning on rising temperatures? See https://winchesterurbanvillage.wordpress.com/2019/02/19/why-are-the-temperatures-assumptions-lower-in-2018-than-2007/
2. What do we want SJC to be when we grow up?
    a. A regional or transcontinental/international airport?
    b. What is the financial impact in terms of bond repayments if we revert to a regional airport?
    c. How should the Airport Master Plan be adapted if we choose to be a regional airport?
3. Will the airport take the full negative financial impact with the construction of the first building that reaches past OEI?
    a. If so, what guarantee is there that enough buildings will be built to ensure an overall positive economic impact?
    b. How does the City reconcile that some will benefit from these new air rights, while others will not?
4. What, if any legal ramifications are there for each of the Scenarios? This does not seem to be addressed in the “report”.
    a. Noise considerations (this has been brought up by Cupertino noise group)
    b. Air rights?
    c. Process?
    d. Not having Airlines or Airline pilots on the Steering Committee?
    e. Having at least one Committee members that were predisposed to an answer (see this January 11th 2018 article)
5. Has the thrust/lift technology improved in airplanes since the 2007 OEI report?
    a. 787 versus B777 for example?
    b. What is the trend in airplane design - efficiency or power?
6. Did the Steering Committee look at:
    a. Alternative Density conditions (e.g. reduced parking, streets - more horizontal)? From the evidence, it looks like regular planning rules were used (see page 20 of this document, where it suggests Envision 2040 Land-use designations were assumed. Why weren’t solutions, such as car-free city centers (such as Oslo, Norway) considered in the modeling?
    b. Runway extensions? Only one slide was given on this topic in May of last year and was not directly presented to the Airport Commission. Would extending over De La Cruz make sense, as depicted here?

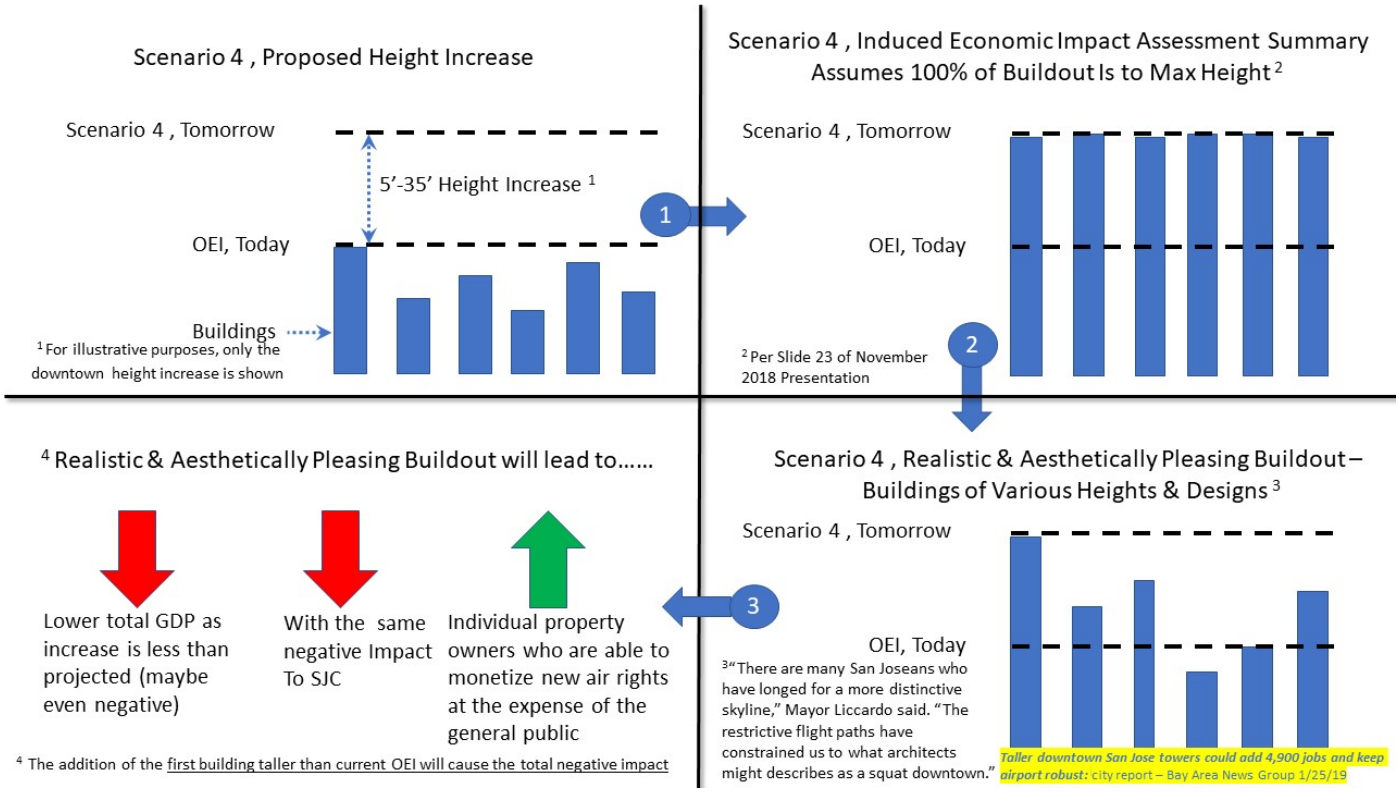
    c. Moving the airport, say to Moffet Field? (approx 1.3 square miles of airport land, not counting Guadalupe Gardens), which is about 832 acres. At $10M/acre (Google's payment to SJ for a plot of land), this would be **8.32B of value**. I am not suggesting that this is feasible, but one would think that a more than $1M study (when staff time is considered) would address this possibility!
7. Why was Google provided information a full two months before the Council-appointed, Airport Commission?
    a. Why was the Airport Commission given only 96 hours to study the material before voting?
    b. Why wasn't the Airport Commission given all the material?
    c. Why wasn't it provided as a report, instead of disparate materials?
8. Why didn't the Committee include representatives from:
    a. The Air Line Pilots Association?
    b. The Airlines?
    c. The Santa Clara County Airport Land-Use Commission?

OEI Study Conclusions:

In a nutshell, the decision that the council is being asked to make (Scenario 4) is whether SJC will be a transoceanic, international airport or a medium, mostly North American, hub airport. The Airport's passengers will be forced to utilize Oakland and San Francisco Airports to get to certain destinations.

If Scenario 4 is chosen, then there are also huge implications to the Airport Master Plan (which is currently being revised and is in the EIR process), such as how are the proposed expansion plans affected. The final Downtown Airspace and Development Capacity Study Report should be part of an iterative process that includes feedback from the placemaking for the Diridon Station Area, as well as the lease negotiations with airlines and should also inform the preparation of the EIR for the Amendment to the Mineta San Jose International Airport Master Plan

And the economic benefits may not be as great as projected, as the negative impact begins with the first building. The modeling assumes a maximum buildout, although the realistic build-out is expected to feature varying heights, as depicted below.



For more details, please see the recommendation approved by the Airport Commission at its 01/24/19 meeting.

All the documentation from the 2018 OEI study process that has been shared is in this folder.

https://drive.google.com/drive/folders/1ixEPcTR2II4Kj5ei8ic2IBrCYpLLSWS9?usp=sharing

Inconclusive Data, Process Concerns and Questions

1. The Steering Committee did not contain
    a. any airlines, pilots or individuals with practical operational experience flying into or out of the Airport, **even though it was implied that these experts would be included per the budget memo request for the study** (page 1 of the memo) dated 6-12-17
    b. nor did it include a **representative from the County of Santa Clara Airport Land Use Commission** which was established under Article 3.5 Airport Land Use Commission Section 21670 Creation; Membership; Selection of California Public Utilities Code.
2. Mid-Year Action February 12, 2018: Allocate Airport Funds for timely completion of 'worstcase' ,'exhaust all options' full Project Scope of Work (additional $417,000; expect $100,000 Google reimbursement [**Added 2/15/19** - *per the 2/11/19 Airport Commission Meeting, the city decided not to except a reimbursement. Also, in that same meeting it was mentioned that the total contract was for $940,000*].[1] **It also mentions that there was coordination with Google's** *OEI consultant. Who is that person/company and what role did they play?*
3. *What will be the impact of climate change on south flow operations and OEI?* The average summer temperature used was 81.3 degrees versus 88 degrees in the 2007 report, which seems counterintuitive based on what is being reported about the potential impact of climate change on airports.
4. The **Downtown Airspace and Development Capacity Study is incomplete**. There is no detailed information for Scenarios 7, 10A, 10B, 10C or 10D or 11. Only Scenarios 4 and 9 were fully analyzed.
    a. **Before deciding on a path forward**, an analysis should be made for each scenario as to how it would affect current and future air service at the Airport.
    b. **Potential loss of airport service is not modeled in the study for domestic and international markets.**
        i. It was also mentioned that International travel only represents 2% of volume in 2018. The Master Plan projects SJC growing to 22.5 million by 2037 from 12.5 million in 2017. *How are we going to get to 22 million passengers, in terms of domestic versus international growth?*
        ii. *Will the change to Scenario 4 affect the projections that underlie the Master Plan?*
    c. **Scenario 11, extending the runway north, is presented on slide 14 of the May 10th presentation, but no analysis and no other mentions.**
5. *What is the net economic impact for each of the scenarios (including potential tax revenue gains minus airport losses)?* The numbers just don't add up.

[1] Presumably the $940,000 contract does not include staff time dedicated to the process.

Table 1 Total Economic Impact Summary (2038)

		Airspace Scenario 4	Airspace Scenario 10B
Total Economic Impact Summary (2038) Gain/Loss[5]	Aviation Impact	-$26M to – $203M[6]	$0[7]
	Real Estate Impact	$747M[8]	$438M[9]
	Net Impact	**$544M - $721M**	**$438M**

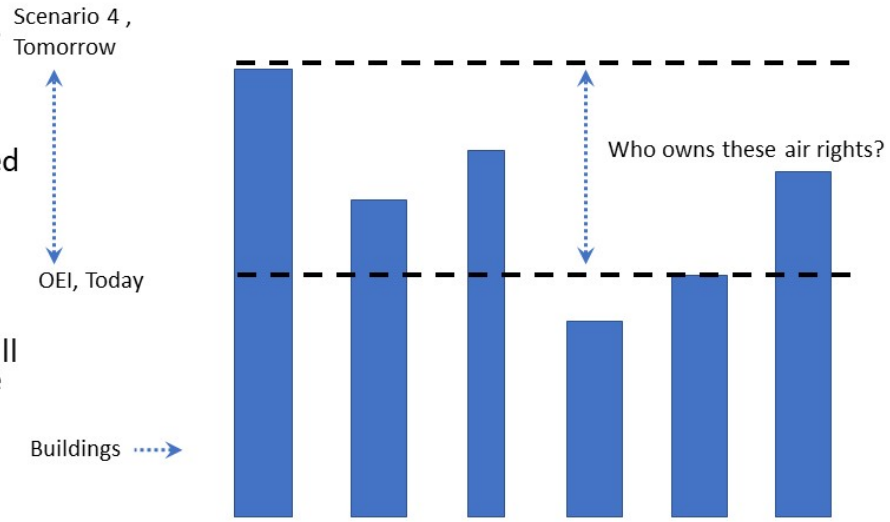
6. **Adobe's building, which is higher than it should be, cost American Airlines $1M alone for its flight to Tokyo-Narita according to page 2 of this 2006 memo.** This is greater than the suggested Community Fund requirement of 804k in 2024.
7. From page 10 of the November 2018 presentation it appears that the same density was used as today (e.g. same parking, FAR requirements), "Test case height limits established by airspace protection scenarios, though no denser than limits established by the General Plan (3-30 stories and 30 FAR for Downtown." Even though Director Aitken suggested so in the 1/14/18 meeting**, the analysis DID NOT look at opportunities to be more efficient from a density standpoint**; ideas such as;
    a. Creating a car-free area in the Diridon area (e.g. putting cars at the edge, with personal and shared electric shuttles for last-mile transport).
    b. Building above rails, freeway and roads, both to better utilize property, as well as to connect divided neighborhoods, while accruing other benefits such as the attenuation of transportation noise.
8. With the assumed number of residents per household at 1.43, compared to the existing 2.4 to 2.9 residents per household in the 95126 and 95110 ZIP codes, respectively*, where are the families going to live?* ***The implication is that the models probably mean displacement of existing families.***
9. *Per slide 34 of the Nov 2018 presentation, the modeled park fees are $14,600. Should these be $11,300, since it is in the Downtown Core Area Incentive area for 12+ story buildings?*
10. *How will Scenario impact SJC's ability to sign long-term leases with our Airline partners?*
11. *Do the proposed changes meet our more than 30 FAA Grant Assurances to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft?*
12. *Whatever happened to the FAA Rulemaking where they were studying incorporating OEI into their review process (page 2 of the memo)?* They were studying 5 cities and there was going to be an eventual NPRM (which was opened in 2014 & still appears to be open*). Could a potential FAA rulemaking overrule whatever the City of San Jose decides?*
13. *How will this rule impact the SJC passengers?*
14. *What will be the impact of noise on the residents of taller buildings?*
15. *What are the potential legal ramifications of making any change to existing airspace protections?*
    a. *From a noise perspective?*
    b. *From an airline's perspective?*

c. *Who owns the air rights above OEI and what are the implications of transferring them to private developers?*

Air Rights Ownership Questions

Questions

1. Who currently owns the air rights above today's OEI limits? Is it a public entity?
2. If it is the public, then how are those rights valued and transferred to the property owner, if restrictions are changed?
3. Not all property owners in the affected area will be able to build beyond current OEI (e.g. older buildings, etc.), so the benefits will inure to new developments & the aggregate benefit to the city may not be as great as modeled. How does the city guarantee enough buildings are built to ensure a positive return?



* Page 3-3 of this document https://www.sanjoseca.gov/DocumentCenter/View/1616 seems to imply that the city owns the air right easement, "the City of San José holds an (n)avigation easement over a portion of the Station Area which sets forth specific height limitations that generally correspond with, or are slightly more restrictive than, current FAA criteria."

Ken Pyle, The Winchester Urban Village

Why the Rush to Adopt Scenario 4?

Jan 29, 2019 Airline Leases, Airport, Diridon Station Area, Downtown San Jose, FAA

[Note: This author appreciates the efforts and insight of airport staff, committee members, and airport commissioners in studying various One Engine Inoperative (OEI) scenarios. These were the comments intended to be said at the January 28, 2019, CED meeting, but not well articulated once in front of the microphone. To some extent, the following represents some of the highlights of the 4/24/19 memo approved by the Airport Commission. Please refer to that memo for more detail]

The City of San Jose Councilmembers are about to address what might be the most important land-use/airport-use decision they will ever make; a decision that will have ramifications for generations to come. To be clear, if the recommended option,

So, why the rush to change building downtown and Diridon Station Area (DSA) heights, given there are no developments requesting the added height and that the community vision process for DSA has not yet begun?

As we look at how we can achieve greater building heights and continued airport growth, we should be looking holistically at how to maximize the public value from seemingly disparate activities of Diridon Station Area placemaking, the EIR for the Airport Master Plan and the ongoing Airline Lease negotiations. The outcome of the process will have an impact that lasts for generations; well beyond the 2038 projections given in the November 2018 presentation.

The OEI study and other related activities that are about to occur.

2018 vote.

First and foremost, the information provided to the Airport Commission in preparation for the January 14th meeting represents an incohesive and, incomplete report (e.g. data was spread over multiple presentations from different points in time) and there were many data points that don't tie together; especially as it relates to potential economic value. Simply, the information has not been well communicated.[1]

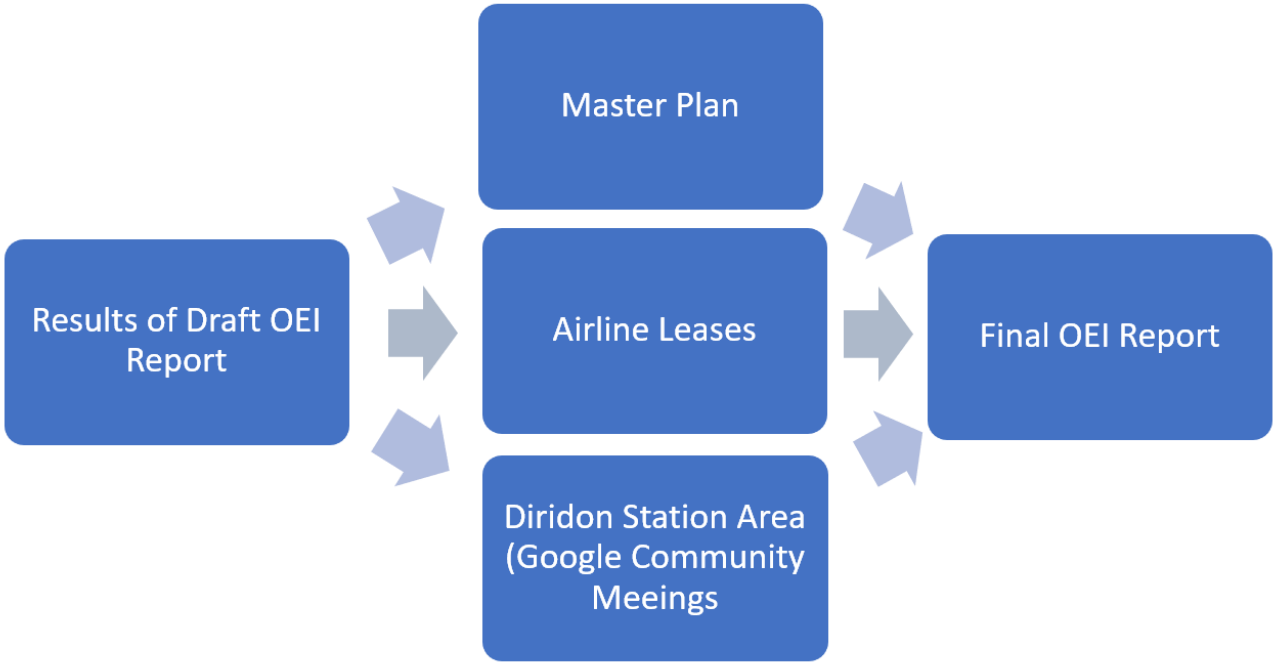
The process seems rushed in the sense that there are several factors (Airport Master Plan, Airline Lease Negotiations and Diridon Station Area Community Meetings) that could affect the modeled scenarios. As an example of an assumption that could easily change, after the upcoming community meetings (aka the Google Village meetings), is the number of residences per home.

The model assumes 1.43 residents per dwelling, which is fewer than the 2.4 and 2.9 people per home that currently reside in the 95126 and 95110 ZIP codes, respectively. The implication is what has been modeled would not be a place for families and could be an indicator of displacement of existing families.

Similarly, it seems like we are missing an opportunity to integrate the airport into the larger urban fabric, as is being done by leading international airports that have a strategic vision that maximizes the value of the real estate for the airport and community. Max Hirsh (PhD, Harvard), a professor at the University of Hong Kong, suggests airports can be part of the larger community and can diversify their income at the same time.

> "If you superimposed the average airport over a map of the city that it serves, you'd find that it's about the same size as the entire downtown core….The world's leading airports view these real estate holdings as a critical source of non-aeronautical revenue. They've transformed that land into a variety of profitable commercial developments, including hotels, office parks, and shopping centers. Still, others have built concert arenas, university campuses, and tourist attractions."

to a process where the OEI study would be influenced by factors that have yet to be determined is depicted below.



An improved OEI process that incorporates related activities

The results of the draft report would inform the Airport Master Plan (e.g. impact on passenger growth, land-use decisions, etc.) the current lease negotiations and the upcoming Diridon Station Area community meetings.

Front loading the planning process like this would add time in the beginning because it would involve more stakeholders and provide the opportunity to test assumptions prior to committing to a long-term change. In the long-term, this would probably save time, as all the stakeholders would have an opportunity to participate in the process.

I voted for Scenario 10b because it was the best option, given the data we were provided. But, if we keep refining our assumptions, as described above, an even better scenario, that creates a greater net public good, could appear. Stay tuned to this blog for another idea that this author doesn't believe has been fully studied, as it didn't appear as a scenario in the materials provided by the Airport.

reminded the author of the root cause of the Challenger accident of poor communication between the engineers and management. To quote from an author who analyzed the communications breakdown that led to that tragic event, "The main problem here is that those engineers did not clearly explain the effects so management thought it was no big deal and they passed it."

[Note: Although he is an SJC Airport Commissioner representing District 1, the views expressed here are the author's own.]

Edit Share 2 Comments Like

MORE IN THE WINCHESTER URBAN VILLAGE

Who Will Benefit the Most from Raising OEI Limits?

At the 02/11/19 Airport Commission meeting, this author raised the question of whether

Why are the Temperature Assumptions Lower in 2018 than 2007?

A recent article from San Jose Inside suggests that San Jose should prepare for warmer

2 COMMENTS

Ken Pyle Feb 7, 2019

See this op-ed in the San Jose Insider for a video and article about the kind of holistic vision that is needed for the airport and surrounding area http://www.sanjoseinside.com/2019/02/01/op-ed-we-need-a-cohesive-vision-for-silicon-valleys-airport/

Reply Like

Ken Pyle > Ken Pyle Feb 8, 2019

And more thoughts as to concerns about the process, gaps in information and my conclusions if Scenario 4 is chosen are at this link:

https://winchesterurbanvillage.files.wordpress.com/2019/02/oei-process-concerns-bullets-190208.pdf

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E.M.Smith
Musings from the Chiefio

Today It Rained – A Curious Thing With Thermometers

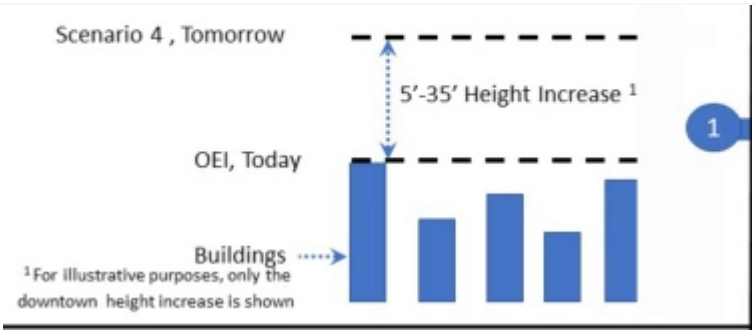
A very curious thing. Today it rained in San Jose, California. For many years now, wher

Ken Pyle, The Winchester Urban Village

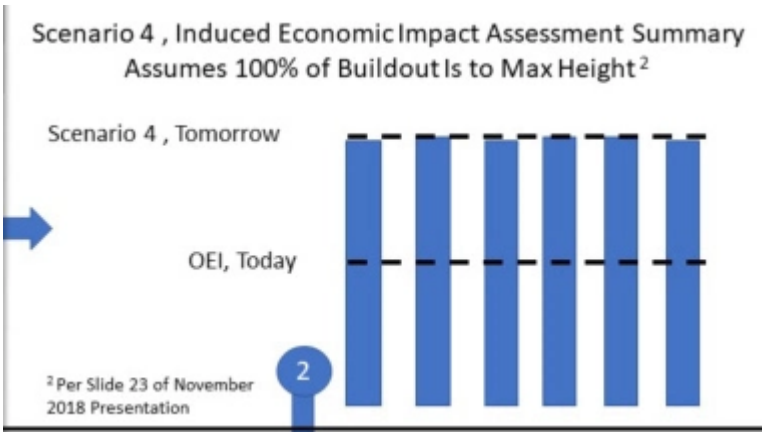
Who Will Benefit the Most from Raising OEI Limits?

2d ago Building Heights, Downtown San Jose, Economic Impact, OEI, One Engine Inoperative

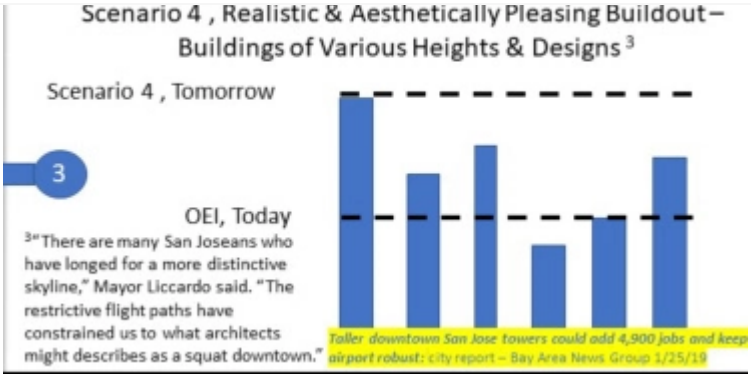
At the 02/11/19 Airport Commission meeting, this author raised the question of whether the economic gains touted by the Norman Y. Mineta San Jose International Airport/City of San Jose (Airport) One Engine Inoperative (OEI) study will be as great as expected, as heard in the above video?[1]



As a brief background, the Airport is recommending a 5' to 35' increase in downtown building heights (less than a 15% increase of today's limits) and 70' to 150' in the Diridon Station Area, while the Airport Commission voted for an alternative Scenario (10B), which would allow taller buildings in the Diridon Station Area (30'-55'), while keeping the same OEI safety limits in the straight out (downtown) path.



The Airport's model assumes all the buildings are built to maximum height and would result in a Total Economic Impact of between $747M for Scenario 4 and $438M for Scenario 10B. The economic impact does not seem to include the economic losses to the airport, which depending upon load factor, is estimated to be between $26 to $203M. These loss estimates do not include dropped routes or routes that are no longer viable for airlines.

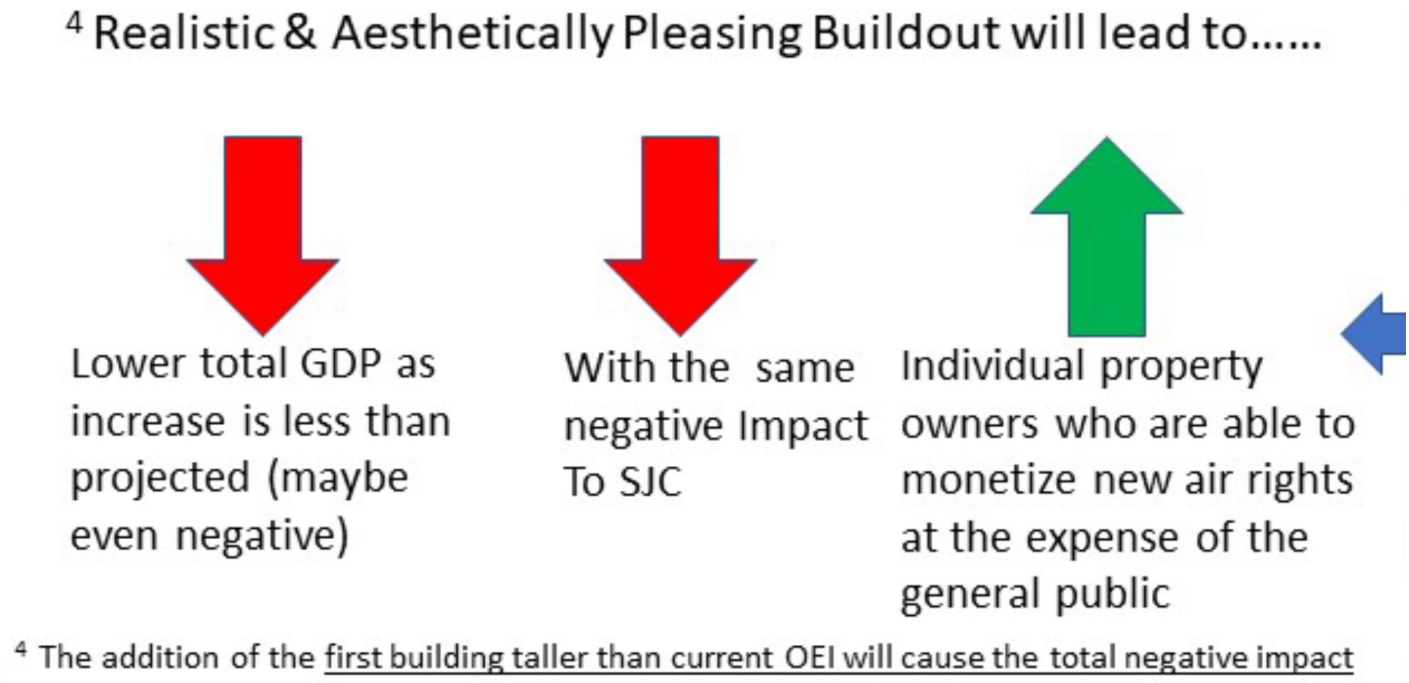


A 100% buildout is not realistic from an economic or aesthetic viewpoint. The economic value drops by a greater amount with Scenario 4, as compared to Scenario 10B, as the economic losses to the airport begin once the first building penetrates the existing OEI limits (see Appendix A, below). In Southflow situations, airlines will have to shed passengers or cargo.

This won't be so critical for an air carrier with many flights from SJC that has multiple options, but for those carriers flying long-haul flights that have fewer alternatives (e.g. being able to put passengers on alternative flights), their solution might be to drop the flight. In 2006, American Airlines raised this concern with their once-profitable flight to Tokyo-Narita, when they discovered that the Adobe building was in its OEI path. https://drive.google.com/file/d/1KwfvIQRutK3g3Yp-8JYxWi-j6GNDsjLv/view

> American Airlines informed the City on 4/12/06, soon after it received staff's downtown building data, that the existence of the Adobe Phase I Tower does not provide sufficient emergency clearance for southerly departures of the B-777 flight to Narita. American must immediately institute weight restrictions on such departures (i.e., not operate with a full load of cargo, passengers, or fuel) unless and until it can redesign its emergency "one-engine out" procedures to avoid the building. This process is underway. American has informally indicated that if modified emergency procedures cannot be implemented, the potential economic loss from weight restrictions on !hat one flight is estimated to be approximately $1 million annually."

American Airlines dropped that flight in 2006. ANA picked up that flight using the more fuel-efficient 787 series jet. This is consistent with the trend identified in an



One thing that is clear is that property owners/developers who have the ability to build above current OEI will capture additional value from the air rights above their property.

The next question, for another article, is who owns those air rights?

[1] $940,000 was spent on this study, which is still a series of presentations and memos and not integrated into a single report.

Appendix A – Different Economic Impacts Based on % Buildout

100% Buildout (assumed in the 2018 OEI Study)

		Airspace Scenario 4	Airspace Scenario 10B
Total Economic Impact Summary (2038) Gain/Loss[1]	Aviation Impact	-$26M to – $203M[2]	$0[3]
	Real Estate Impact	$747M[4]	$438M[5]
	Net Impact	**$544M - $721M**	**$438M**

50% Buildout

		Airspace Scenario 4	Airspace Scenario 10B
Total Economic Impact Summary (2038) Gain/Loss	Aviation Impact	-$26M to – $203M	$0
	Real Estate Impact	$374M[6]	$219M
	Net Impact	**$171M - $348M**	**$219M**

10% Buildout (e.g. First Few Buildings)

		Airspace Scenario 4	Airspace Scenario 10B
Total Economic Impact Summary (2038) Gain/Loss	Aviation Impact	-$26M to – $203M	$0
	Real Estate Impact	$75M[7]	$44M
	Net Impact	**-$128M - $49M**	**$44M**

[1] This is provided on page 23 of the December 2018 presentation and is cumulative over the period ending in 2038.

[2] Page 30 of the November 2018 presentation. Impact to the airport is directly related to Load Factor. The baseline Load Factor results in a $26M negative impact, while it increases to $203M as the Load Factor goes to 95%

[3] ibid

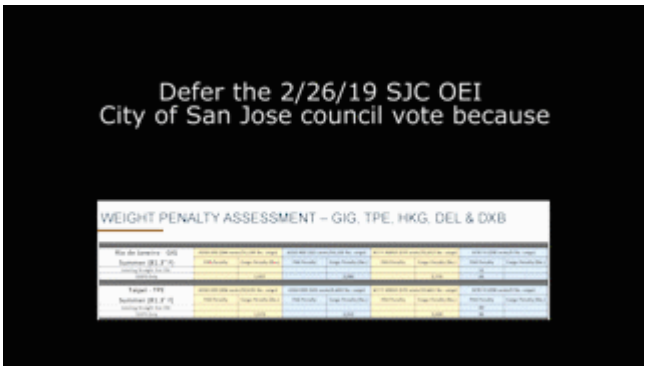
[4] Page 23 of December 2018 presentation.

[5] ibid

Ken Pyle, The Winchester Urban Village

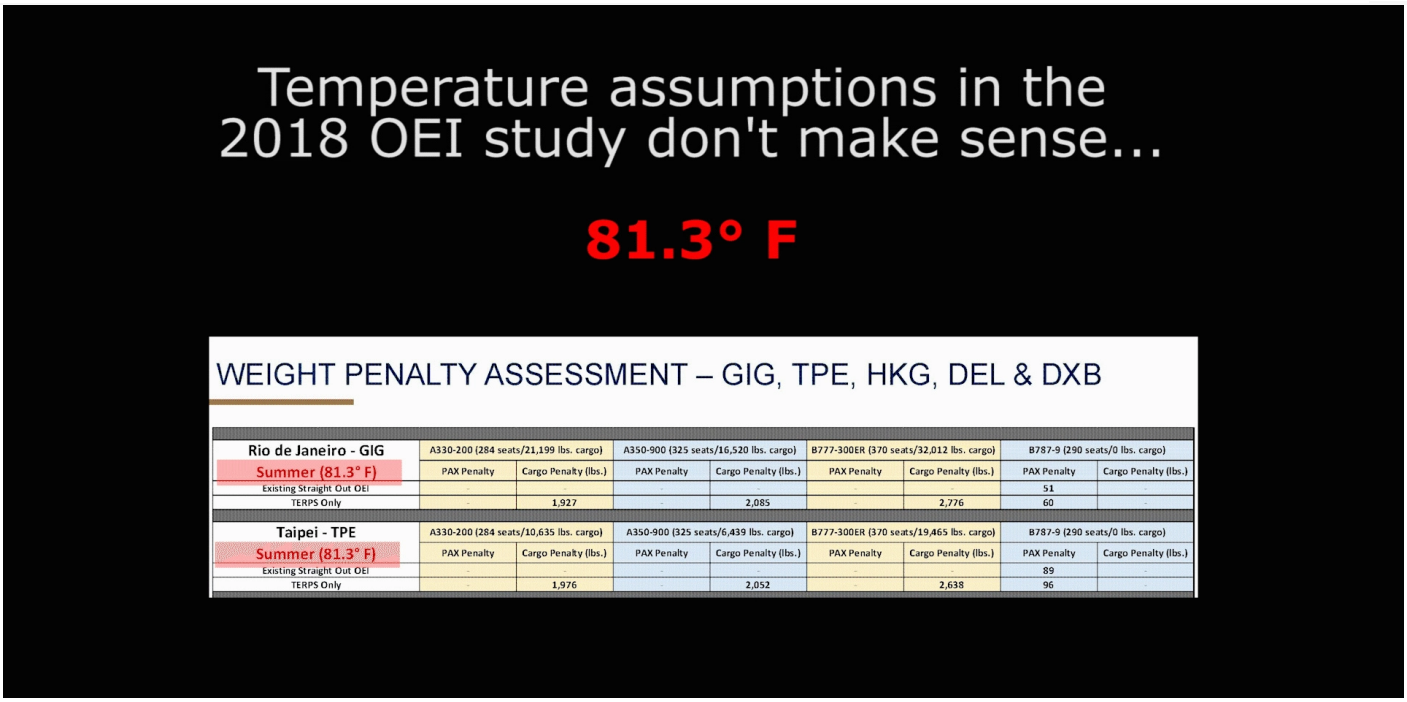
Why are the Temperature Assumptions Lower in 2018 than 2007?

2d ago Climate Change, OEI, One Engine Inoperative, Temperature



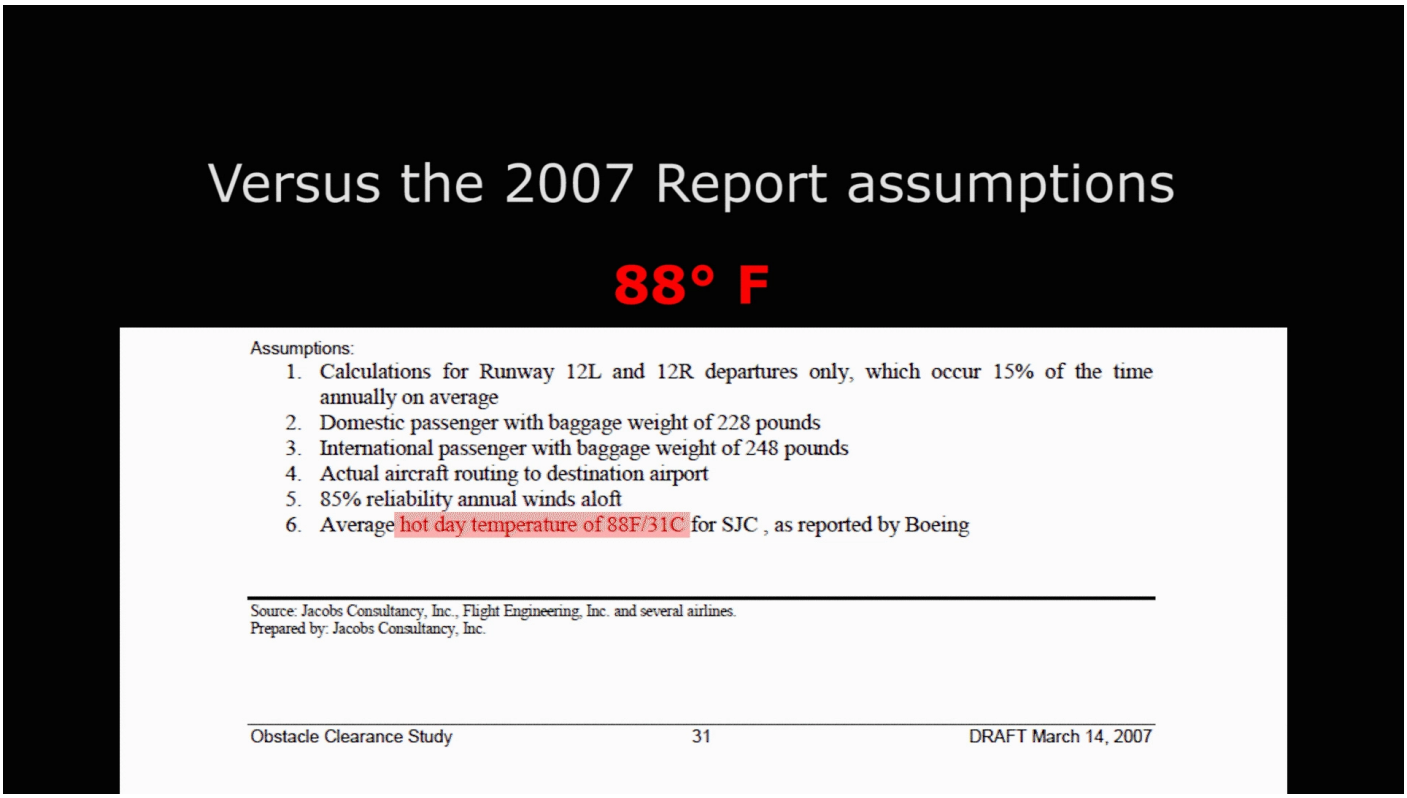
A recent article from San Jose Inside suggests that San Jose should prepare for warmer temperatures. This advice is consistent with the City of San Jose's Climate Smart San Jose "plan to reduce air pollution, save water, and create a stronger and healthier community."

Why then did the consultant that was hired by the Airport to perform the 2018 One Engine Inoperative study use temperatures (81.3° F) that were almost 7 degrees cooler as compared to what was assumed in the 2007 study (88°)?



Rio de Janeiro - GIG	A330-200 (284 seats/21,199 lbs. cargo)		A350-900 (325 seats/16,520 lbs. cargo)		B777-300ER (370 seats/32,012 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	-	1,927	-	2,085	-	2,776	60	-

Taipei - TPE	A330-200 (284 seats/10,635 lbs. cargo)		A350-900 (325 seats/6,439 lbs. cargo)		B777-300ER (370 seats/19,465 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
Summer (81.3° F)	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	-
TERPS Only	-	1,976	-	2,052	-	2,638	96	-



This is important, as the higher the temperatures, the more weight (in the form of passengers or cargo) that has to be removed from an airplane to ensure safe operation in the event of a loss of an engine. The change in temperature was the major assumption difference between the 2007 study and the 2018 study.

the difference between serving transcontinental/transoceanic flights versus regional destinations, as indicated on SJC's website:

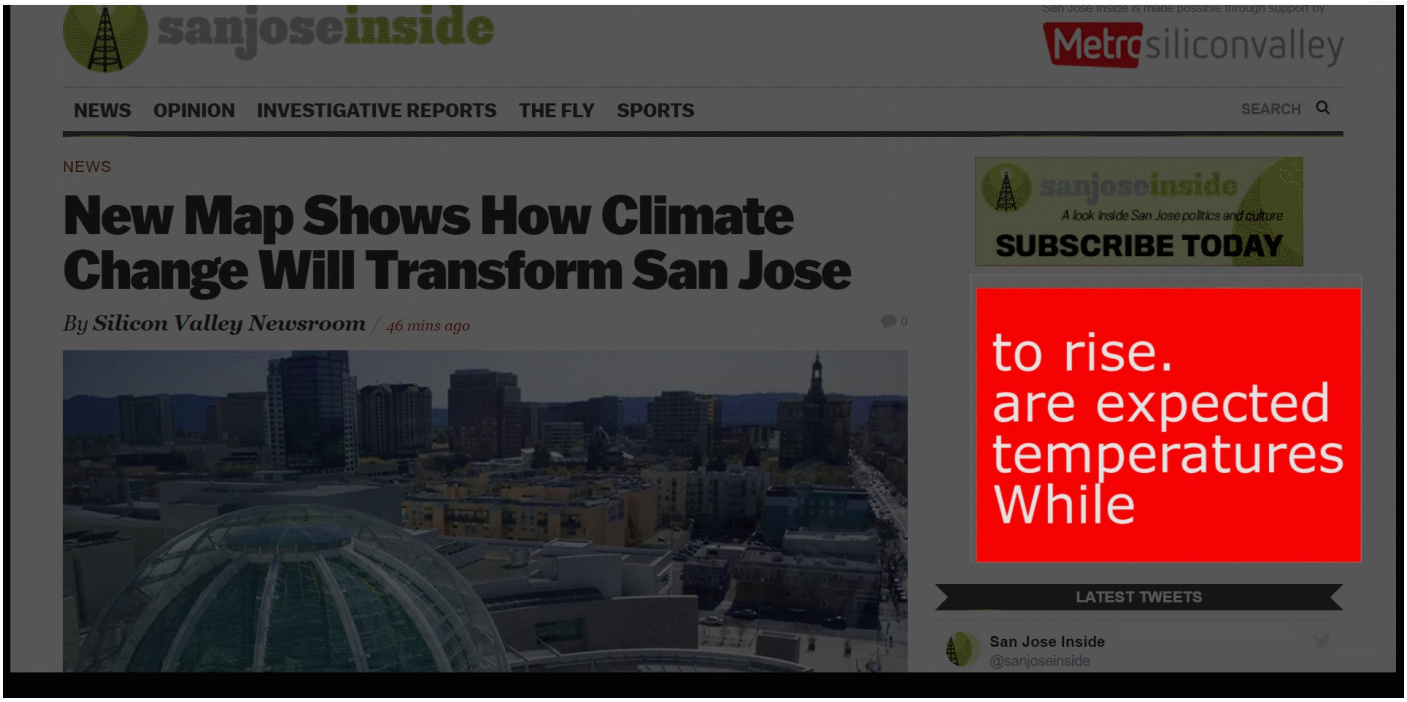
> "Airlines will not fly routes that are not economically practical due to OEI-required weight penalties, and SJC would therefore risk losing existing or potential future air service, particularly to long-haul destinations. This could eventually result in SJC becoming a 'regional' airport primarily providing direct flights only to cities along the West Coast and in the western half of the United States. SJC would no longer be able to serve nonstop flights to the East Coast, Hawaii, or overseas to Asia or Europe." [PDF]

Speaking at the January 28th, 2019 Community Economic Development meeting (YouTube), the Airport's consultant to the study suggested that he had been conservative in 2007.

> "I was typically using 95% reliability for some of the studies back in that 2007 timeframe and invariably I got responses that, that was too conservative and too high. The reason I was using 95% reliability when most of the airlines were using 85% reliability is that if it was a day time operation, the percentages for a 24-hour period, so if the airline is operating mainly passenger flights, not cargo during daylight hours, it would tend to be a little more conservative to use 95%. But, I have really switched to using what the airlines use which is 85% surface temperatures and in-route winds for these type of route analyses."

This raises several questions:

1. Who was telling him he was being conservative?
2. Does each airline use the 85% temperature and reliability numbers? Do some airlines use 90% or 95%?
3. What about the impact of climate change regarding future temperature assumptions?



Edit Share 1 Like

MORE IN THE WINCHESTER URBAN VILLAGE

Why the Rush to Adopt Scenario 4?

[Note: This author appreciates the efforts and insight of airport staff, committee members, and airport commissioners in studying var

Who Will Benefit the Most from Raising OEI Limits?

At the 02/11/19 Airport Commission meeting, this author raised the question of whether

NO COMMENTS - add the first!

To: City Council – San Jose

From: The Sunnyvale-Cupertino Airplane Noise Group

Date: Feb 25, 2019

RE: San Jose City Council Meeting Feb 26, 2019

Comment regarding Agenda Item 6.2 - (File #18-1944)
Actions Related to the Downtown Airspace and Development Capacity Study –
Study regarding increased building height envelope in San Jose downtown and Diridon

---

Below is a statement from the Sunnyvale-Cupertino Airplane Noise Group.

Request (File 18-1944): Any action that would result in taller building heights in downtown San Jose or Diridon area should be delayed until the FAA and an experienced aviation consultant have completed a supplemental report confirming no potential current or future impact to the San Jose Airport south flow trigger, and no impact to SJC arrivals. (Current trigger > 5 knots south/east wind speed).

Our group understands that San Jose recently commissioned a study to determine the feasibility of taller building heights in the downtown San Jose and Diridon areas. This study focused on departing flights only, and did not consider any impact on arrivals. As you know, normal flow arrivals fly directly over downtown San Jose, and these arrivals are partly impacted by the current building heights. Decisions regarding taller building heights will have repercussions for decades to come, and these important decisions should not be based on a clearly incomplete study that is missing a major piece of analysis. Without a proper study regarding the arrival flight paths, it is unclear whether the frequency of SJC normal flow or south flow operations (reverse flow) will be impacted in any way by the proposed taller building envelope. Any unintended impact could have major consequences to the airport, the city of San Jose, and surrounding communities.

San Jose Airport typically operates under normal flow operations, where arrivals are flying over downtown San Jose. In contrast, when the wind direction changes to South or East and the wind speed is greater than 5 knots, the direction of operation changes to south flow operations (often called reverse flow). An increase in south flow operations would not only impact the quality of life for your neighbors in Sunnyvale, Cupertino, Mountain View, and Palo Alto - An unintentional increase in south flow operations would have a detrimental impact to airline profitability, airport operations, and FAA safety. Yet an analysis of SJC arrivals was never conducted regarding increased building heights. Normal flow is the preferred path for safety reasons, airline financial benefits, and efficiency. For this reason, a study regarding SJC arrivals and any impact on south flow operations is warranted, and is in the airport's and San Jose's best interest.

Based on an FAA meeting in March 2017 at Congressman Ro Khanna's office, we already know that the south flow trigger is impacted partly due to the existing tall buildings in downtown San Jose. An excerpt from that meeting "*San Jose's runway is too short. Part of the reason that it is too short is the buildings in downtown which make a piece of that end of the runway unusable (planes can't drop down until they are past those buildings).*" It is unclear whether the proposed taller building envelope will have a downward pressure on the current south flow trigger, causing an increase in south flow operations over Sunnyvale and Cupertino – Potentially exacerbating an already contentious airplane noise situation.

We request that any San Jose vote that would ultimately result in taller buildings in downtown and/or the Diridon area be temporarily postponed until a supplemental aviation study is commissioned by San Jose, and the FAA is consulted to confirm any potential impact to the SJC south flow trigger. It is possible that the proposed building height changes will have no impact on the trigger. However, this assumption should be confirmed in writing by the FAA and an aviation expert prior to any approval.

To summarize, any San Jose approvals that would result in taller building heights should be delayed until the FAA and an experienced aviation consultant have completed a supplemental report confirming no impact to arrivals and the current south flow trigger (Current trigger > 5 knots south/east wind speed). The current aviation study is incomplete, and further analysis of the arrival flight path over downtown San Jose needs to be completed in order to make a fully informed, proper decision regarding building heights.

Thank you for your help regarding this matter.

Sincerely,

Tony Guan

Jennifer Tasseff

And members of the Sunnyvale-Cupertino Airplane Noise Group
Over 500 members strong

Below is supplemental information and diagrams that were compiled by the Sunnyvale-Cupertino Airplane Noise Group, and which may be helpful in understanding the issue. [Continued]

Supplemental Materials regarding taller building heights in San Jose Downtown and Diridon Area (Document prepared by the Sunnyvale-Cupertino Airplane Noise Group)

Background Information:

Due to FAA flight path changes, tens of thousands of residents in Sunnyvale, Cupertino, and Mountain View are now detrimentally impacted by loud airplane noise during south flow operations. Complaint numbers at San Jose Airport have skyrocketed due to increased airplane noise during south flow operations over these cities. Could taller San Jose buildings indirectly increase the frequency of south flow operations, by forcing the FAA to reduce the south flow wind speed trigger from 5 knots to a lower wind speed threshold? The answer is uncertain, and requires further study.

Excerpts from the March 22, 2017 FAA meeting conducted at Ro Khanna's office:

Original Question submitted during meeting Mar 22, 2017:

> "*As many citizens have noted, San Francisco Airport has a waiver from the 5-knot wind standard, allowing that airport to direct aircraft to land with up to a 10-knot tailwind. What would it take to get San Jose Airport that kind of waiver? If south flow were used only at wind speeds above 10 knots, it would be used much less often and the noise over these neighborhoods would drop.*
>
> *Answer: FAA Flight Standards Program Manager Chris Harris explained that this approach cannot be used at San Jose Airport for two reasons:*
>
> *1. the usable runway for landing is too short for planes to land safely with that strong of a tailwind (SFO's runways are substantially longer), and*
>
> *2. San Jose Airport is used by many general aviation aircraft (small propeller planes) which could not land safely at those wind speeds under any conditions*."

Additional clarification regarding the tall building heights in downtown San Jose, and how these tall buildings currently impact the ability to raise the wind speed trigger for south flow from 5 knots to 10 knots. This information has also been confirmed through supplemental conversations with FAA personnel.

> Response from Director Moylan based on additional info:
>
> "*At the March 2017 meeting that I organized, FAA said that there were two reasons why San Jose Airport would not be granted a waiver of the 5-knot standard for landing with a tailwind. The first is the length of the runway, because it takes more runway to land with the wind at your back. San Jose's runway is too short. Part of the reason that it is too short is the buildings in downtown which make a piece of that end of the runway unusable (planes can't drop down until they are past those buildings). But that was not the whole cause of the runway being too short. It was too short anyway. The other reason is that small planes aren't safe to land in a tailwind no matter how much runway you have. San Francisco can get a waiver because it has only large jets and a long runway. We have small planes and a short runway*."

Commissioned study by San Jose included no analysis regarding possible impact to the south flow trigger:

The studies commissioned by San Jose considered the financial implications of taller buildings for the city at large, the SJ airport, and the airlines. The study also considered various FAA rules and regulations, including OEI (one engine inoperable), FAR Part 77, etc.

In contrast, there was no clear analysis to determine whether taller buildings would impact SJC arrivals and the south flow trigger in any way. The commissioned report specified financial and FAA impacts based directly on DEPARTURE flight paths in relation to building heights. No consideration was given to arrival flight paths. The south flow trigger is partly impacted by the current building heights in downtown San Jose (based on an FAA meeting March 2017).

A supplemental study or consultation with the FAA may be necessary to confirm no impact to the south flow trigger from the proposed taller building envelope. This analysis may require analysis of the arrival flight path during normal-flow operations.

Recommendations under Scenario 4 TERPS include minimal increases in height – Could minimal height increases have impact on the south flow trigger?

Without an analysis by the FAA, the answer is unclear.

Yes, in some areas the recommendations under Scenario 4 call for minimal height adjustments, especially over downtown San Jose. Proposed height adjustments over downtown San Jose under Scenario 4 TERPS are between 5 and 35 feet; Increased heights in the Diridon area are significantly larger deltas (70 – 150 feet).

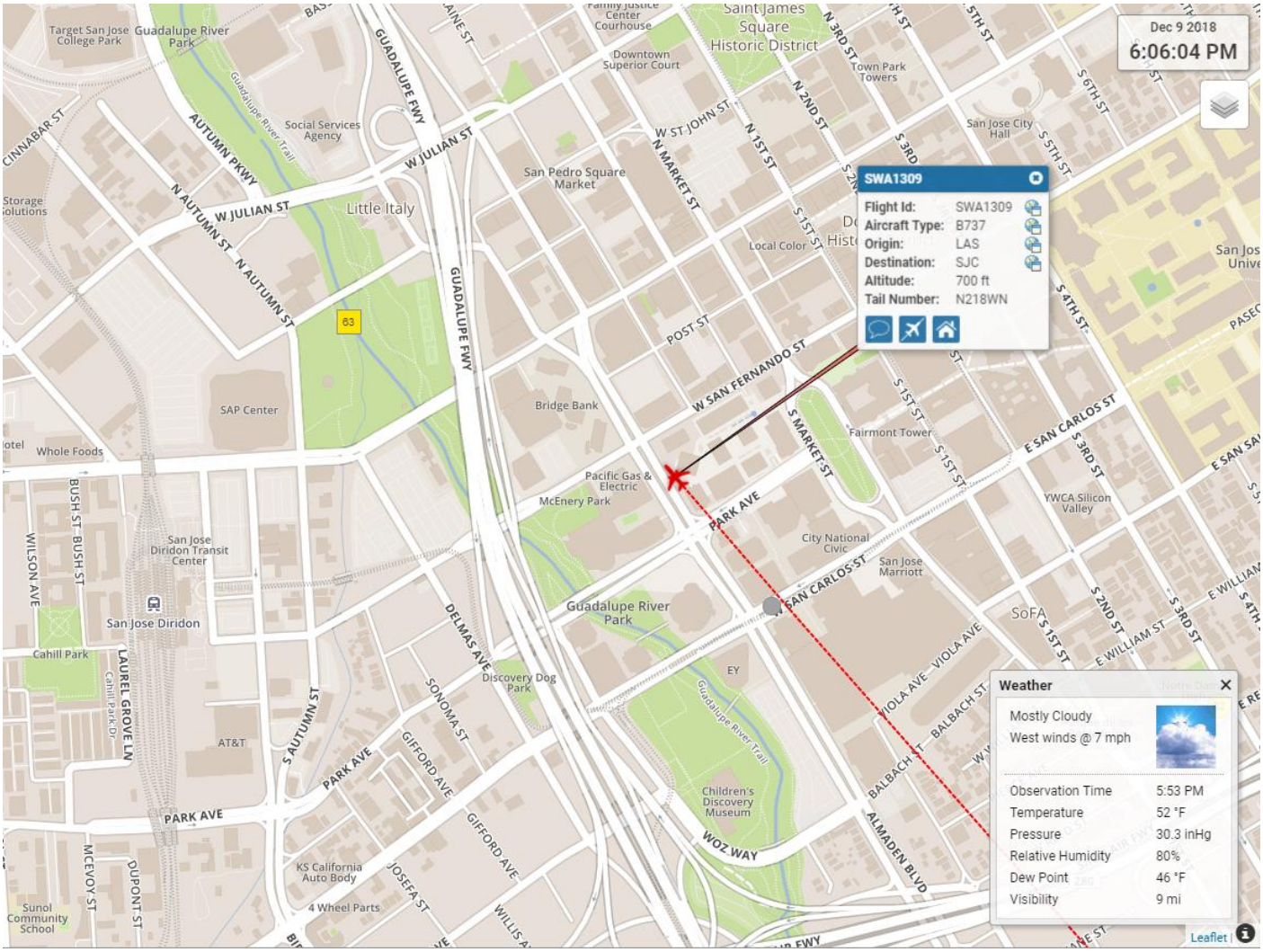
Based on San Jose Web tracker & FAA flight plates, the normal-flow arriving flights use a "straight in" flight pattern for each of the two runways 30L and 30R (during North flow). In many cases (based on San Jose web tracker altitude information), these arriving flights appear to be flying less than 500 feet above the high points of the San Jose downtown buildings.

For example, the Adobe tower at the corner of Park Ave and San Fernando Ave has a recorded height of 260 feet (per Wikipedia). Arriving flights routinely fly over this corner (per web tracker) at approx. 700-foot altitude. Although Web tracker may have some slight discrepancies in the altitudes, these normal-flow arrivals do appear to be flying very close to the tops of the current buildings. (See sample flight pictures next 2 pages.)

This might imply that even small height increases in buildings directly under the two arrival normal-flow flight paths could indirectly force the FAA to lower the south flow trigger criteria, especially if these changes result in the need for a steeper descent slope or closer proximity to building roof tops & other associated obstacles. A 35-foot change might be considered significant if arriving flights are indeed flying closer than 500 feet from the tops of the downtown buildings, which is what SJC flight tracker altitudes seem to indicate.

Only analysis by the FAA or an experienced aviation consultant can confirm whether the proposed small adjustments to height will impact the south flow trigger.

Sample flight flying right next to the Adobe tower at an altitude of 700 feet. The Adobe tower is 260 feet, so height delta is approx. 440 feet between the plane and the top of the building. (Approach to runway 30R)



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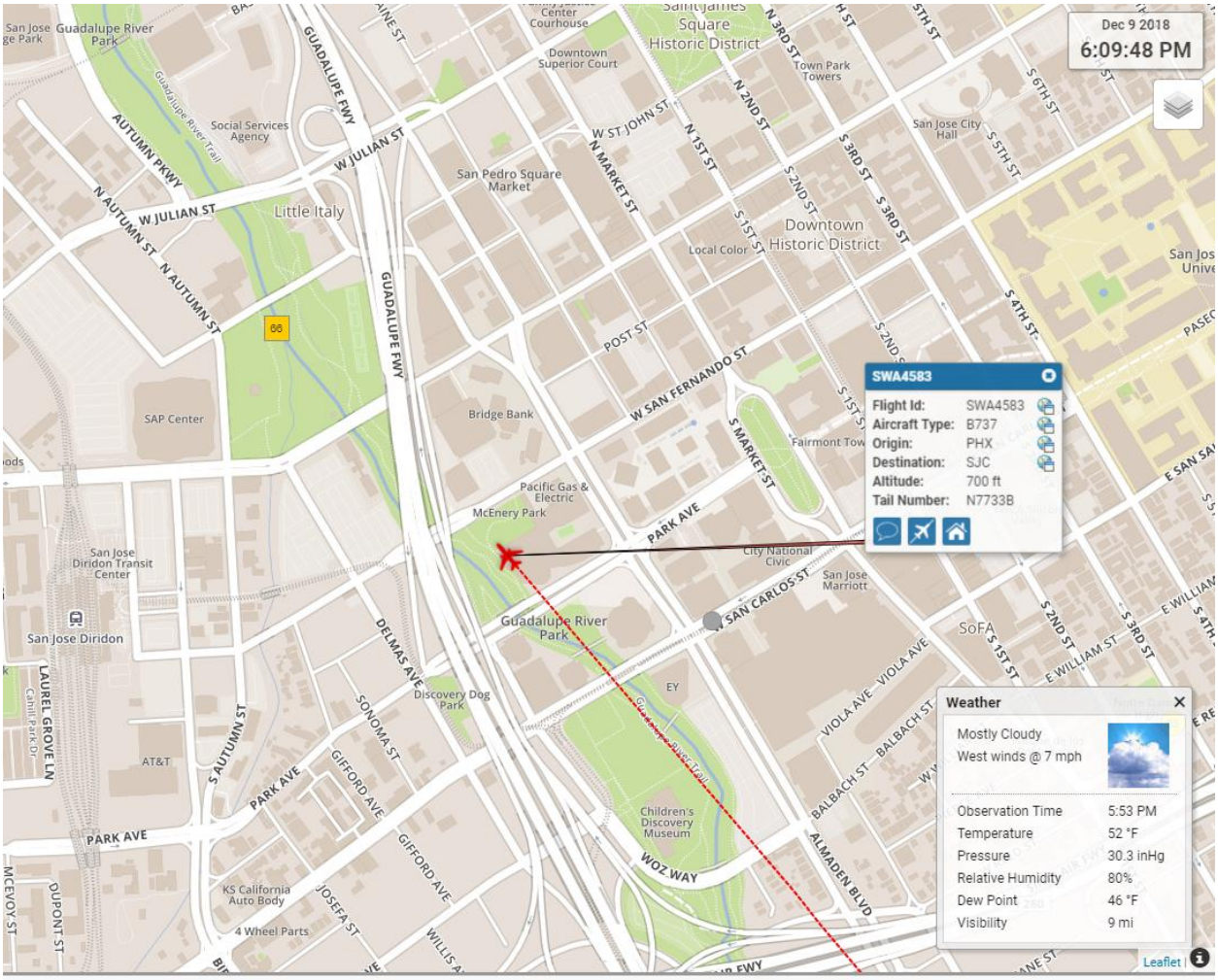
The two approach flight paths straddle the Adobe towers on each side (Approach to runway 30L). Flight at 700 foot altitude over Adobe Tower, which is 260 feet building height. Delta 440 feet (700 – 260).



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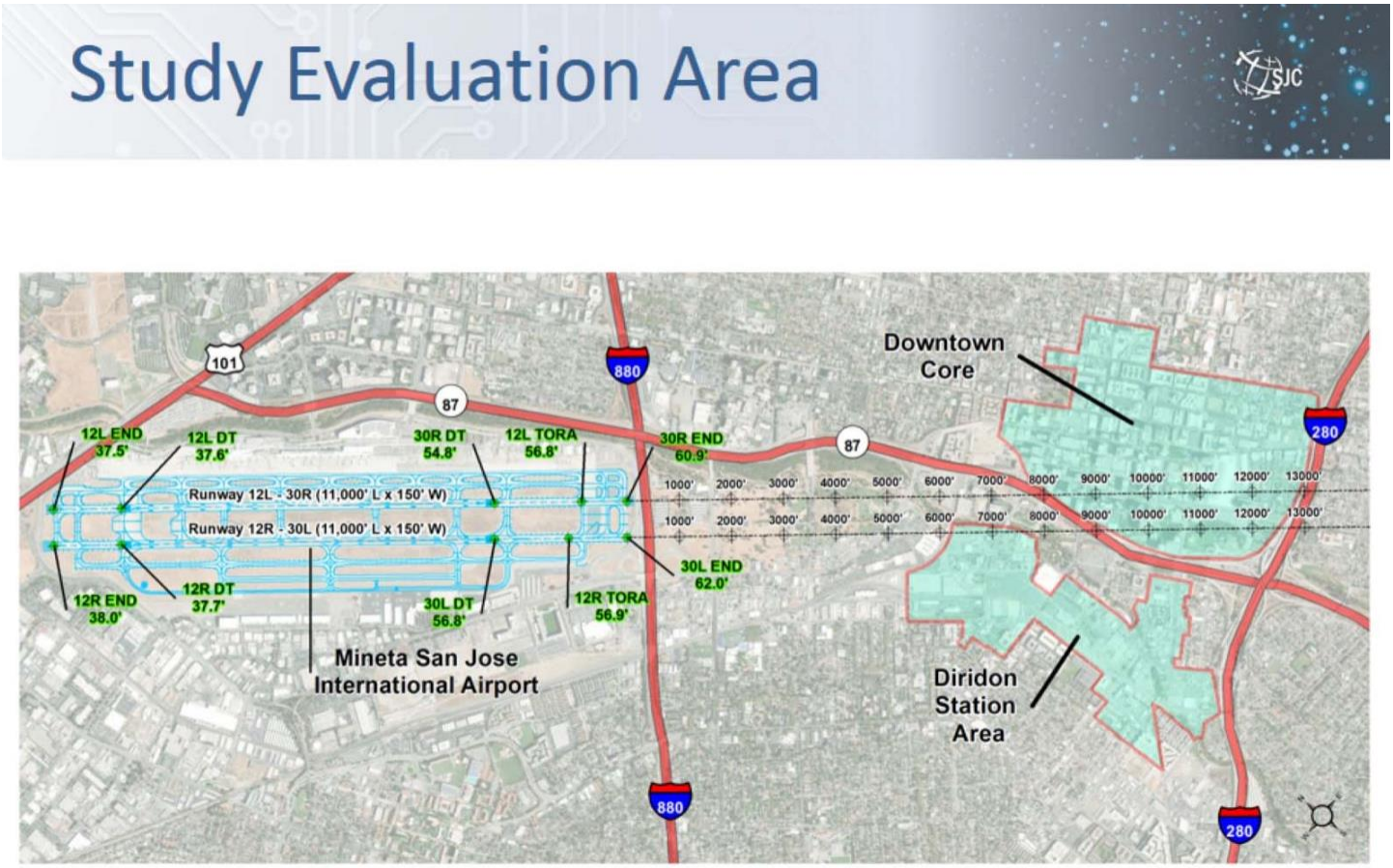
Proposed increases in building heights include taller buildings directly below the two normal-flow arrival flight paths (30L and 30R).



The two normal-flow arrival flight paths correspond to the two black lines extending beyond each of the two SJC runways, and showing the distance in feet from the end of each runway (30R and 30L).

The arrival flight paths extend directly into the downtown core, and into a small section of the Diridon evaluation area.

CONTINUED

SJC Airport, the airlines, and FAA benefit from limited south flow operations at SJC:

An unintentional increase in south flow operations would not be favorable for the FAA, the airlines, nor San Jose Airport. It appears that normal flow is the preferred path for safety reasons, airline financial benefits, and efficiency.

During the San Jose Airport Ad Hoc Committee meetings on south flow arrivals, FAA staff presented that a south flow arrival approach is a more complicated procedure than north flow given its proximity to other flight procedures for SFO traffic, and as such, it is a less preferred procedure when compared with north flow. The preferred approach is north flow, where planes approach SJC from the south flying north, as there is less air traffic from other airports.

Additionally, the south flow flight path is a longer flight path than the normal flow path. For this reason, it is likely not the preferred flight path for the airlines. The south flow arrival approach is longer, often resulting in as much as 30- 50 miles additional flying distance. Longer flight distances increase airline fuel costs, cut into airline profits, and can impact arrival times. Increases in airline fuel costs and/or impacts to arrival times associated with an increase in south flow operations, could indirectly factor into an airport's ability to attract or retain desired air service, therefore potentially impacting the profitability of the airport.

Finally, an unintended increase in south flow operations would further impact cities like Sunnyvale, Cupertino, Mountain View, and Palo Alto and would exacerbate an already contentious airplane noise problem.

Future Airline Technology and its possible impact to south flow operations:

For fuel efficiency purposes, newer airlines are generally being engineered with shallower descent profiles.

General questions that we may wish to pose to the FAA:

- Does the FAA anticipate that future aircraft designs and potential shallower descents would place downward pressure on the south flow trigger, thereby potentially increasing the frequency of south flow flights?
- For the following question assume that the FAA has confirmed no current impact to the south flow trigger based on the proposed taller building envelope in San Jose:
    - Assuming this is the case, then could the proposed taller San Jose buildings in conjunction with a trend toward airline shallower descents cause potential FUTURE impact on the south flow trigger? In other words, is there a synergistic effect between the proposed taller buildings and shallower descent rates that could require a lowering of the south flow trigger wind speed in the future?

Could the proposed building height increases impact any possible improvement currently being considered for the south flow trigger?

Perhaps.

We understand that the FAA has been working on its' response to the San Jose Airport Adhoc Committee recommendations and questions. It is expected that an FAA response will be available soon after the government shut down ends.

One of the requests in the adhoc report includes a question regarding the south flow trigger, and whether it is feasible for the FAA to slightly increase the south flow wind speed threshold (i.e. from the current 5 knot threshold to a wind speed threshold of 6 or 7 knots). An FAA response is pending.

It is likely that an increase in the proposed building height envelope in certain areas of downtown San Jose and the Diridon area directly below the normal-flow arrival flight path might impact any ability to raise the south flow wind speed trigger in the future. Already the FAA states that the trigger is partially impacted by current tall buildings in downtown SJ.

For this reason, we would recommend no adjustments to the previous building height envelope for areas directly below the normal-flow arrival flight path. In other words, current city codes regarding maximum building heights directly below the "straight in" normal flow arrival flight path would remain unchanged; In contrast, newly proposed height increases for areas a specified horizontal distance AWAY from the normal flow arrival flight path would be fine to implement – assuming the FAA has no objection and no impact to the south flow trigger is identified for these new locations.

Weblink meeting packets for San Jose discussions regarding proposed increased SJ building heights- SJ Airport Commission, CED Committee, and SJ City Council:

San Jose City Council Feb 26, 2019 Meeting link for Agenda Item 6.2 - (File #18-1944) Actions Related to the Downtown Airspace and Development Capacity Study
https://sanjose.legistar.com/LegislationDetail.aspx?ID=3859245&GUID=62B21903-3F67-4DDF-A072-C8C46B9DF1CB&Options=&Search=

Meeting Link to Community and Economic Development Committee (meeting Jan 28, 2019):
https://sanjose.legistar.com/LegislationDetail.aspx?ID=3829565&GUID=7C96ACD3-C53B-4A18-BE6E-61826B93289D&Options=&Search=

Meeting Link for Jan 14, 2019 San Jose Airport Commission meeting:
https://www.flysanjose.com/node/5086

Meeting Link for Jan 24, 2019 San Jose Commission meeting:
https://www.flysanjose.com/node/5136

OEI Slide presentation on Jan 14, 2019:
https://www.flysanjose.com/sites/default/files/commission/1%20%2014%2019%20Airport%20Commission%20OEI%20Presentation.pdf

END OF SUPPLEMENTAL DOCUMENT