



Downtown San José Crane Policy Study

FINAL – December 2021

PREPARED FOR

Norman Y. Mineta San José
International Airport

PRESENTED BY

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Commonly Used Acronyms

For reference purposes, the following list of acronyms will be referenced throughout this report:

BTS - Bureau of Transportation Statistics

COO - Certificate of Occupancy

DADCS - Downtown Airspace Development Capacity Study

DB - Denied Boarding

DBC - Denied Boarding Compensation

DF - Developer Fee

DOT - U.S. Department of Transportation

FAA - Federal Aviation Administration

FAR - Federal Aviation Regulation

GAO - U.S. Government Accountability Office

ILS - Instrument Landing System

L&B - Landrum & Brown, Inc.

LF - Load Factor

LNAV/VNAV - Lateral Navigation/Vertical Navigation

LPV - Localizer Performance with Vertical Guidance

MSL - Mean Sea Level

NM - Nautical Mile

OEI - One-Engine Inoperative

PAX - Passengers

PBCE – City of San José Planning, Building and Code Enforcement Department

RNP - Required Navigation Performance

SJC - Mineta San José International Airport

TCO - Temporary Certificate of Occupancy

TERPS - Terminal Instrument Procedures

1 Executive Summary

1.1 Background

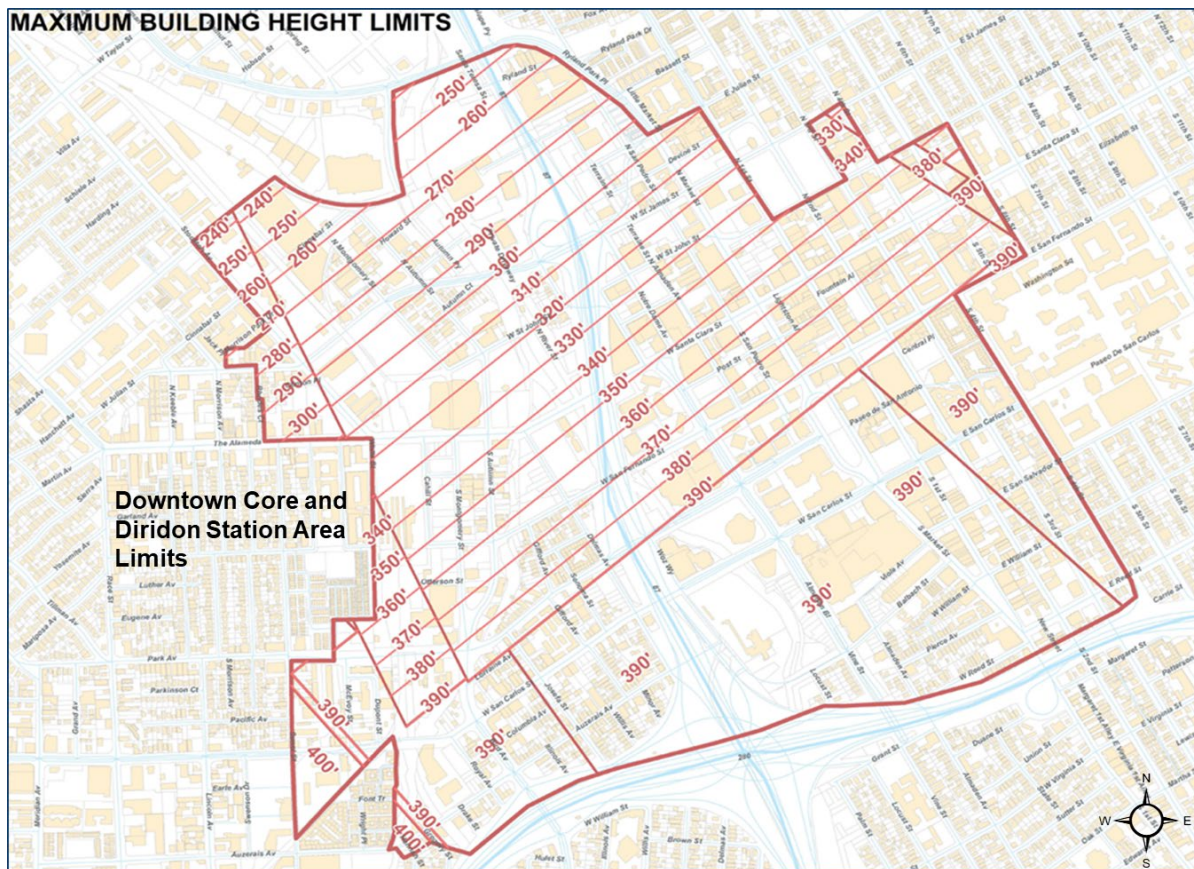
On February 26, 2019, the City of San José City Council accepted the Downtown Airspace Development Capacity Study (DADCS), which presented the maximum building height limits in the Downtown Core and Diridon Station Area based on Federal Aviation Administration (FAA) obstruction criteria for Norman Y. Mineta San José International Airport (SJC or Airport).

The DADCS consisted of an evaluation of the following elements:

- Existing conditions assessment for SJC aircraft operations
- Existing real estate and land use environment in the Downtown Core and Diridon Station Area
- Evaluation and development of various airspace surface protection scenarios for the established of maximum building height limits
- Aircraft performance and range capability assessment of existing and future destinations served from SJC
- Evaluation of aviation and real estate impacts associated with each of the airspace protection scenarios

The results yielded from the technical analyses conducted in the DADCS led to the development of new maximum building height limit airspace protection surfaces. These airspace surfaces are comprised of instrument and non-instrument approach and departure procedures for SJC as developed and published by the FAA. The FAA procedures are developed using criteria listed in the U.S. Department of Transportation Order 8260.3 “United States Standard for Terminal Instrument Procedures” or “TERPS” for short. **Figure 1-1** depicts the maximum building height limits established as part of the DADCS.

Figure 1-1 Existing Building Height Limits MSL (feet)



Source: Landrum & Brown

Stakeholder coordination meetings were held throughout the DADCS including stakeholders from the City of San José (various business units), the development community for San José, the airline operators at SJC and the FAA. The Airport staff along with staff from other business units presented findings and recommendations from the study to the City Council at scheduled sessions throughout the duration of the DADCS. On March 12, 2019, the City Council formally approved and adopted the recommended maximum building height limits over the Downtown Core and Diridon Station Areas.

Downtown Height Limits:

<https://flysanjose.com/downtown-height-limits>

DADCS Final Report

https://flysanjose.com/sites/default/files/SJC_DADCS_Final_Report_August_2019.pdf

Downtown Height Limits (Contours Only)

<https://flysanjose.com/sites/default/files/rsheelen/Downtown%20San%20Jose%20Height%20Limits%20Jan%202020%20Map.pdf>

Downtown Height Limits (Aerial Map)

<https://flysanjose.com/sites/default/files/rsheelen/Downtown%20San%20Jose%20Height%20Limits%20Jan%202020.pdf>

1.2 Construction Crane Height Guidance Analysis

As part of the adoption of the maximum building height limits in the DADCS, the City Council directed the Airport staff to develop a construction crane policy to minimize impacts to airline service during construction. Temporary crane heights (or other means and methods of construction) could reasonably exceed the heights of the maximum building height limits, therefore, resulting in additional impacts to aviation operations at SJC. Additionally, the duration of construction and the season in which the construction crane would be operating may have significant impacts on aviation operations at SJC. Therefore, the construction crane height guidance analysis was performed to evaluate the technical and operational impacts on aviation operations and to formulate solutions to mitigate impacts to aviation at SJC while also striking a balance to meet the needs of the local development community. As part of the construction crane height guidance analysis, several technical assessments were conducted including:

- Airline and FAA coordination regarding critical TERPS instrument approach and departure procedures utilized by airlines at SJC
- Development of airspace surface protection scenarios for temporary construction cranes based upon critical TERPS instrument approach and departure procedures
- Stakeholder outreach and engagement
- Aircraft performance assessments for various current aircraft types, aircraft engine variants, destinations including both domestic and international under various crane height scenarios to evaluate airline weight penalty impacts

At the conclusion of the technical analysis, five aircraft protection scenarios were evaluated however only three scenarios were ultimately considered. Scenarios 1 and 2 were eliminated as they did not provide enough additional height above the existing building height limit protection surfaces to enable temporary construction cranes to operate. Scenarios 3, 3A and 3B were evaluated for further consideration. Scenario 3B, which protects for critical airline instrument approach procedures was the selected scenario for crane height guidance. Scenario 3B provides construction cranes with the ability to be erected at additional heights above the maximum building height limits ranging from 40 – 80 feet in the Downtown Area and 60 – 80 feet in the Diridon Station Area. However, additional impacts to air service for various airlines and destinations at SJC are likely to be incurred as a result of the additional heights for temporary construction cranes. The development community will be required to follow the established Crane Height Guidance established the City of San José and provide detailed information about their proposed projects construction cranes. The FAA will enforce the protection of critical airlines approach and departure procedures and evaluate all proposed crane heights to assess the impacts to aviation.

The FAA will provide developers with a determination of presumed maximum allowable heights for temporary cranes and other conditions that are required as part of the project proposal.

1.3 Construction Crane Fee Program

Based on the crane heights identified in the construction crane height guidance analysis and the associated potential for weight impacts to the airlines, in March 2021, Mayor and City Council directed Airport staff to explore a construction crane fee program to reduce landing fees for impacted airlines and ensure the construction cranes were removed timely. The analysis determined that certain flights have the potential for weight impacts on departure, resulting in the denied boarding (DB) of passengers (PAX). In order to offset the costs to the airlines for these denied passengers, an study was conducted to determine the frequency of these impacts, the quantification of potential denied passengers, and the estimated financial impact cost to the airlines. In order to offset the financial impacts, a developer fee (DF) was established in order to compensate for the airlines' loss. Those DFs are used to credit airline landing fees for the affected airlines through the landing fee credit program.

Impacted flights and subsequently the financial impacts are driven by times when there is a weatherly Southeast Flow causing flights to use Runway 12L and 12R (i.e. departing to the Southeast over downtown San José). It is these flights that would potentially need to limit passenger loads and possibly incur DBs. Determining these impacted flights is driven by some key factors: aircraft type, markets served, the season (winter vs summer) and time-of-day. Impacted flights do not necessarily result in DBs. This is because during the winter months, load factors (LFs) are relatively lower. There is a direct correlation between LFs and the number of DBs i.e.; the higher the LF, the more likely a flight will incur DBs.

Assigning a cost to incurring a DB depends on the type of DB: voluntary or involuntary. A voluntary DB occurs when a passenger is offered a seat on their current flight but has accepted compensation in exchange for a seat on a later flight or another airline. To qualify as voluntary, the passenger must be offered a seat, otherwise, they are categorized as involuntary regardless of their flight re-accommodation and any compensation they have received. For an involuntary DB, the U.S. Department of Transportation (DOT) has rules on the minimum amount of compensation that must be given based on the length of the passenger's delay.

1.4 Crane Fee Deposit

The DB costs represent the full schedule of flights at SJC in 2019 (pre-Covid-19). In assessing how much of these costs are needed to provide airline landing fee credits, four scenarios were analyzed to best determine an estimated crane fee deposit.

- Full schedule: all domestic flights and international flights
- Full schedule without Beijing: all domestic flights and international flights without PEK
- No international plus London: all domestic flights and no international flights except for London
- No international: all domestic flights and no international flights

The full schedule scenario included all flights and schedules. Given COVID and the uncertainty pertaining to international flights returning, additional scenarios were considered, broken out by the likelihood of certain international services returns. Beijing (PEK) flights were separated out under the second scenario, as PEK service on Hainan Airlines is considered the least like service to return, particularly in the near-term. In the third scenario, all international flights were eliminated with the exception of London service on British Airways. This more conservative scenario considers the continued delay in the return of international service, with the exception of SJC's longest running and most popular international destination, London. Finally, the fourth scenario only analyzes domestic service. Again, this ties to the uncertainty pertaining to international routes returning to SJC.

Collections for the crane fee deposit are based on utilizing 75 percent of the DB costs from this scenario, plus a 15 percent City administrative fee. While SJC reserves the right to adjust the air service mix on an annual basis to account for changes in flights to/from SJC in the future, it was determined that the "no international plus London" was the most reasonable assumption for the start of the fee program.

The crane fee deposit occurs at the time of building permit issuance. At the time of permit issuance, up to 50 percent of the total per project site fees covering the duration the construction cranes would exceed the building height limits would be due. Initially, the deposit percentage will be set at 40 percent. For projects where the construction cranes will exceed the height limits for six months or less, a fee cap will be implemented.

Depending on a determination of which flights will be impacted and based on long haul destinations serving SJC, the total annual amount will be adjusted and thus the rates will vary accordingly.

Note: A grace period (i.e. no fees for the first 6 months of crane operation above the Downtown Building Height Limits) for the program will apply for projects that already had a building permit or application in for a building permit as of September 29, 2021, provided that construction is started within 6 months of building permit issuance.

Additionally, a grace period will apply to projects that obtain a building permit and start construction (not including foundation, grading, or drainage) by September 30th, 2022. However, for any projects falling under the grace period, if these project's construction cranes operate above the Downtown Building Height Limits past the 6 month timeframe, the project site will begin paying the crane fee immediately in the 7th.

In order to credit up to 75 percent of the financial impacts to the airlines for its DB costs, SJC will credit the landing fees paid by those affected airlines. To receive this credit, each airline must submit details of their actual DB for the period requested. SJC will vet the Airline requests to ensure cranes were operating above the Downtown Building Height Limits at time of incident, the flight occurred at the time and date stated, and that the Airport was operating in South Flow at the time of the incident. Airlines' total landing fees annually to the Airport for routes that could be impacted is estimated to be \$3.85MM, while total DB financial impact is \$2.79MM.

While SJC will make all efforts to provide a credit to the landing fee for each affected airline up to the 75 percent threshold, airlines will be credited based on successful collection of developer crane fees. Regardless, it is not the intention of SJC to increase or modify the crane fee deposit accordingly.

1.5 Conclusion

The goal of the construction crane fee program is to collaborate with the development community, who operate construction cranes in the construction crane guidance area above the downtown building height limits, and the airlines serving SJC, who have potential to experience DB costs due to aircraft weight restrictions caused by these cranes when SJC is in the Southeast Flow runway configuration. This collaboration has resulted in a crane fee, established by City Council and administered by SJC, that will offset a portion of the airlines' financial impact through a credit to the airline landing fees. This fee applies to each applicable project site and is based on the best understanding of the estimated financial impacts that are occurring based on information received from the project teams, provides for reconciliation and accountability to ensure that each project is charged, and ensures that each airline receives their qualified landing fee credits under the program.

2 Construction Crane Height Guidance Analysis

As part of the adoption of the maximum building height limits in DADCS, the City Council provided a directive to the SJC Airport staff to develop a construction crane policy to minimize the impacts to airline service during construction within the Downtown Core and Diridon Station Area “Construction Crane Guidance Area.” Temporary construction cranes require heights that are in excess of the established maximum building height limits, thereby resulting in additional impacts to the aviation community at SJC. The aviation community at SJC must factor the height of cranes and meteorological conditions into their flight planning as well as aircraft performance specifications to assess potential impacts to air service during construction.

The FAA protects airspace around airports through the application of Federal Aviation Regulations (FAR) Part 77 and TERPS. These regulations define various airspace “surfaces” or slopes that radiate out from runways at an airport and mandate FAA review of any proposed temporary or permanent structure, including construction equipment (e.g., cranes). Flight procedures protected by FAR Part 77 and TERPS include basic safe landing and departing procedures that airlines utilize daily, regardless of the weather conditions. The loss of these procedures could result in airlines diverting aircraft to alternate airports, resulting in inconvenience for passengers, schedule impacts to the airlines, and lost revenue for the Airlines and Airport.

Identifying and protecting for critical airline procedures maximizes potential construction crane heights, but also allows airlines access to critical procedures, which are necessary during inclement weather conditions. In the extreme cases of equipment failure on an aircraft or FAA navigational aid failure at the Airport, aircraft must still be able to land at the airport.

In San José, as in most local land use jurisdictions, proposed temporary structures associated with high-rise building construction can exceed these airspace surfaces and are subject to FAA airspace safety review. A “determination of no hazard” from the FAA is required prior to, or as a condition of, City development permit approval.

Additionally, while the downtown City of San José building height limits are based on TERPS surfaces, airlines are still required to comply with One-Engine Inoperative (OEI) emergency procedures per FAA Part 25. Per FAA regulations, airlines must develop OEI procedures in the case of the loss of one engine during any point in a departure. Every airline aircraft departure must be able to avoid buildings, cranes, and other objects either vertically or horizontally along the flight path by a defined safety margin accounting for the loss of one engine. OEI procedures can be impacted more by maximum building heights around an airport than the FAA restrictions per FAR Part 77 and TERPS. The closer an object is to an airport the greater the potential impact is on airport operations. While the FAA requires airlines to develop their own OEI procedures from each runway, the FAA does not include OEI airspace surface protection in FAA obstruction evaluations. The FAA has determined that airlines can mitigate OEI airspace obstructions (e.g., buildings, cranes, towers, trees, etc.) 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 impacts the economic viability of airline service. Even small weight penalties can affect the feasibility of air service to a destination, most notably transcontinental and transoceanic destinations. These destinations require aircraft to carry larger fuel loads to reach the destination, which leads to larger passenger impacts when a weight reduction is required. Temporary or permanent obstructions within the surrounding airspace are a factor in the ability of SJC to attract or retain desired air service. Additionally, City staff gave close attention to the effect new local employees and additional downtown development can have on increasing the demand for air service.

In June 2020, L&B, a national aviation planning/engineering consultant with extensive experience working for the City on airspace and other airport technical issues including the DADCS, was contracted to perform the technical work on the construction crane height guidance analysis, which analyzed the potential impacts of temporary structures (e.g., construction cranes) on FAA and airline procedures.

As part of the technical analysis for the assessment of potential crane impacts on aviation activities at SJC, various analyses were conducted including:

- Airline and FAA coordination regarding critical TERPS instrument approach and departure procedures utilized by airlines at SJC
- Development of airspace surface protection scenarios for temporary construction cranes based upon critical TERPS instrument approach and departure procedures
- Stakeholder outreach and engagement
- Aircraft performance assessment for current various aircraft types, aircraft engine variants, destinations including both domestic and international under various crane height scenarios

2.1 TERPS Instrument Approach and Departures Procedures

The FAA has the regulatory responsibility on airspace determinations, including instrument approach and departure procedures to ensure the safe operation of all aircraft utilizing SJC. Staff worked with the FAA and the airline partners to protect approach and departure procedures that were most commonly used to ensure safety can be maintained. As part of that process, L&B surveyed the primary SJC airlines and the FAA's Air Traffic Control Division to determine frequency and priority of airline instrument procedures operating over the Construction Crane Guidance Area: Runway 30L and 30R arrivals and Runway 12L and 12R departures. Seventeen existing approach and five departure procedures were identified for consideration in this assessment. Additionally, the TERPS instrument approach (Runways 30L and 30R) and departure (Runways 12L and 12R) procedure charts published by the FAA are included in **Appendix A**.

Airlines that provided survey responses included Southwest Airlines, Alaska Airlines, Delta Air Lines, Hawaiian Airlines, and UPS. The results of the inquiry were summarized and determined the published TERPS procedures for SJC that are most frequently utilized by airline operators are as follows:

TERPS Instrument Approach Procedures (Runways 30L and 30R):

- Instrument Landing System (ILS) – Runway 30L
- ILS - Localizer Only – Runway 30L
- ILS - Sidestep Approach – Runway 30R
- Lateral Navigation/Vertical Navigation (LNAV/VNAV) – Runways 30L and 30R
- Localizer Performance with Vertical Guidance (LPV) – Runways 30L and 30R
- Required Navigation Performance (RNP) 0.15 and 0.30 – Runway 30L
- RNP 0.11 and 0.30 – Runway 30R

TERPS Instrument Departure Procedures (Runways 12L and 12R):

- SUNOL ONE 330 Foot per Nautical Mile (NM) Climb Gradient
- ALMDN FOUR 500 Foot per NM Climb Gradient
- BMRNG FOUR 470 Foot per NM Climb Gradient
- TECKY THREE 500 Foot per NM Climb Gradient

2.2 Airspace Surface Protection Scenarios for Cranes or other means and methods

Based on the airline survey, five conceptual airspace protection scenarios were formulated and refined to test various alternative combinations of air service protection and FAA/TERPS instrument procedure protection, and their effect on maximum temporary construction equipment (e.g., crane) heights or other means and methods that exceed the building height limit in the Downtown Area. Scenarios 1 and 2 were developed; however, they were ruled out early in the evaluation process. Within the study area closest to SJC and extending southeast over a large portion of the Downtown Area, it was determined that additional heights of 0 feet to 15 feet above the maximum building height limits were achieved in Scenarios 1 and 2 and was deemed insufficient for construction crane operations. Therefore, these two scenarios were eliminated from further consideration.

The three conceptual airspace protection scenarios that were ultimately selected for detailed analysis included:

- Scenario 3: Protect primary airline instrument procedures
- Scenario 3A: Reduced airline instrument procedure protection
- Scenario 3B: Protect critical airline instrument procedures

Please note that the TERPS instrument departure procedure climb gradients of 330, 470 and 500 feet per NM are protected for in all three of the scenarios presented.

Scenario 3, as depicted in **Figure 2-1**, protects for the primary arrival and departure procedures identified by the airlines. It is assumed that the cloud ceiling and visibility requirements, referred to as “minimums”, could be temporarily adjusted or other modifications made to the other approach and departure procedures that the airlines did not identify as primary procedures without significantly impacting airport operations.

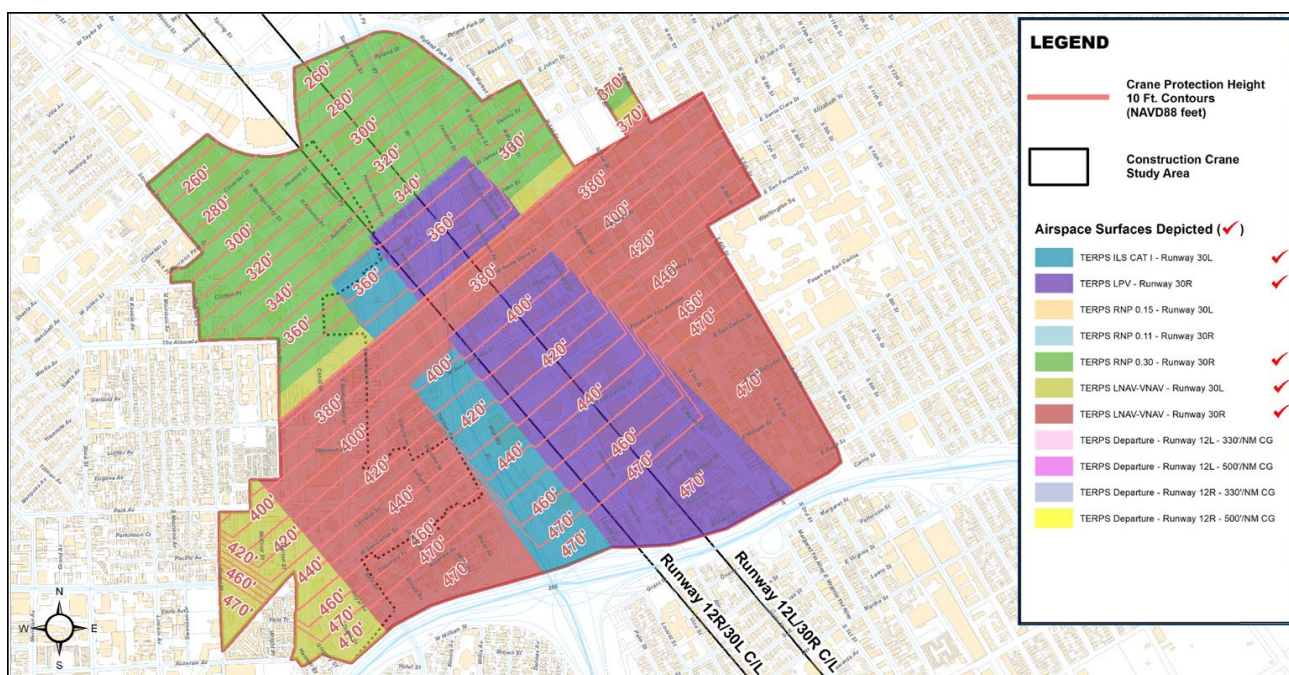
The climb gradient for the obstacle departure procedure would be required to temporarily increase from 261 to 330 feet per NM for all the scenarios. These changes would be temporary

based on the duration that the temporary construction crane would be above the maximum building height limit.

The following airspace protection surfaces were the lowest heights over the study area used to develop the airspace protection heights for temporary cranes for Scenario 3:

- TERPS ILS CAT I – Runway 30L
- TERPS LPV – Runway 30R
- TERPS RNP 0.30 – Runway 30R
- TERPS LNAV/VNAV – Runways 30L
- TERPS LNAV/VNAV – Runways 30R

Figure 2-1 Scenario 3 Airspace Surface Protection Height Limits (MSL feet)



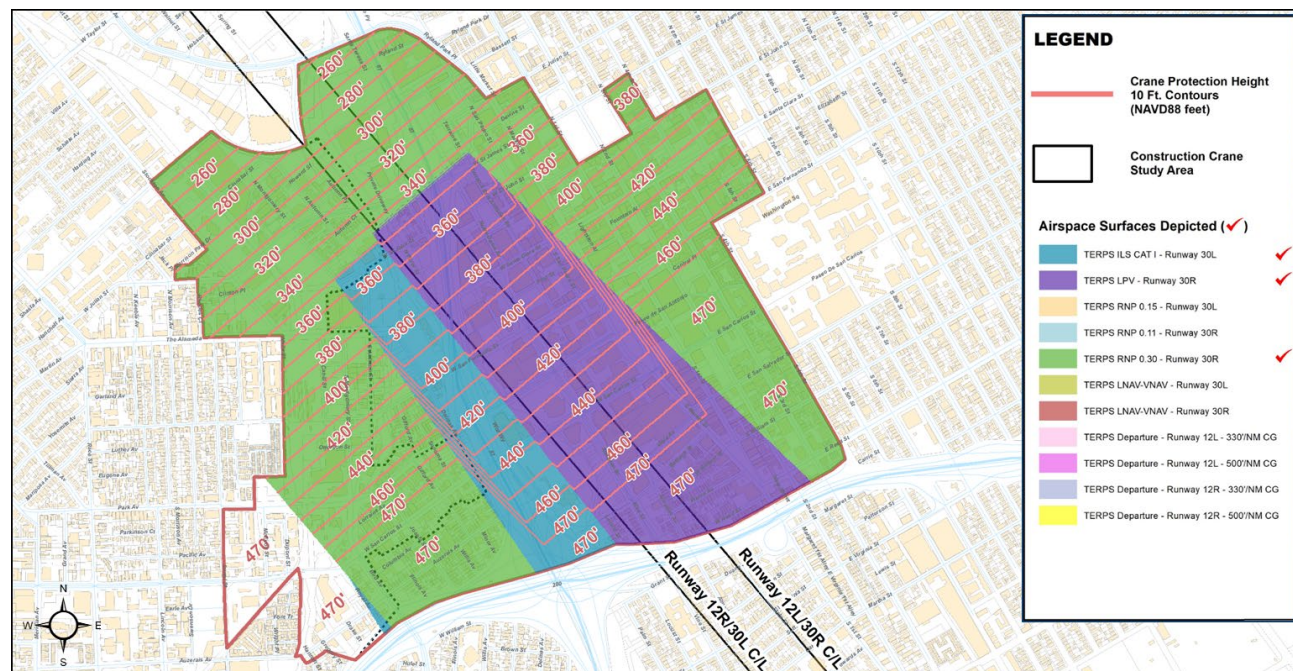
Source: Landrum & Brown

Scenario 3A, as depicted in **Figure 2-2**, protects for a reduced set of arrival and departure procedures identified by the airlines except for the LNAV/VNAV approaches to Runways 30L and 30R. The FAA would be required to modify the LNAV/VNAV approach procedures to permit aircraft to operate safely. These modifications would likely include raising the approach minimums (the lowest cloud ceiling and lateral visibility limits allowed for aircraft to use this approach) while the temporary construction cranes exceed to maximum building limit heights. In lower cloud/visibility conditions, approaches other than the LNAV/VNAV procedure would be required to be used.

- TERPS ILS CAT I – Runway 30L
- TERPS LPV – Runway 30R

- TERPS RNP 0.30 – Runway 30R

Figure 2-2 Scenario 3A Airspace Surface Protection Height Limits (MSL feet)

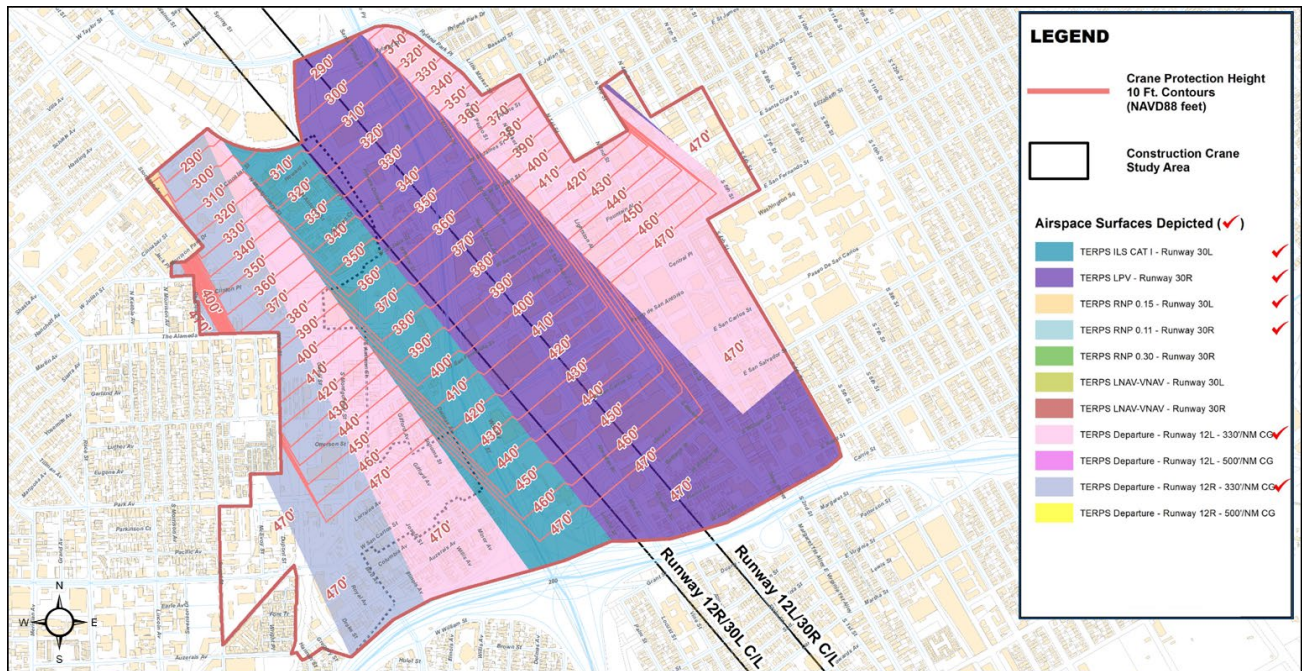


Source: Landrum & Brown

Scenario 3B, as depicted in **Figure 2-3**, protects for the critical arrival and departure procedures identified by the airlines. The FAA would be required to modify the LNAV/VNAV and RNP 0.30 approach procedures to permit aircraft to operate safely. These modifications would likely include raising the approach minimums for these procedures while the temporary construction cranes exceed to maximum building limit heights. In lower cloud/visibility conditions, approaches other than the LNAV/VNAV and RNP 0.30 procedure would be required to be used. The following airspace protection surfaces were the lowest heights over the study area used to develop the airspace protection heights for temporary cranes:

- TERPS LPV – Runway 30R
- TERPS RNP 0.15 – Runway 30L
- TERPS RNP 0.11 – Runway 30R
- TERPS Departure Surface (SUNOL ONE 330 foot per nautical mile (NM) Climb Gradient) – Runway 12L
- TERPS Departure Surface (SUNOL ONE 330 foot per nautical mile (NM) Climb Gradient) – Runway 12R

Figure 2-3 Scenario 3B Airspace Surface Protection Height Limits (MSL feet)



Source: Landrum & Brown

Full sized exhibits for the three airspace protection scenarios are included in Appendix A of this report. **Table 2-1** below summarizes the presumed heights for temporary crane heights that the FAA will allow above the existing downtown building height limits for each of the three airspace protection scenarios.

Airspace Protection Scenario	Airspace Surface Protection Scenarios for Cranes	Additional Crane Height (Downtown Area)	Additional Crane Height (Diridon Station Area)
Scenario 3	Protect primary airline instrument procedures	10 feet - 80 feet	10 feet - 80 feet
Scenario 3A	Reduced airline instrument procedure protection	10 feet - 80 feet*	10 feet - 80 feet*
Scenario 3B	Protect critical airline instrument procedures	40 feet - 80 feet	60 feet - 80 feet

Source: Landrum & Brown

* Depending on location in the Downtown and Diridon Station Areas, crane heights above some parcels are higher in Scenario 3A than in Scenario 3.

2.3 Stakeholder Outreach and Engagement

The construction crane height guidance analysis considered stakeholder input from the development community, crane operators, airlines, FAA, Downtown Association, and multiple City departments including representatives from Planning, Building and Code Enforcement Department (PBCE), Office of Economic Development, City Attorney's Office, and the Airport Department..

Stakeholder outreach for this study was accomplished over the span of six months through PBCE's Developers and Construction Roundtable, twelve meetings with the airlines, FAA, as well as meetings with developers, contractors, and crane operators that requested to meet individually. Over the course of the study, PBCE hosted three Developers and Construction Roundtables and SJC provided updates introducing the study and review technical crane material with the development community. SJC hosted two meetings on preferred scenario alternatives and impacts discussion. The meetings were well attended by the development community and served as opportunities to ask questions and provide feedback to the study findings.

The development community's largest concern focused on the maximum crane height permitted above buildings, as well as the schedule and cost implications associated with permitted crane heights. To address the concerns from the development community, Scenario 3B was identified to provide the most crane height flexibility to developers in the Downtown Core and Diridon Station Areas, while utilizing methods identified later in the memo to minimize airline impacts to maintain safety on approaches and departures.

The Airport Commission was briefed on the Crane Height Guidance Analysis on November 4, 2020 and February 8, 2021. The Commission was given the opportunity to review the scope, initial technical analysis, and provide feedback.

Appendix B contains all the presentations and memorandums which were prepared for the various stakeholder meetings and City Council sessions as part of the construction crane height guidance analysis.

2.4 Air Service Weight Penalty Analysis

For departing aircraft, the taller construction cranes must be factored into airline OEI takeoff calculations, and the heights may result in airlines incurring excessive weight penalties resulting in the off-loading of revenue paying passengers and/or belly cargo. Ultimately, taller obstacles erected for extended durations in close proximity to airport may result in air service impacts so significant that an airline may discontinue a route or service to the airport altogether as a result of the economic losses. In particular long-distance flights, such as transcontinental, Hawaii, Europe, or Asia Pacific require more fuel to reach their destinations. Due to the additional weight of fuel, some passengers may be removed in order to safely clear the construction cranes guidance area.

This task analyzed the air service weight penalties associated with temporary construction crane height increases in the study area for Scenarios 3, 3A, and 3B.

Technical analysis assessed the aircraft performance impact (weight penalties) under each scenario using combinations of aircraft types, destinations, and seasonal temperatures. The aircraft were selected based on aircraft that were or were planned to be operating from SJC to those markets in 2019 or, in the case of the B777-300ER, an aircraft used by carriers at other west coast airports for similar service. **Tables 2-2 through 2-5** illustrate the passenger and cargo penalties that specific aircraft serving selected existing non-stop markets are projected to incur under Scenarios 3, 3A, and 3B in the summer and winter months for a fully booked aircraft (100 percent LF). The data presented is from the aircraft performance assessment conducted by L&B and Flight Engineering. While L&B, with the assistance from Flight Engineering, modeled weight impacts, City staff also engaged airlines at SJC to request they conduct their own aircraft performance assessment using the same obstacle data and heights that L&B evaluated. Note that weight penalties occur only during Southeast Flow weather conditions (occur 13 percent of annually). Upon reviewing of the aircraft performance assessment results provided by the airlines, it was confirmed that while slightly different from airline to airline, the results were in-line with results produced by the L&B analysis, thereby providing another level of validation of the study results.

The airlines that participated in the aircraft performance assessment also wrote letters to SJC documenting their concerns about the potential impacts of temporary cranes on their operations. These letters are contained in **Appendix C** of this report.

Table 2-2 Transcontinental – New York Market – Assessment of Potential Weight Penalties for Runway 12L

New York - JFK		A320-200 (150 seats/2,390 lbs. cargo)				B737-800 (175 seats/6,100 lbs. cargo)			
Winter (63° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures	-	-	2,390	100%	-	-	1,070	18%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches	-	-	2,390	100%	-	-	1,070	18%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	4	3%	2,390	100%	-	-	1,960	32%
New York - JFK		A320-200 (150 seats/840 lbs. cargo)				B737-800 (175 seats/5,270 lbs. cargo)			
Summer (81.3° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	7	5%	840	-	-	-	2,130	40%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	7	5%	840	-	-	-	2,130	40%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	11	7%	840	-	-	-	3,010	57%

Source: Landrum & Brown and Flight Engineering

Table 2-3 Hawaii – Honolulu Market – Assessment of Potential Weight Penalties for Runway 12L

Hawaii - HNL		A321 NEO (189 seats/580 lbs. cargo)				B737-800 (175 seats/No cargo)			
Winter (63° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	9	5%	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	2	1%	580	100%	13	7%	-	-
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	2	1%	580	100%	13	7%	-	-
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	5	3%	580	100%	17	10%	-	-
Hawaii - HNL		A321 NEO (189 seats/3,510 lbs. cargo)				B737-800 (175 seats/40 lbs. cargo)			
Summer (81.3° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	-	-	1,640	47%	9	5%	40	100%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	-	-	1,640	47%	9	5%	40	100%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	-	-	2,290	65%	13	7%	40	100%

Source: Landrum & Brown and Flight Engineering

Table 2-4 Europe– Frankfurt Market – Assessment of Potential Weight Penalties for Runway 12L

Frankfurt - FRA		B787-9 (290 seats/2,970 lbs. cargo)				B777-300ER (370 seats/55,480 lbs. cargo)			
Winter (68° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	37	13%	2,970	100%	-	-	9,780	18%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	60	21%	2,970	100%	-	-	21,020	38%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	120	41%	2,970	100%	-	-	38,060	69%
Frankfurt - FRA		B787-9 (290 seats/370 lbs. cargo)				B777-300ER (370 seats/53,680 lbs. cargo)			
Summer (81.3° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	-	-	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	46	16%	370	100%	-	-	10,500	20%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	69	24%	370	100%	-	-	21,390	40%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	128	44%	370	100%	-	-	38,630	72%

Source: Landrum & Brown and Flight Engineering

Table 2-5 Asia – Beijing Market – Assessment of Potential Weight Penalties for Runway 12L

Beijing - PEK		B787-9 (290 seats/No cargo)				B777-300ER (370 seats/41,450 lbs. cargo)			
Winter (68° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	33	11%	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	83	29%	-	-	-	-	10,210	25%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	105	36%	-	-	-	-	21,940	53%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	163	56%	-	-	-	-	39,710	96%
Beijing - PEK		B787-9 (290 seats/No cargo)				B777-300ER (370 seats/39,580 lbs. cargo)			
Summer (81.3° F)		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Existing	Existing Building Limits	36	12%	-	-	-	-	-	-
Scenario 3	No Air Service Protection, Protect Primary Airline Instrument Procedures & 12L 330 ft/NM Departure Procedure	84	29%	-	-	-	-	10,430	26%
Scenario 3A	Protect TERPS ILS, LPV & RNP 0.30 Approaches & 12L 330 ft/NM Departure Procedure	106	37%	-	-	-	-	21,250	54%
Scenario 3B	Protect TERPS ILS, LPV, RNP 0.11/0.15 Approaches & 12L 330 ft/NM Departure Procedure	162	56%	-	-	-	-	37,360	94%

Source: Landrum & Brown and Flight Engineering

Scenarios 3 and 3A provided protection for primary airline procedures and highlighted that for most of the Downtown Core and Diridon Station Area, any minor increases in crane height creates the potential for sizeable weight penalties for the airlines in the four markets analyzed. The passenger impact does vary based on the type of aircraft an airline can use for that market.

Scenario 3B which has the most significant air service impacts, allows for the maximum temporary crane heights above the existing building height limit while retaining the critical airline procedures at SJC. However, Scenario 3B demonstrates that higher crane heights create significant weight impacts that carry over to SJC's domestic markets in addition to international markets. Hawaiian markets (represented by Honolulu) see weight penalty increase with the loss of 17 passengers (10 percent) and prevents cargo in the Winter months, while Transcontinental markets (represented by New York) weight penalty increase to 11 passengers (7 percent) and prevents cargo in the Summer. European markets (represented by Frankfurt) would see significant weight penalty increases, including the loss of all cargo and a 128 passenger (44 percent) penalty in the Summer. The Asian market (represented by Beijing) would see the largest weight penalty increase to 163 passengers (56 percent) and loss of all cargo year-round. Scenario 3B was selected as the preferred scenario for the construction crane policy and development of a construction crane fee program.

2.5 Construction Crane Guidance

Regarding construction crane heights, the City will defer to the FAA regarding the establishment of presumed maximum height limits based on the following:

- a. The FAA's responsibility is to protect critical airline TERPS procedures
- b. All projects are responsible to submit and FAA Form 7460-1 "Notice of Proposed Construction" to the FAA to conduct an official aeronautical study
- c. A project must receive a FAA issuance of "Determination of No Hazard" for temporary cranes or other means and methods
- d. FAA may require additional conditions (i.e. obstruction lighting and marking) to be added to temporary cranes for increased visibility

To mitigate for increased weight penalties associated with Scenario 3B construction crane heights, the City prepared a Construction Crane Guidance Document to be included in all development permits for Downtown and Diridon Station Area projects. As discussed later in this report, this includes the development of a construction crane permit fee to support a Landing Fee Credit Program for airlines that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area. This guidance document outlines three methods for developers to minimize impacts:

1. Utilize crane jumps (aka increasing the height) to ensure cranes are only at their maximum height (impacting SJC air service) for the shortest duration possible and not for the entire project duration.
2. Limit maximum crane heights to a 6-month timeframe
3. Schedule maximum crane heights during April – September, when SJC is in Southeast Flow for the shortest duration

All airlines are required to pay a landing fee each time they land at SJC. Landing fees are based on certified maximum gross landing weight of the aircraft.. To further mitigate increased weight penalties associated with higher construction crane heights, on March 9th, 2021, the San Jose City Council directed City staff to explore a Landing Fee Reduction Program for for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area.

3 Construction Crane Fee Program

In March 2021, City Council and the Mayor directed Airport staff to explore a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes or other means and methods in the Downtown Core and Diridon Station Area. The Construction Crane Fee Program Study was to mitigate the financial impact associated with denying passengers boarding due to weight impacts on departure. There is a real cost to airlines when a passenger is denied boarding. This cost affects the profitability of the flight and the overall route.

A study was initiated to review options and determine the best method to accomplish a construction crane fee program. This study looked at the following elements which are described in more detail throughout this chapter:

- Impacted Departures and Load Factors (LF). Determine how frequent the impact would be and at what load factors would there be an effect.
- Potential Denied Boardings. Quantify how many passengers have the potential to be denied boarding by carrier & flight.
- Denied Boarding Costs and Assumptions. Review specific SJC airline data and industry information on denied boarding costs.
- Financial Impact by Airline. Quantify the potential financial impact to each airline serving SJC.
- Mechanism to Mitigate Cost. Determine the best mechanism to credit the airlines for the cost impact.
- Mechanism to Fund the Credit. Determine the best method to fund the credit.
- Implementation. Outline the course of action for implementing the plan (e.g. collecting the developer fee, crediting the airlines).

3.1 Impacted Departures and Load Factors

Certain weather conditions necessitate SJC operating in a Southeast Flow runway configuration (arriving and departing Runways 12L and 12R), which aligns with the construction crane guidance area. As discussed in Section 2.4, depending on seasonality and time of day, the Southeast Flow has a weight impact on departing aircraft, potentially resulting in DB of passengers. A lower airline LF (percentage of passengers to available seats) allows for an aircraft to depart but results in a financial cost to the airline.

After analyzing ten years of weather data, the ensuing seasonal winter winds required more days in the Southeast Flow runway configuration. Therefore, winter months have more flight operations that are adversely impacted.

Conversely, flights during the summer months have less days necessitating the Southeast Flow runway configuration, thus less flights are adversely impacted due to weather. Also, time-of-day for a flight operation is an important determinant as Southeast Flow is typically a morning event in the summer months.

Table 3-1 illustrates the historic percentage of time that winds dictate that SJC operate in Southeast Flow. As shown, this is dictated by the time-of-day and month. Early morning flights are impacted more broadly while later afternoon flights and evening flights typically experience minimal impacts.

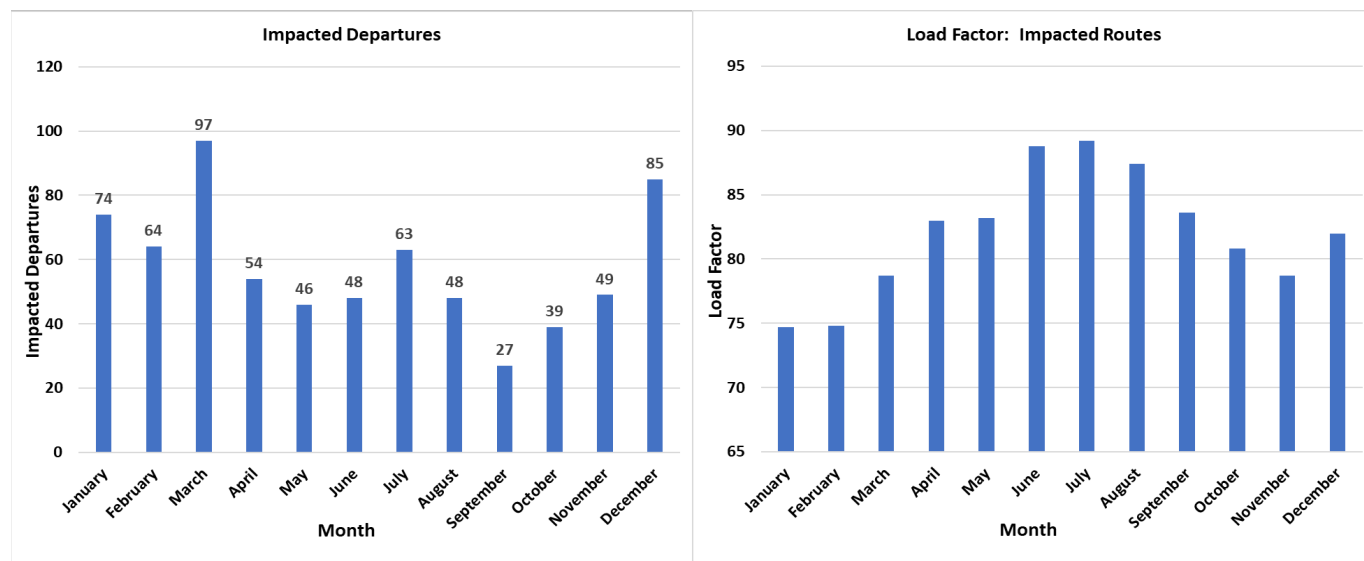
Table 3-1 SJC: Percentage of Departures in Southeast Flow by Hour and Month

SJC: Percentage of Departures in Southeast Flow by Hour and Month												
Hour	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6	20%	24%	25%	16%	14%	18%	24%	20%	12%	15%	17%	22%
7	20%	24%	29%	17%	16%	19%	26%	22%	13%	14%	18%	23%
8	22%	22%	31%	17%	17%	19%	25%	22%	14%	14%	17%	24%
9	22%	23%	30%	17%	17%	18%	24%	21%	14%	14%	17%	24%
10	21%	21%	28%	16%	14%	12%	18%	15%	11%	14%	17%	23%
11	20%	20%	28%	13%	11%	9%	9%	8%	8%	12%	17%	22%
12	20%	20%	25%	13%	8%	5%	4%	4%	5%	10%	15%	22%
13	18%	19%	24%	12%	8%	4%	2%	2%	3%	8%	13%	22%
14	19%	18%	22%	11%	7%	3%	1%	2%	3%	7%	13%	21%
15	18%	18%	22%	11%	7%	2%	1%	2%	2%	6%	12%	19%
16	17%	16%	20%	9%	7%	2%	1%	1%	3%	6%	12%	19%
17	17%	16%	20%	9%	6%	2%	1%	1%	3%	6%	12%	19%
18	18%	15%	19%	8%	6%	2%	1%	1%	3%	7%	12%	19%
19	18%	16%	19%	8%	6%	2%	1%	1%	2%	7%	11%	17%
20	19%	15%	18%	8%	5%	1%	1%	1%	3%	7%	12%	18%
21	19%	16%	19%	9%	6%	2%	1%	1%	3%	8%	13%	19%
22	20%	16%	18%	9%	6%	2%	1%	2%	3%	8%	14%	19%
23	19%	17%	18%	9%	6%	2%	1%	2%	4%	8%	14%	19%
Average	19%	19%	23%	12%	9%	7%	8%	7%	6%	10%	14%	21%

Source: FAA ASPM Airport Efficiency Daily Configuration by Hour, 1/1/2010 to 12/31/2020

Importantly, impacted flights do not always result in DBs. During the winter months, LFs are relatively lower, meaning there are more empty seats and the need for DBs is less. During the summer months, less flights are impacted; however, with higher LFs, the denied boarding impacts to those flights is greater. The number of impacted flights by month is shown in **Figure 3-1**.

Figure 3-1 Impacted Departures and Load Factor by Month



Source: Landrum & Brown

3.2 Denied Boarding Costs and Assumptions

An important distinction when analyzing DB costs is that there are two types of DBs, voluntary and involuntary. A voluntary DB occurs when a passenger is offered a seat on the current flight but has accepted compensation in exchange for a seat on a later flight or another airline. To qualify as voluntary, the passenger must be offered a seat; otherwise, the passenger is categorized as involuntary regardless of the flight re-accommodation and any compensation received.

For an involuntary DB, the U.S. DOT has established rules on the minimum amount of compensation that must be provided based on the length of the passenger’s delay. Effective April 13, 2021, a passenger is entitled to \$775 for a one to two-hour domestic delay or a one to four-hour international delay, and \$1,550 for two or more hours domestic delay and four or more hours international delay.

DB costs were derived from government and industry information, and the following assumptions were deemed consistent with these sources for use in this study. A domestic passenger who is involuntarily denied boarding would receive cash compensation of \$1,000. This amount is representative of the U.S. Government Accountability Office’s (GAO) data which shows in 2018 the average amount of cash compensation a passenger who was involuntarily denied boarding received was \$937. To further support this assumption, it was validated that a major network airline serving SJC uses \$1,000 for its involuntary DB cost as an input in its overbooking model. An international passenger who is involuntarily denied boarding will receive cash compensation of \$2,000. This higher cost for international passengers is attributable to fewer flight re-accommodation options.

It was reasoned that a passenger who voluntarily gives up a seat will receive \$300 for a domestic flight and \$600 for an international flight. These voluntary cost numbers are in line with the value of a free ticket; the compensation typically offered when airlines solicit passenger volunteers. The GAO reports indicate no data exists on compensation received from voluntary DBs because the compensation typically is not a monetary amount, but rather a free ticket or travel voucher.

The above compensation numbers do not include the additional cost of hotel accommodations and per diem expenses (e.g., meals). Due to the likelihood of no available same day flight re-accommodation, a hotel cost of \$300 is added to international and long-haul domestic DBs. For per diem expenses, \$200 is used for international and domestic passengers and the probability of this cost being incurred increases for flights that are later in the day.

In order to classify potential DBs as involuntary and voluntary, data from the Bureau of Transportation Statistics (BTS) and the GAO was reviewed. The GAO only has data on domestic passengers, but the ratio for domestic DBs was also applied to international DBs for analytical purposes. On average, less than 5 percent of DBs are involuntary; this has been trending downward in recent years due to airlines taking less overbooking risk. However, there are two scenarios where the airline industry errors towards a more conservative stance on involuntary DBs:

- The first scenario is where the DBs are occurring close to departure times and the airline was given little advance notice about the occurrence, and the volunteer solicitation process is compromised due to inadequate time.
- The second scenario is the number of passengers needed to be removed from the aircraft which represents a significant LF percentage and is beyond the number of volunteers the airline would be able to solicit.

3.3 Denied Boarding Costs Per Passenger

The DB costs are applied on a per passenger basis and are determined by numerous factors, including whether the passenger is originating travel from SJC or SJC is their destination airport and the type of DB they are classified as.

Table 3-2 provides a summary of how the DB compensation is computed and would be applied given a scenario where a particular airline, route, type of DB and origin occur. For reference, a list of airport codes used in the following sections is listed below:

- EWR – Newark Liberty International Airport
- FRA – Frankfurt Airport
- HNL – Honolulu International Airport
- JFK - John F. Kennedy International Airport
- KOA - Ellison Onizuka Kona International Airport at Keahole
- LHR – London Heathrow
- NRT – Tokyo-Narita International Airport
- OGG - Kahului Airport
- PEK - Beijing Capital International Airport

Table 3-2 Assumed Denied Boarding Cost Per Passenger: By Point of Origin and Denied Boarding Compensation (DBC) Type

	Traffic Mix of Denied Boardings				Hotels, Per Diem Vouchers		Airline DB Compensation per Passenger		DB Compensation per Passenger		
	SJC Origin		SJC Destination		SJC Origin	SJC as Destination	Voluntary	Involuntary	Hotels, Per Diem	Air Fare	Total
	Voluntary	Involuntary	Voluntary	Involuntary							
Impacted SJC Market	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
Asia: Beijing (PEK), Tokyo (NRT)	57%	3%	38%	2%	\$200	\$500	\$600	\$2,000	\$320	\$670	\$990
Hawaii: HNL, KOA, OGG	78%	4%	17%	1%	\$200	\$500	\$300	\$1,000	\$254	\$335	\$589
Europe - Lufthansa***	59%	3%	36%	2%	\$200	\$500	\$600	\$2,000	\$314	\$670	\$984
Europe - British Airways	55%	3%	40%	2%	\$200	\$500	\$600	\$2,000	\$326	\$670	\$996
Newark (EWR) - Alaska Airlines	52%	3%	43%	2%	\$200	\$500	\$300	\$1,000	\$335	\$335	\$670
JFK - Alaska & Delta	50%	3%	45%	2%	\$200	\$500	\$300	\$1,000	\$341	\$335	\$676
JFK - Alaska & jetBlue	50%	3%	45%	2%	\$200	\$500	\$300	\$1,000	\$341	\$335	\$676

Source: Landrum & Brown
***Based upon CY2018
DB = Denied Boarding

Using the letter column heads from Table 3-2 above, the following provides an example equation to illustrate how the DB Compensation per Passenger is computed:

$$K \text{ Total Compensation} = I \text{ Hotel, Per Diem Compensation} + J \text{ Air Fare Compensation}$$

$$\text{where } I = (A * E) + (B * E) + (C * F) + (D * F) \text{ and}$$

$$\text{where } J = ((A * C)) * G + (B * D)) * H$$

3.4 Denied Boarding Costs Per Passenger

The estimated financial impact of DBs due to a Southeast Flow runway configuration is summarized below.

- Full Year: \$2.8 million
 - April-September: \$1.1 million
 - October-March: \$1.7 million

The total financial impact is significantly impacted due to certain international traffic, especially the Beijing route. Up to 63 percent of the DBs create \$1.7 million of the financial impact, which is made up of the international flights NRT, LHR and Beijing Capital International PEK. The financial impact on PEK alone is approximately \$1.0 million. **Table 3-3** demonstrates the airline/route DBs financial impact.

Table 3-3 Estimated Financial Impact for Full Calendar Year by Airline, Route and Aircraft Type

					Actual			Denied Boarding Estimates			
Airline	Destination	Aircraft Type	Actual 2019 Departures	Departures Impacted	Enplaned	Average Onboard	LF	Est. DBs/ Impacted Flight	Est. Total Denied Boardings	DBC/ PAX	Financial Impact
AS	EWR	Boeing 737-800	237	47	29,642	125	78.7	0.0	0	-	-
AS	EWR	Boeing 737-900ER	64	14	8,784	138	77.7	0.0	0	-	-
AS	HNL	Boeing 737-800	64	14	8,982	140	88.3	14.7	200	\$589	\$117,816
AS	HNL	Boeing 737-900ER	182	38	28,177	155	87.2	13.4	509	\$589	\$299,598
AS	JFK	Airbus Industrie A319	10	1	1,179	118	79.9	1.1	1	\$589	\$827
AS	JFK	Airbus Industrie A320-100/200	48	9	5,890	123	82.1	0.6	5	\$676	\$3,677
AS	JFK	Boeing 737-800	225	40	30,612	136	85.6	0.0	0	-	-
AS	JFK	Boeing 737-900ER	66	14	9,584	145	81.6	0.0	0	-	-
AS	KOA	Boeing 737-800	112	23	14,148	126	79.5	7.1	163	\$589	\$96,100
AS	KOA	Boeing 737-900ER	121	26	18,030	149	83.7	10.7	277	\$589	\$163,114
AS	OGG	Boeing 737-800	326	57	41,746	128	80.7	7.5	432	\$589	\$254,376
B6	JFK	Airbus Industrie A320-100/200	313	28	41,451	132	88.3	1.2	34	\$676	\$22,813
B6	JFK	Airbus Industrie A321	6	1	956	159	79.6	1.4	2	\$676	\$1,032
BA	LHR	B787-900 Dreamliner	331	31	57,551	174	80.6	5.5	172	\$996	\$171,361
DL	JFK	Boeing 737-800	147	29	17,974	122	76.4	0.0	0	\$0	\$0
DL	JFK	Boeing 737-900ER	183	8	29,025	159	88.1	5.0	38	\$676	\$26,004
DL	JFK	Boeing 757-200	3	1	358	119	71.1	0.0	0	-	-
HA	HNL	Airbus Industrie A321-200n	322	68	56,949	177	93.7	0.7	45	\$589	\$26,240
HA	HNL	Airbus Industrie A330-200	41	3	9,396	232	83.5	0.0	0	-	-
HA	HNL	Boeing 767-300/300er	3	1	550	183	69.4	0.0	0	-	-

					Actual			Denied Boarding Estimates			
Airline	Destination	Aircraft Type	Actual Departure	Departures Impacted	Enplaned	Average Onboard	LF	Est. DBs/ Impacted Flight	Est. Total Denied Boardings	DBC/ PAX	Financial Impact
HA	OGG	Airbus Industrie A321-200n	363	72	59,482	164	86.8	0.5	38	\$589	\$22,145
HU	PEK	B787-800 Dreamliner	40	7	6,819	170	80.0	44.4	289	\$990	\$285,722
HU	PEK	B787-900 Dreamliner	149	11	30,447	204	71.0	73.2	775	\$990	\$767,694
LH*	FRA	A340-300	150	8	31,709	211	70.5			-	-
NH	NRT	B787-800 Dreamliner	331	44	41,454	125	72.7	11.9	523	\$990	\$517,692
NH	NRT	B787-900 Dreamliner	29	2	4,544	157	72.3	6.1	14	\$990	\$13,994
WN*	HNL	Boeing 737-800	362	52	58,272	161	92.4	0.0	0	-	-
WN*	OGG	Boeing 737-800	340	47	50,102	148	83.1	0.0	0	-	-
Total Average			4,564	693	693,805	152	81.1	5.1	3,517	\$793	\$2,790,206

Source: Landrum & Brown
 DB = Denied Boarding
 DBC = Denied Boarding Compensation
 LF = Load Factor

3.5 Denied Boarding Costs for Cargo

The financial impact of removing cargo due to weight impacts on departing flights are not factored into this study as it assumes airlines find alternative means to accommodate displaced cargo such as trucking to an alternate airport.

3.6 Crane Fee Deposit

The DB costs represent the full schedule of flights at SJC in 2019 (pre-Covid-19). In assessing how much of these costs are needed to provide airline landing fee credits, four flight schedule scenarios were analyzed to best determine an estimated crane fee deposit.

1. Full schedule: all domestic flights and international flights
2. Full schedule without Beijing: all domestic flights and international flights without Beijing
3. No international plus London: all domestic flights and no international flights except for London
4. No international: all domestic flights and no international flights

Collections for the crane fee deposit are based on utilizing 75 percent of the DB costs from this scenario, plus a 15 percent City administrative fee. See **Table 3-4** for the fee, broken down by season and charged monthly. Depending on the number of developers operating construction cranes above the Downtown Building Height Limits in the crane guidance area, monthly crane fees will be split accordingly.

Table 3-4 Developer Monthly Crane Fee Rates

Options	Crane Fee Monthly Rates April – September “Summer Season”				Crane Fee Monthly Rates October – March “Winter Season”			
	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
# Projects	Full Schedule	Full Schedule No Beijing	No International + London	No International	Full Schedule	Full Schedule No Beijing	No International + London	No International
1 Projects*	\$158,125	\$111,694	\$98,849	\$88,406	\$244,375	\$137,856	\$74,867	\$59,944
2 Projects*	\$79,063	\$55,847	\$49,425	\$44,204	\$122,188	\$68,929	\$37,433	\$29,972
3 Projects*	\$52,709	\$37,232	\$32,958	\$29,469	\$81,458	\$45,953	\$24,956	\$19,982

Note: Each column above is calculated separately and cannot be added to reach a total.
 *Each project that requires a building permit is considered a single project.
 Staff’s recommendation is highlighted in yellow.
 75 percent Forecasted Costs to Airlines +15 percent City Administration Fee

While SJC reserves the right to adjust the air service mix on an annual basis to account for changes in flights to/from SJC in the future, it was determined that the “no international plus London” was the most reasonable assumption for the start of the fee program, based on current 2021 flight schedules.

In order to credit a portion of the impacted airlines’ landing fees, a methodology was established to properly determine a deposit amount for those developers operating in the Construction Crane Guidance Area with construction cranes above the Downtown Building Height Limits. A crane fee deposit is charged on a “per project site” basis. A “project site” is defined as a contiguous project location that has one or more cranes that exceed the downtown building height limits during a portion of the construction period. The crane fee deposit per project site basis is represented as a seasonal rate (winter/summer) charged monthly over the duration of the construction period when cranes would exceed the height limits, not for the entire construction timeline. The monthly crane fee rate will be divided equally among all project sites operating construction cranes in the guidance area that during that month are deemed to exceed the building height limits. The crane fee deposit formula is listed below:

$$40\%^1 \quad \times \quad \frac{\text{Published Monthly fee rate} \times \text{Estimated \# months construction crane(s) will exceed Downtown Building Height limits}}{\text{\# of projects with crane(s) exceeding Downtown Building Height Limits}}^2$$

¹40% is the starting crane fee program deposit percentage

²Note that the crane fee deposit is charged per project, not per crane on project site

The crane fee deposit will be required to be paid at the time of building permit issuance. A project will be required to estimate the duration a project’s construction cranes will exceed the building height limits. For project sites where a construction crane(s) will exceed the height limits for six months or less, a fee cap will be implemented. This fee cap provides that the project’s deposit will not exceed five months’ equivalent of payments for the six-month period. Should the project exceed the six-month duration, the fee cap would be eliminated. All fees will be reconciled at temporary or certificate of occupancy (TCO/COO), whichever occurs sooner. A project’s crane fees will be based on actual airline denied boarding impacts. The fee cap formula is below:

$$5 \quad \times \quad \text{Published Monthly fee rate}$$

Crane fee rates will adjust on an annual basis based on SJC’s current and forecasted flight schedule. Depending on a determination of which flights will be impacted and based on long haul destinations serving SJC, the total annual amount will be adjusted and thus the rates will vary accordingly.

A grace period of one year from implementation of the program is in effect. Any projects that submitted a Building Permit application on or before September 29, 2021 and begins works* that conforms with the Building Permit within six months of Building Permit issuance, will pay no crane fees for the first six months of operation of construction crane(s) above the Downtown Building Height Limits. Projects operating construction crane(s) beyond six months will be subject to the crane fee for each month thereafter until cranes and/or other means and methods are below the Downtown Building Height Limits.

Any project that receives a building permit and undertakes work that conforms with the Building Permit by September 30, 2022, will pay no crane fees for the first six months of the operation of construction cranes above the Downtown Building Height Limits. Projects operating construction cranes beyond six months will be subject to the crane fee thereafter until cranes and/or other means and methods are below the Downtown Building Height Limits.

*Grading, demolition, or utility relocation do not qualify as undertaking work conforming with a project's building permit.

3.7 Landing Fee Credit Program

In order to credit up to 75 percent of the financial impacts to the airlines for its DB costs, SJC will provide landing fee credits to affected airlines. To receive this credit, each airline must submit details of their actual DB for the period requested. SJC will vet those requests independently.

Table 3-5 shows the capacity of landing fees paid by route as well as the cumulative amounts by each airline. The current (FY2021) landing fee of \$4.95 per 1,000 pounds is used. The total annual DBs are estimated to be 3,517.

Table 3-5 Estimated Financial Impact for Full Calendar Year by Airline, Route, and Aircraft Type

Airline	Destination	Aircraft Type	Aircraft Weight	Actual Departures	Landing Fees	Impacted Departures	Impacted Landing Fees	DB Costs Impact	Impacted LF Capacity	Total LF Capacity	Net Airline LF Cumulative
AS	EWR	Boeing 737-800	146,300	237	\$171,632	47	\$34,109	-			
AS	EWR	Boeing 737-900ER	157,300	64	\$49,443	14	\$10,512	-			
AS	HNL	Boeing 737-800	146,300	64	\$46,348	14	\$9,849	\$117,816	(\$107,967)	(\$71,469)	
AS	HNL	Boeing 737-900ER	157,300	182	\$141,322	38	\$29,666	\$299,598	(\$269,932)	(\$158,276)	
AS	JFK	Airbus Industrie A319	137,789	10	\$6,821	1	\$887	\$827	\$60	\$5,994	
AS	JFK	Airbus Industrie A320-100/200	145,505	48	\$34,572	9	\$6,554	\$3,677	\$2,878	\$30,895	
AS	JFK	Boeing 737-800	146,300	225	\$162,942	40	\$28,605	-			
AS	JFK	Boeing 737-900ER	157,300	66	\$51,390	14	\$10,901	-			
AS	KOA	Boeing 737-800	146,300	112	\$81,109	23	\$16,656	\$96,100	(\$79,444)	(\$14,991)	
AS	KOA	Boeing 737-900ER	157,300	121	\$94,215	26	\$20,198	\$163,114	(\$142,916)	(\$68,899)	
AS	OGG	Boeing 737-800	146,300	326	\$235,722	57	\$41,496	\$254,376	(\$212,880)	(\$18,654)	(\$295,400)
B6	JFK	Airbus Industries A320-100/200	145,505	313	\$225,438	28	\$20,239	\$22,813	(\$2,574)	\$202,625	
B6	JFK	Airbus Industries A321	171,519	6	\$5,094	1	\$934	\$1,032	(\$98)	\$4,062	\$206,687
BA	LHR	B787-900 Dreamliner	193,000	331	\$315,743	31	\$29,902	\$171,361	(\$141,459)	\$144,382	\$144,382
DL	JFK	Boeing 737-800	146,300	147	\$106,455	29	\$20,857	\$0	\$20,857	\$106,455	
DL	JFK	Boeing 737-900ER	157,300	183	\$142,490	8	\$5,941	\$26,004	(\$20,063)	\$116,486	
DL	JFK	Boeing 757-200	210,000	3	\$3,119	1	\$624	-			\$222,941
HA	HNL	Airbus Industries A321-200n	171,519	322	\$272,960	68	\$57,563	\$26,240	\$31,324	\$246,720	
HA	HNL	Airbus Industries A330-200	396,832	41	\$79,555	3	\$5,873	-			
HA	HNL	Boeing 767-300/300er	320,000	3	\$4,752	1	\$950	-			

Airline	Destination	Aircraft Type	Aircraft Weight	Actual Departures	Landing Fees	Impacted Departures	Impacted Landing Fees	DB Costs Impact	Impacted LF Capacity	Total LF Capacity	Net Airline LF Cumulative
HA	OGG	Airbus Industries A321-200n	171,519	363	\$307,769	72	\$61,299	\$22,145	\$39,154	\$285,624	
HU	PEK	B787-800 Dreamliner	172,000	40	\$34,056	7	\$5,534	\$285,722	(\$280,188)	(\$251,666)	
HU	PEK	B787-900 Dreamliner	193,000	149	\$142,347	11	\$10,127	\$767,694	(\$757,567)	(\$625,347)	(\$877,013)
LH*	FRA	A340-300	423,288	150	\$314,291	8	\$15,924	-			
NH	NRT	B787-800 Dreamliner	172,000	331	\$281,813	44	\$37,462	\$517,692	(\$480,230)	(\$235,879)	
NH	NRT	B787-900 Dreamliner	193,000	29	\$27,705	2	\$2,197	\$13,994	(\$11,797)	\$13,711	(\$222,168)
WN*	HNL	Boeing 737-800	146,300	362	\$261,793	52	\$37,513	-			
WN*	OGG	Boeing 737-800	146,300	340	\$245,861	47	\$33,964	-			
Totals				4,564	\$3,846,757	693	\$556,336	\$2,790,206	(\$2,412,845)	(\$288,226)	(\$820,570)

Source: Landrum & Brown
DB = Denied Boarding
LF = Load Factor

Airlines' total landing fees annually to the Airport for routes that could be impacted is estimated to be \$3.85M, while total DB financial impact is \$2.79M. Impacted airlines will be credited against their total landing fees. However, the airlines serving two international routes, NRT and PEK, each have a significant enough cumulative landing fee deficit that the proposed landing fee credit will not be sufficient to properly mitigate the financial impact gap.

While SJC will make all efforts to provide a credit to the landing fee for each affected airlines up to the 75 percent threshold, there may be some circumstances where an airline is not fully compensated (due a project falling within the "grace period" or a "cap" is identified on a project's fees). Landing fee credits will be issued after the reconciliation period for a project and all funds have been collected by the City.

3.8 Conclusion

The goal of the Construction Crane Policy Study was to collaborate amongst the development community and Airlines to strike a balance between Downtown construction crane heights and adverse air service impacts at SJC. With additional construction crane height flexibility permitted above the Downtown Building Height Limits, the Downtown and Diridon Station Areas can continue to develop, while the Construction Crane Fee Program will be used to offset the potential airline denied boarding impacts associated with construction crane operations during SJC Southeast Flow.

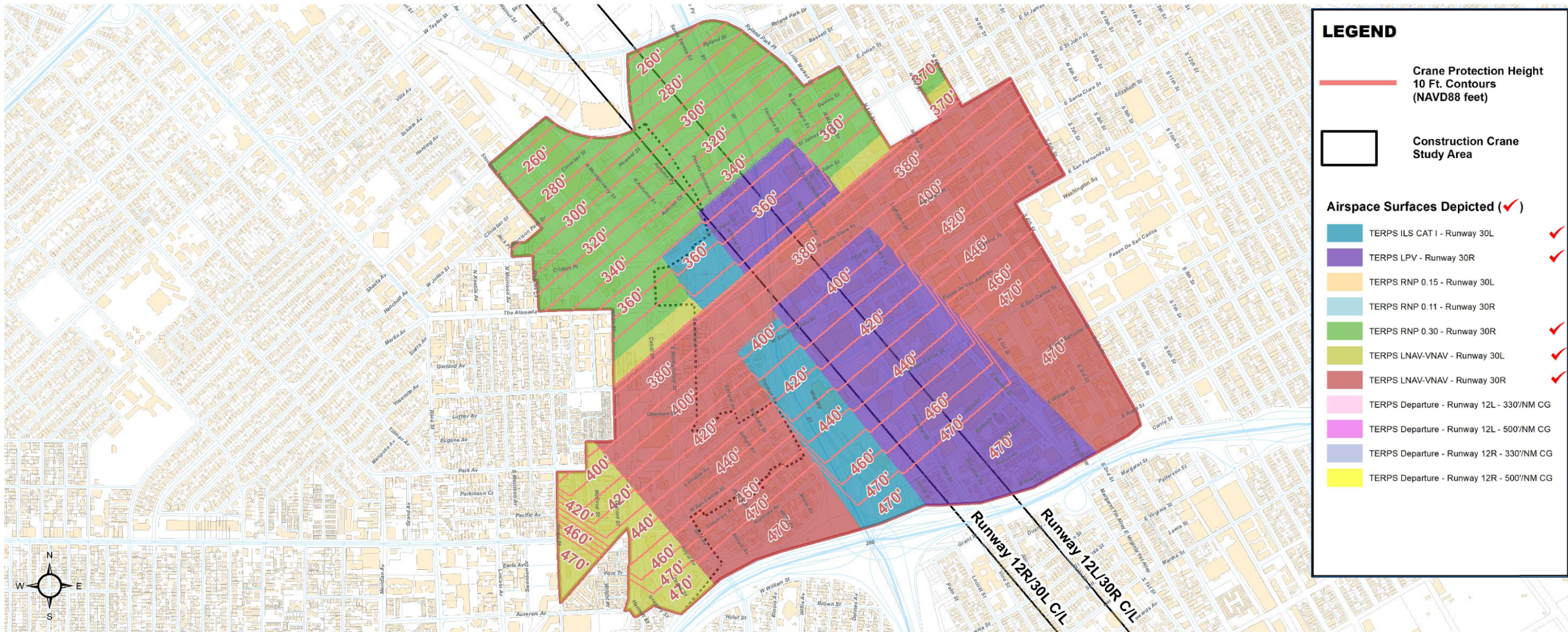
This study collaboration produced the construction crane height guidance & fee program document, which serves as a tool for the development community to ensure construction projects can be successful in the Construction Crane Guidance Area. The fee program is based on an educated understanding of the estimated financial impacts associated with airline denied boarding's. The program provides for reconciliation and accountability to ensure that each developer is only charged for actual denied boarding impacts and that each airline receives landing fee credits only for their respective impacted flights.

Appendix D contains all the presentations and memorandums which were created for various stakeholder meetings and City Council sessions as part of the construction crane fee program. The full "Construction Crane Fee Program" ordinance as well as a program guidance document is also available in **Appendix D**.

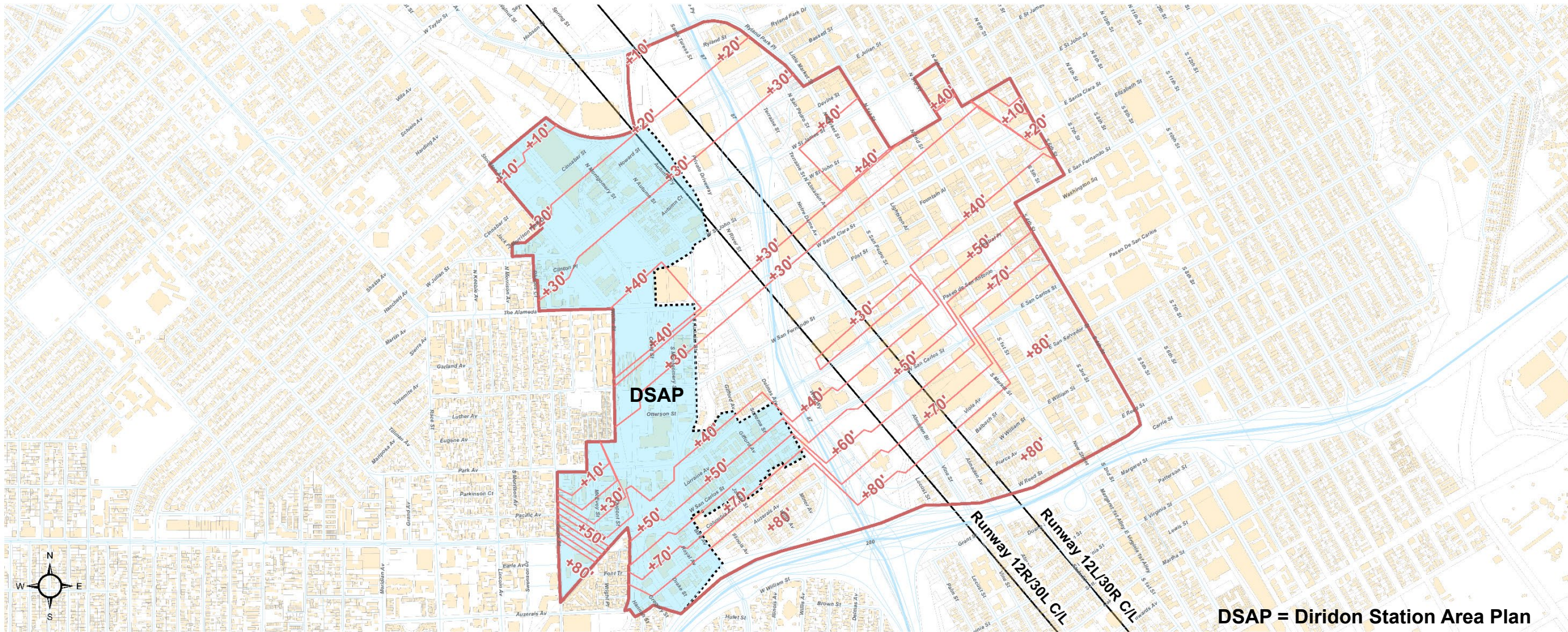
Additionally, **Appendix E** contains a summary of the City of San José Developer questions which were submitted to SJC and addressed and responded to by key staff members.

Appendix A: Construction Crane Airspace Protection Scenario Exhibits

SCENARIO 3 COMPOSITE AIRSPACE PROTECTION

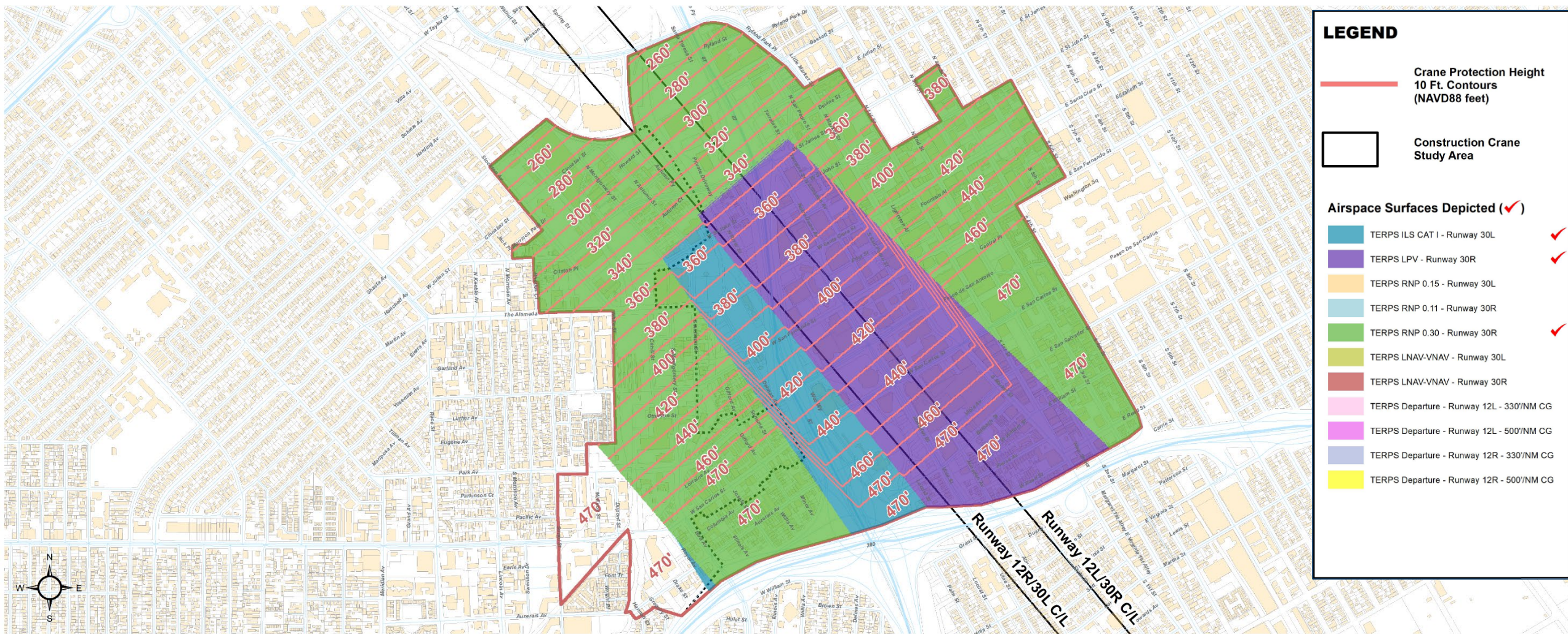


SCENARIO 3 HEIGHT DIFFERENTIAL COMPARISON TO BASELINE

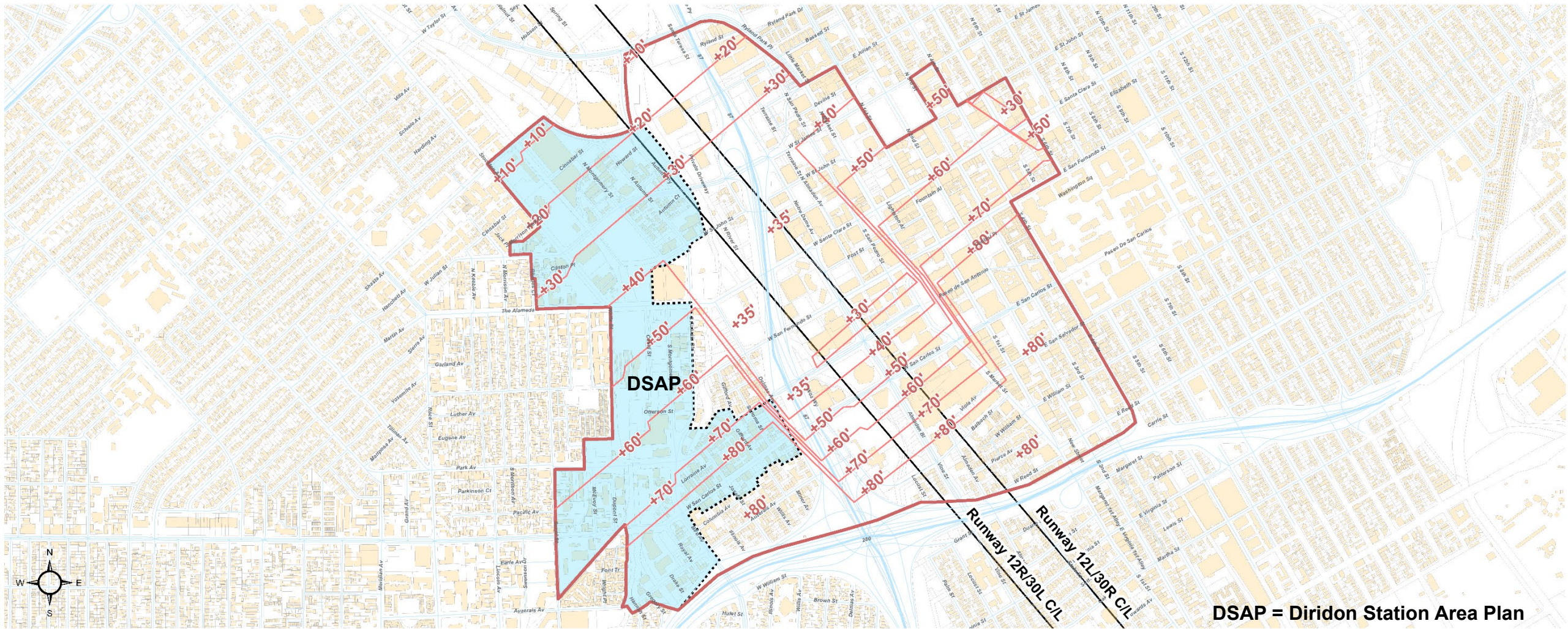


DSAP = Diridon Station Area Plan

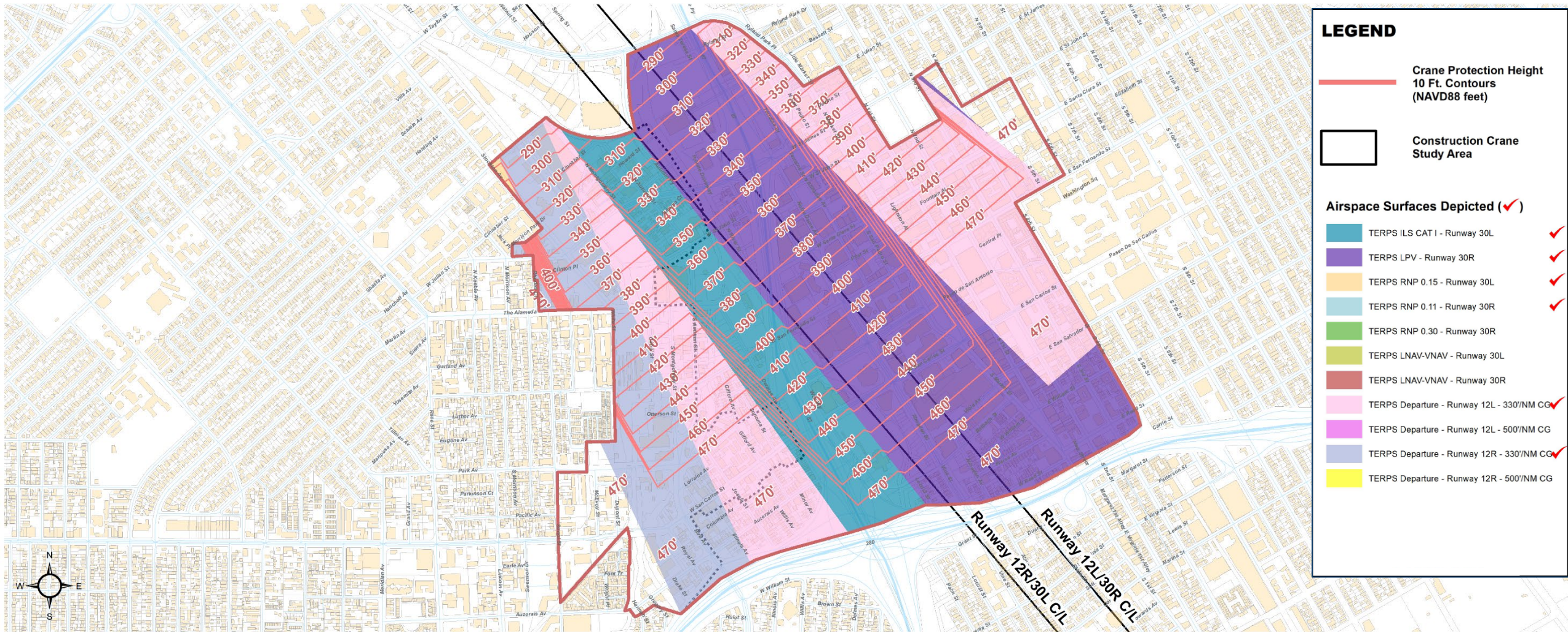
SCENARIO 3A COMPOSITE AIRSPACE PROTECTION



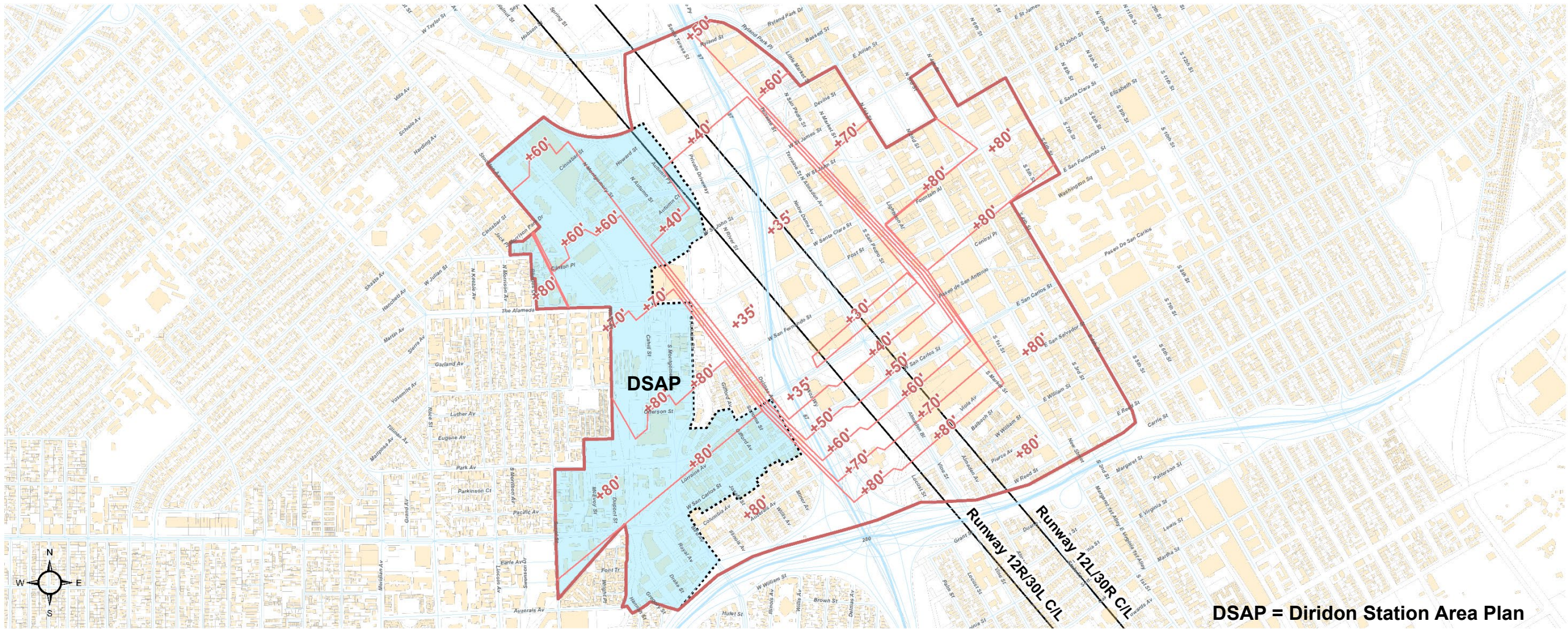
SCENARIO 3A HEIGHT DIFFERENTIAL COMPARISON TO BASELINE



SCENARIO 3B COMPOSITE AIRSPACE PROTECTION



SCENARIO 3B HEIGHT DIFFERENTIAL COMPARISON TO BASELINE



DSAP = Diridon Station Area Plan

LOC/DME I-SJC 110.9 Chan 46	APP CRS 306°	Rwy Idg 7614 TDZE 57 Apt Elev 62
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ILS RWY 30L (SA CAT I & II)

NORMAN Y MINETA SAN JOSE INTL (SJC)

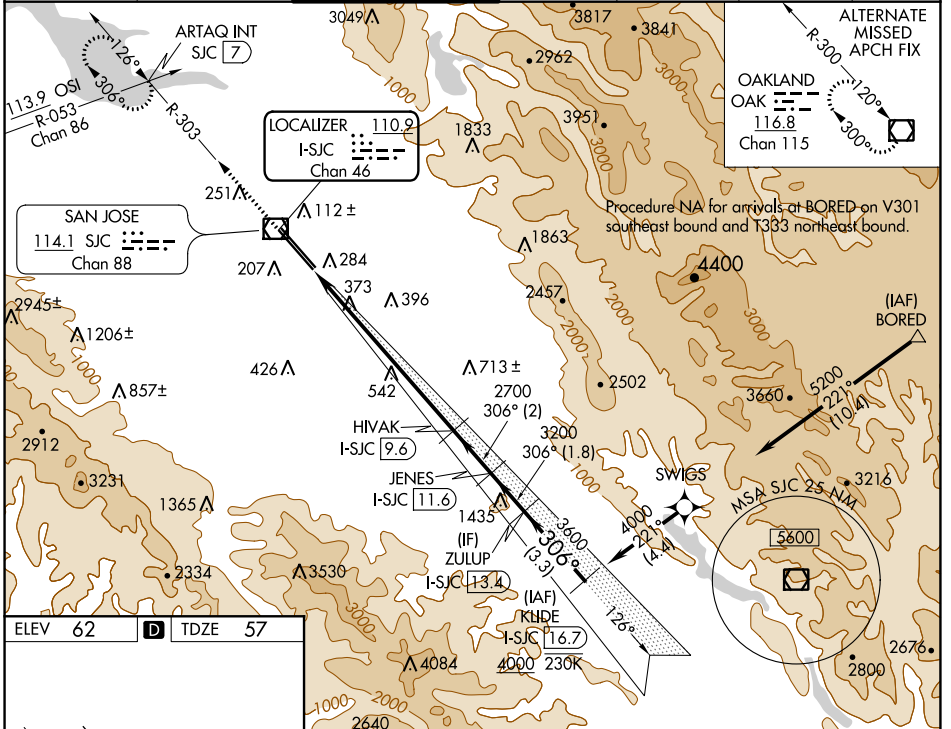
RNAV 1-GPS or RADAR required for procedure entry. DME required.
From BORED: RNAV 1-GPS required.

MALSR

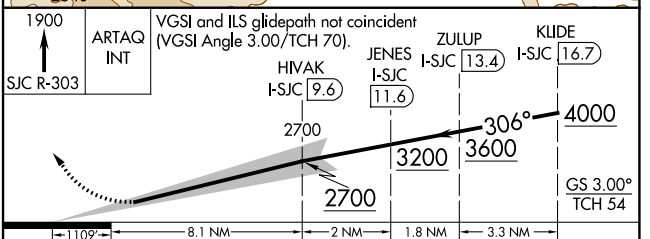
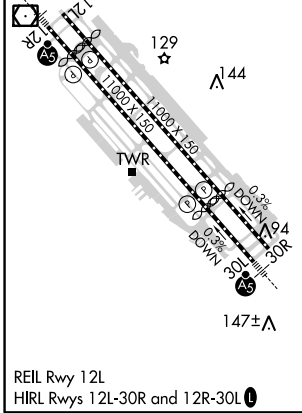
MISSED APPROACH: Climb to 1900 on SJC VOR/DME R-303 to ARTAQ INT/SJC 7 DME and hold.

SA CAT I: Requires specific OPSPEC, MSPEC, or LOA approval and use of HUD to DH.
SA CAT II: Reduced lighting: requires specific OPSPEC, MSPEC, or LOA approval and use of autoland or HUD to touchdown. SA CAT I/II: Procedure NA when tower closed.

D-ATIS 126.95	NORCAL APP CON 120.1 290.25	SAN JOSE TOWER* 124.0 (CTAF) 257.6	GND CON 121.7	CLNC DEL 118.0	CPDLC	UNICOM 122.95
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ELEV 62	D	TDZE 57
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CATEGORY	A	B	C	D
S-ILS 30L	SA CAT I	RA 147/14	150 DA 207	
S-ILS 30L	SA CAT II	RA 97/12	100 DA 157	

SA CATEGORY I & II ILS - SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED

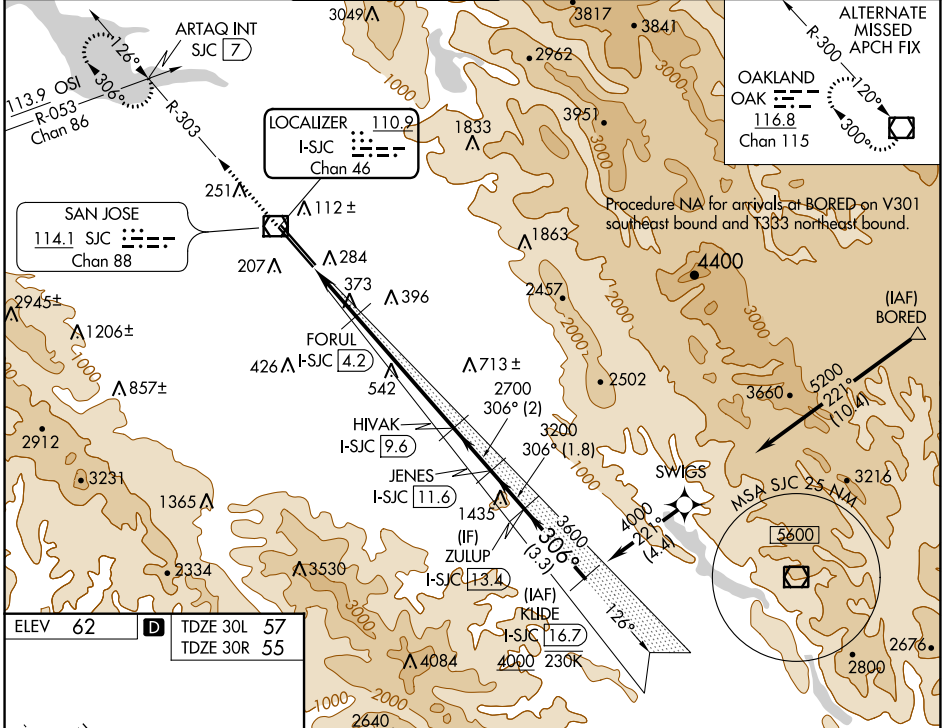
LOC/DME I-SJC 110.9 Chan 46	APP CRS 306°	Rwy Idg 7614 7597 TDZE 57 55 Apt Elev 62 62	30L 30R
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ILS or LOC RWY 30L

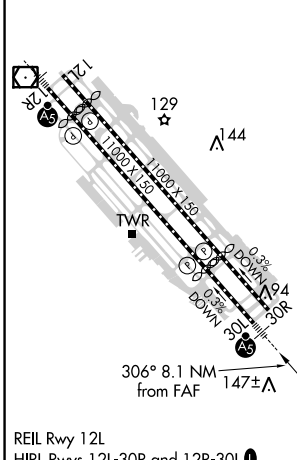
NORMAN Y MINETA SAN JOSE INTL (SJC)

RNAV 1-GPS or RADAR required for procedure entry. DME required. From BORED: RNAV 1-GPS required.		MALS Rwy 30L	MISSED APPROACH: Climb to 1900 on SJC VOR/DME R-303 to ARTAQ INT/SJC 7 DME and hold.
# RVR 1800 authorized with use of FD or AP or HUD to DA.			

D-ATIS 126.95	NORCAL APP CON 120.1 290.25	SAN JOSE TOWER * 124.0 (CTAF) 0 257.6	GND CON 121.7	CLNC DEL 118.0	CPDLC	UNICOM 122.95
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ELEV 62	TDZE 30L 57	TDZE 30R 55
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1900 SJC R-303 *LOC only	ARTAQ INT FORUL I-SJC 4.2 *I-SJC 3	VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 70). HIAK I-SJC 9.6 JENES I-SJC 11.6	ZULUP I-SJC 13.4	KLIDE I-SJC 16.7 4000
1000*	2700	3200	3600	4000
1.6 NM	1.2 NM	5.3 NM	2 NM	1.8 NM
GS 3.00° TCH 54				

CATEGORY	A			
S-ILS 30L#	257/24 200 (200-½)			
S-LOC 30L	640/24	583 (600-½)	640-1¼	583 (600-1¼)
SIDESTEP 30R	640-1	585 (600-1)	640-1¾	585 (600-2)

SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

RNAV (RNP) Z RWY 30L

NORMAN Y MINETA SAN JOSE INTL (SJC)

APP CRS	Rwy Idg	7614
306°	TDZE	57
	Apt Elev	62

RNP AR APCH.

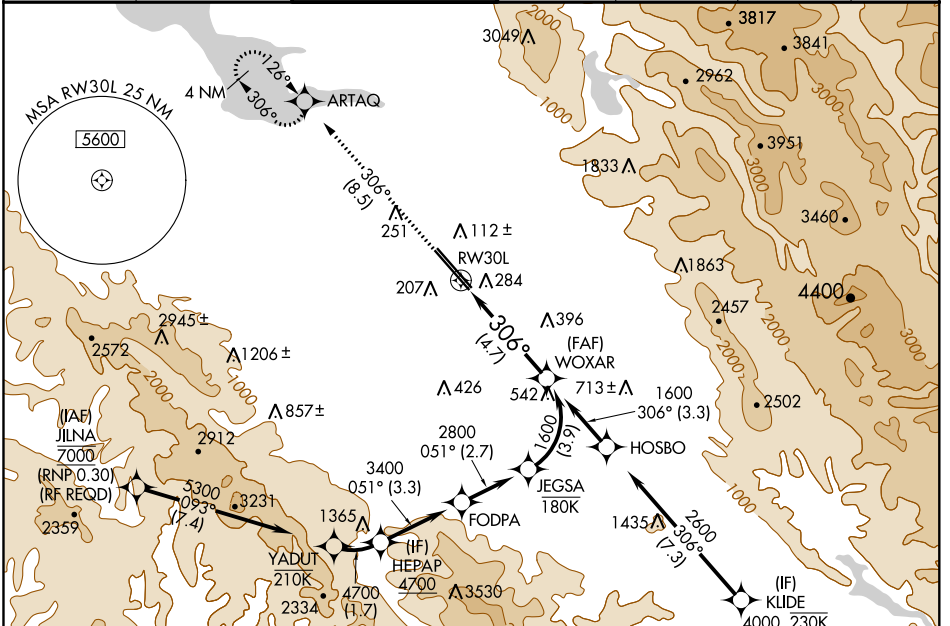
▼ For uncompensated Baro-VNAV systems, procedure NA below 1°C or above 54°C. For inoperative ALS, increase RNP 0.10 all Cats visibility to RVR 5500 and increase RNP 0.30 all Cats visibility to 1^{1/2} SM.

MALSR

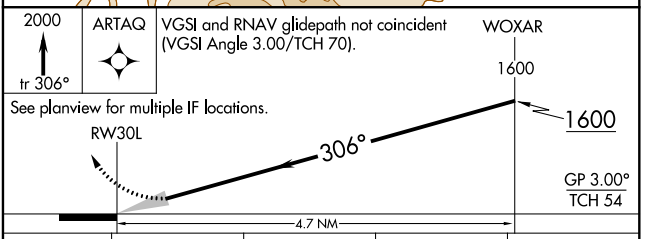
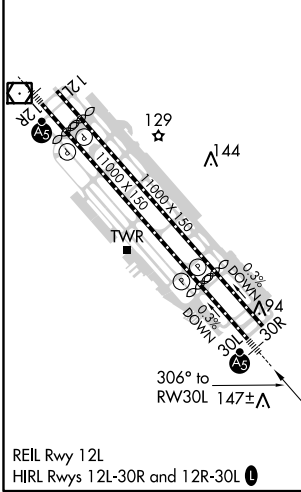
AS

MISSED APPROACH: Climb to 2000 on track 306° to ARTAQ and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0		122.95



ELEV	62	D	TDZE	57
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CATEGORY	A	B	C	D
RNP 0.10 DA		430/35	373 (400- ^{3/4})	
RNP 0.20 DA		464/40	407 (500- ^{3/4})	
RNP 0.30 DA		541/50	484 (500-1)	

AUTHORIZATION REQUIRED

SW-2, 07 OCT 2021 to 04 NOV 2021

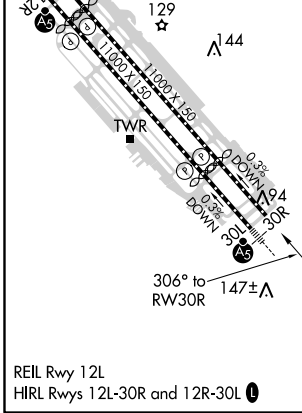
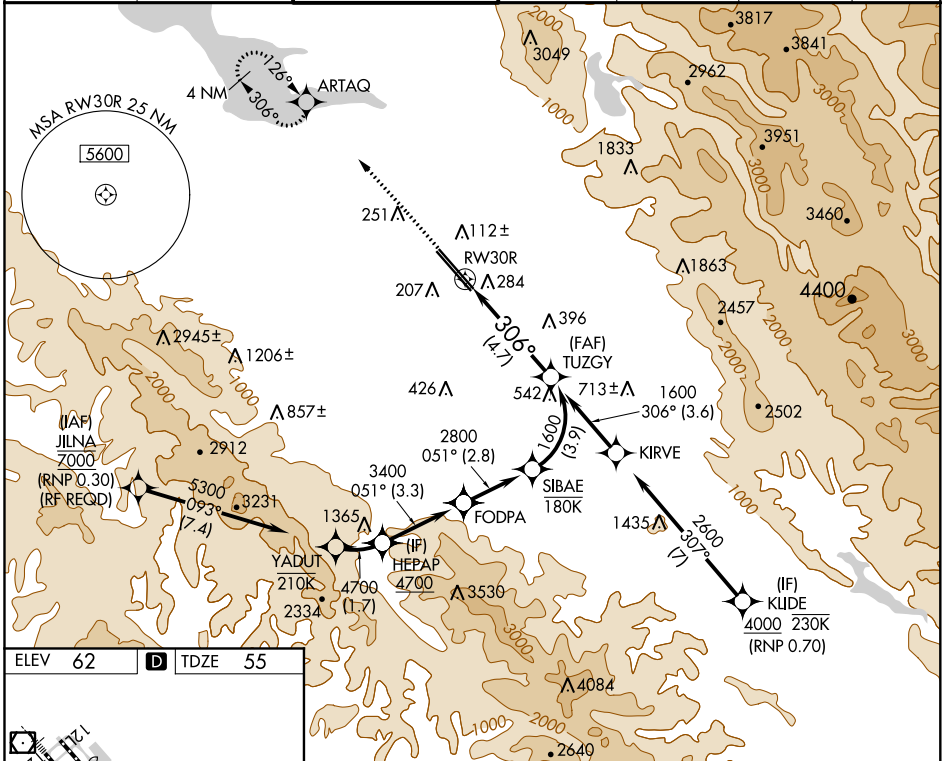
SW-2, 07 OCT 2021 to 04 NOV 2021

APP CRS	Rwy Idg	7597
306°	TDZE	55
	Apt Elev	62

RNAV (RNP) Z RWY 30R

NORMAN Y MINETA SAN JOSE INTL (SJC)

RNP AR APCH.			MISSED APPROACH: Climb to 600 then climb to 2000 direct ARTAQ and hold.			
▼ For uncompensated Baro-VNAV systems, procedure NA below 1°C or above 54°C.						
D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 55	600	2000	ARTAQ	VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 69).	TUZGY
			↑	↑	✦		1600
See planview for multiple IF locations.							
RWY 30R							1600
							GP 3.00°
							TCH 55
							4.7 NM

CATEGORY	A	B	C	D
RNP 0.11 DA		377-1	322 (400-1)	
RNP 0.20 DA		472-1½	417 (500-1½)	
RNP 0.30 DA		538-1¾	483 (500-1¾)	

AUTHORIZATION REQUIRED

SW-2, 07 OCT 2021 to 04 NOV 2021

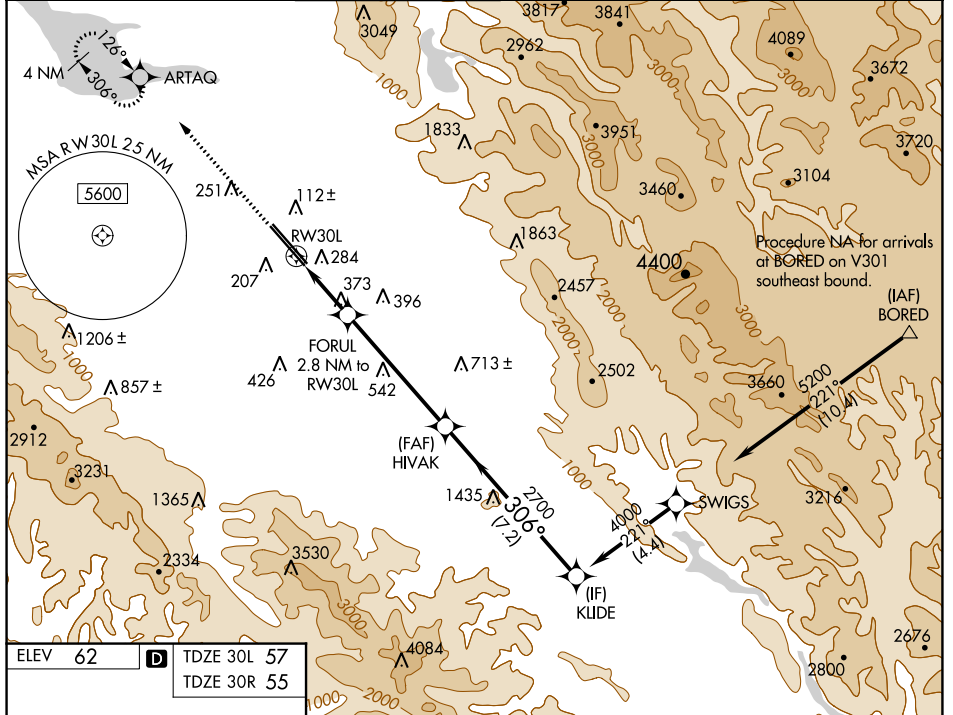
SW-2, 07 OCT 2021 to 04 NOV 2021

WAAS CH 97306 W30A	APP CRS 306°	Rwy Idg 30L 7614 30R 7597	TDZE 57 55	Apt Elev 62 62
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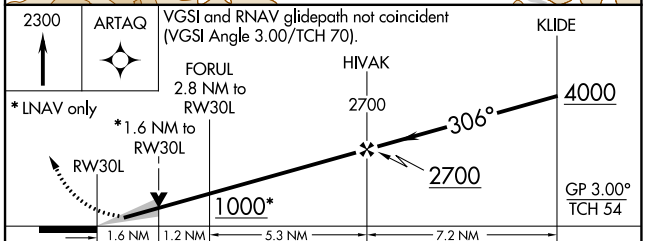
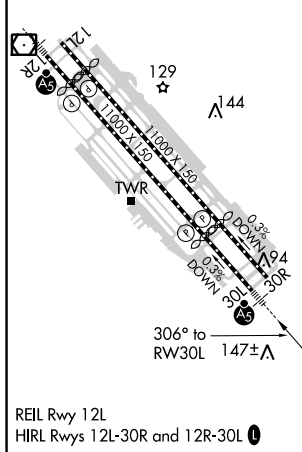
RNAV (GPS) Y RWY 30L

NORMAN Y MINETA SAN JOSE INTL (SJC)

<p>For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. # RVR 1800 authorized with use of FD or AP or HUD to DA.</p>				<p>MALSR Rwy 30L </p>	<p>MISSED APPROACH: Climb to 2300 direct ARTAQ and hold.</p>		
D-ATIS 126.95	NORCAL APP CON 120.1 290.25	SAN JOSE TOWER ★ 124.0 (CTAF) 0 257.6		GND CON 121.7	CLNC DEL 118.0	CPDLC	UNICOM 122.95



ELEV 62	D	TDZE 30L 57	TDZE 30R 55
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CATEGORY	A	B	C	D
LPV DA #		257/24	200 (200-½)	
LNAV/VNAV DA		540/60	483 (500-1¼)	
LNAV MDA	640/24	583 (600-½)	640-1¼	583 (600-1¼)
SIDESTEP 30R	640-1 585 (600-1)			

SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

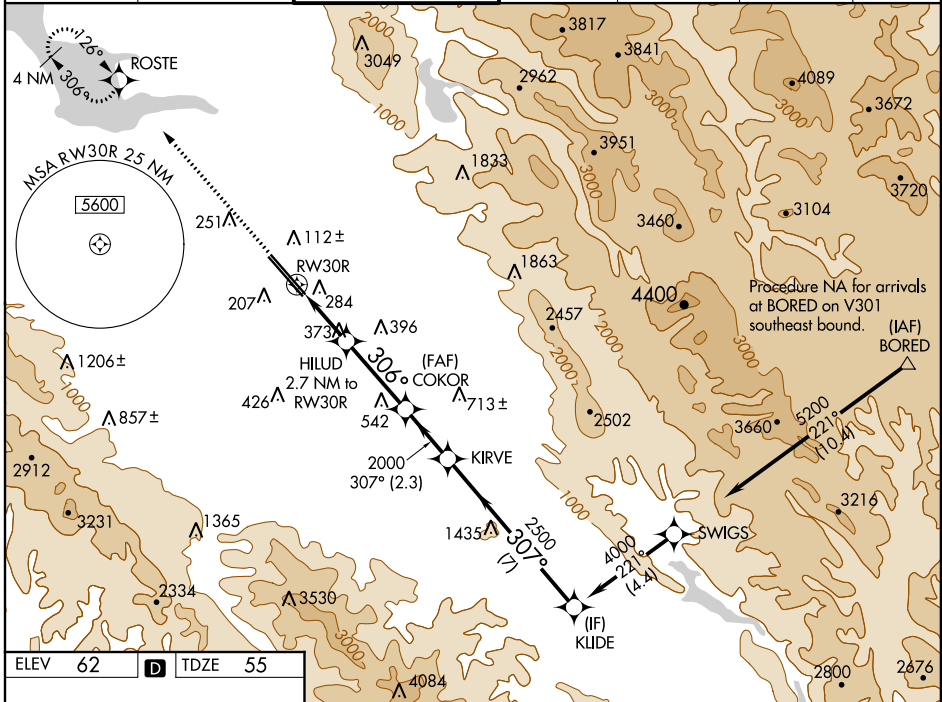
WAAS CH 72901 W30B	APP CRS 306°	Rwy Idg 7597 TDZE 55 Apt Elev 62
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RNAV (GPS) Y RWY 30R

NORMAN Y MINETA SAN JOSE INTL (SJC)

<p>▼ For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). DME/DME RNP-0.3 NA.</p>					<p>MISSED APPROACH: Climb to 2300 direct ROSTE and hold.</p>		
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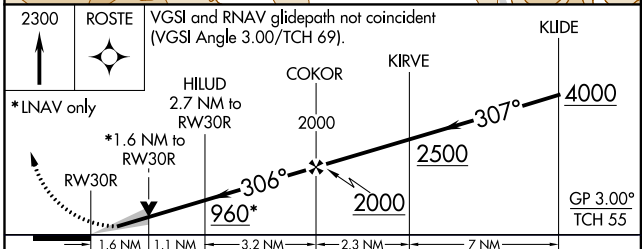
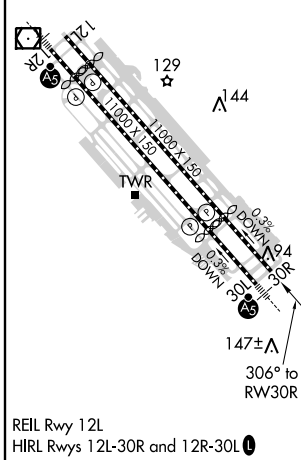
D-ATIS 126.95	NORCAL APP CON 120.1 290.25	SAN JOSE TOWER * 124.0 (CTAF) 0 257.6	GND CON 121.7	CLNC DEL 118.0	CPDLC	UNICOM 122.95
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SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

ELEV 62	D	TDZE 55
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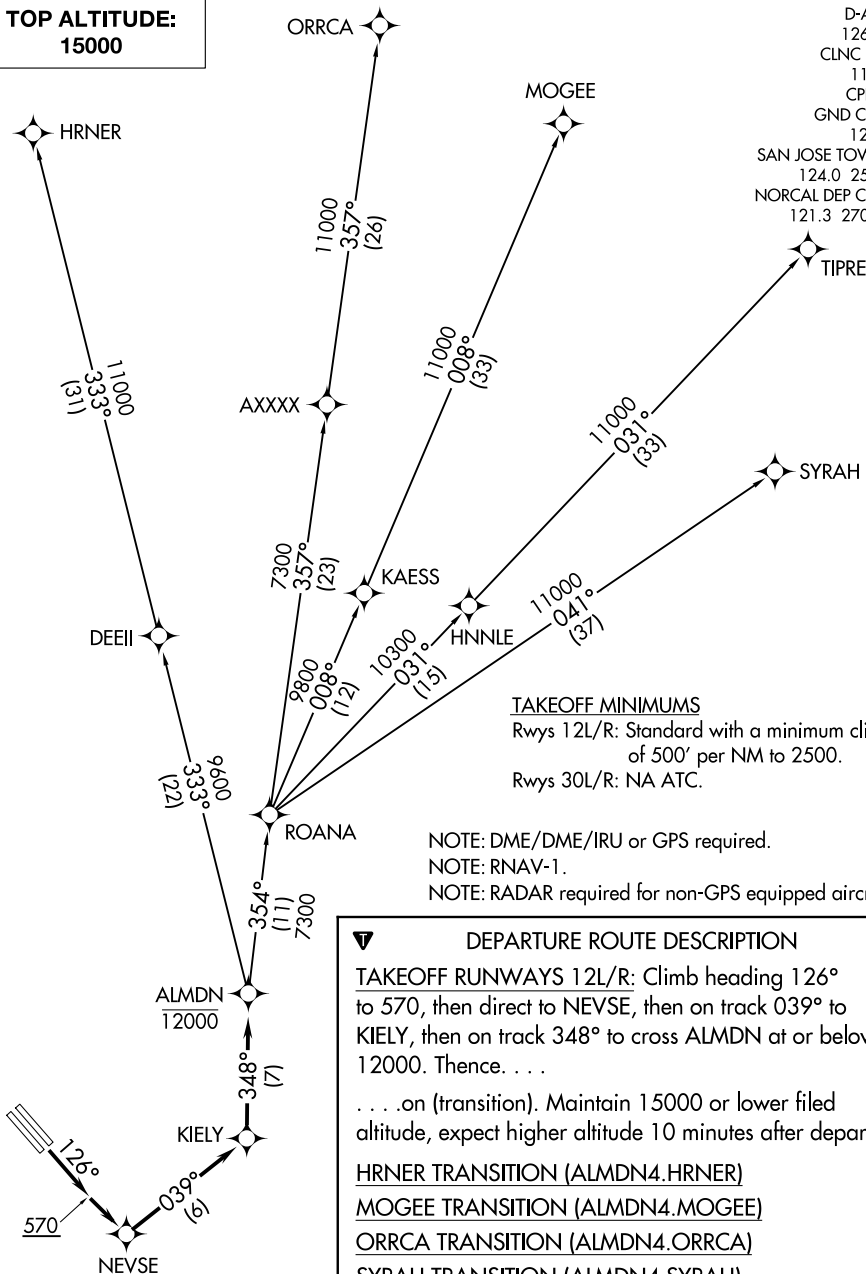


CATEGORY	A	B	C	D
LPV DA		255-3/4	200 (200-3/4)	
LNAV/VNAV DA		541-15/8	486 (500-15/8)	
LNAV MDA	640-1	585 (600-1)	640-13/4	585 (600-13/4)
C CIRCLING	640-1 578 (600-1)	700-1 638 (700-1)	700-13/4 638 (700-13/4)	700-2 638 (700-2)

ALMDN FOUR DEPARTURE (RNAV)

**TOP ALTITUDE:
15000**

D-ATIS
126.95
CLNC DEL
118.0
CPDLC
GND CON
121.7
SAN JOSE TOWER *
124.0 257.6
NORCAL DEP CON
121.3 270.35



TAKEOFF MINIMUMS

Rwys 12L/R: Standard with a minimum climb of 500' per NM to 2500.
Rwys 30L/R: NA ATC.

NOTE: DME/DME/IRU or GPS required.
NOTE: RNAV-1.
NOTE: RADAR required for non-GPS equipped aircraft.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L/R: Climb heading 126° to 570, then direct to NEVSE, then on track 039° to KIELY, then on track 348° to cross ALMDN at or below 12000. Thence. . . .on (transition). Maintain 15000 or lower filed altitude, expect higher altitude 10 minutes after departure.

- HRNER TRANSITION (ALMDN4.HRNER)
- MOGEE TRANSITION (ALMDN4.MOGEE)
- ORRCA TRANSITION (ALMDN4.ORRCA)
- SYRAH TRANSITION (ALMDN4.SYRAH)
- TIPRE TRANSITION (ALMDN4.TIPRE)

NOTE: Chart not to scale.

SW-2, 07 OCT 2021 to 04 NOV 2021

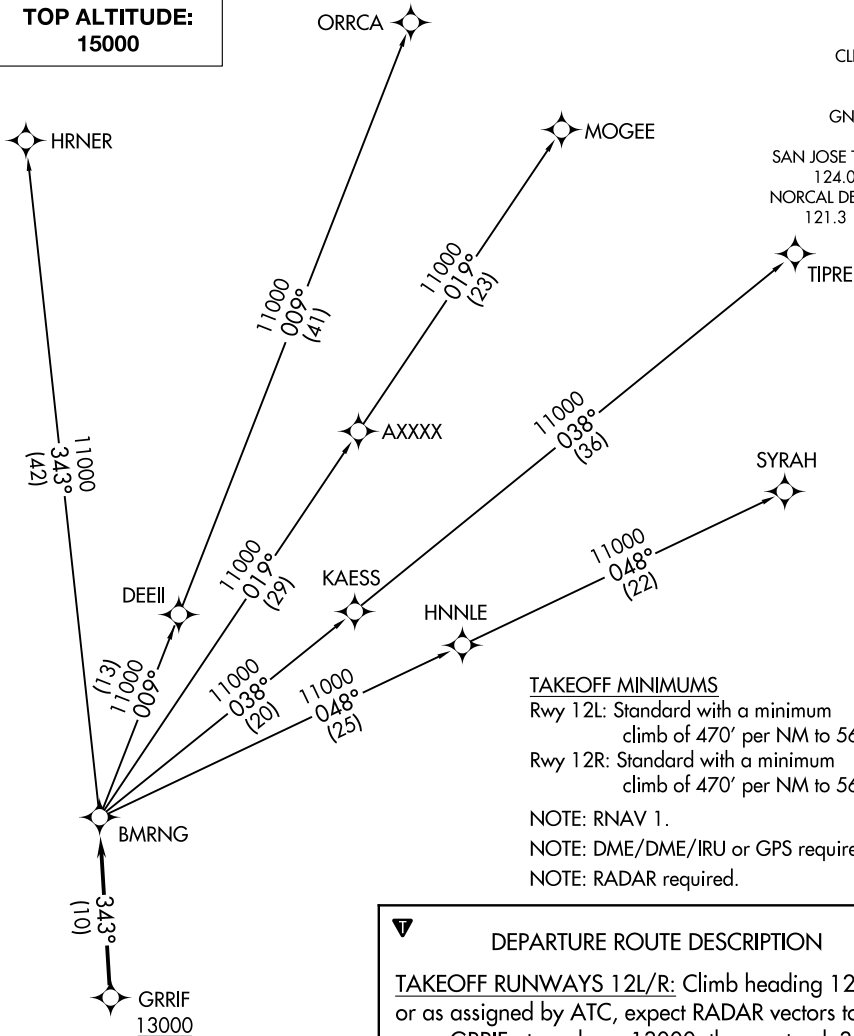
SW-2, 07 OCT 2021 to 04 NOV 2021

ALMDN FOUR DEPARTURE (RNAV)

BMRNG FOUR DEPARTURE (RNAV)

**TOP ALTITUDE:
15000**

D-ATIS 126.95
CLNC DEL 118.0
CPDLC GND CON 121.7
SAN JOSE TOWER * 124.0 257.6
NORCAL DEP CON 121.3 270.35



TAKEOFF MINIMUMS

Rwy 12L: Standard with a minimum climb of 470' per NM to 5600.
Rwy 12R: Standard with a minimum climb of 470' per NM to 5600.

NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: RADAR required.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L/R: Climb heading 126° or as assigned by ATC, expect RADAR vectors to cross GRRIF at or above 13000, then on track 343° to BMRNG, thence
. . . . on (transition). Maintain 15000. Expect filed altitude 10 minutes after departure.

HRNER TRANSITION (BMRNG4.HRNER)

MOGEE TRANSITION (BMRNG4.MOGEE)

ORRCA TRANSITION (BMRNG4.ORRCA)

SYRAH TRANSITION (BMRNG4.SYRAH)

TIPRE TRANSITION (BMRNG4.TIPRE)

NOTE: Chart not to scale.

BMRNG FOUR DEPARTURE (RNAV)

SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

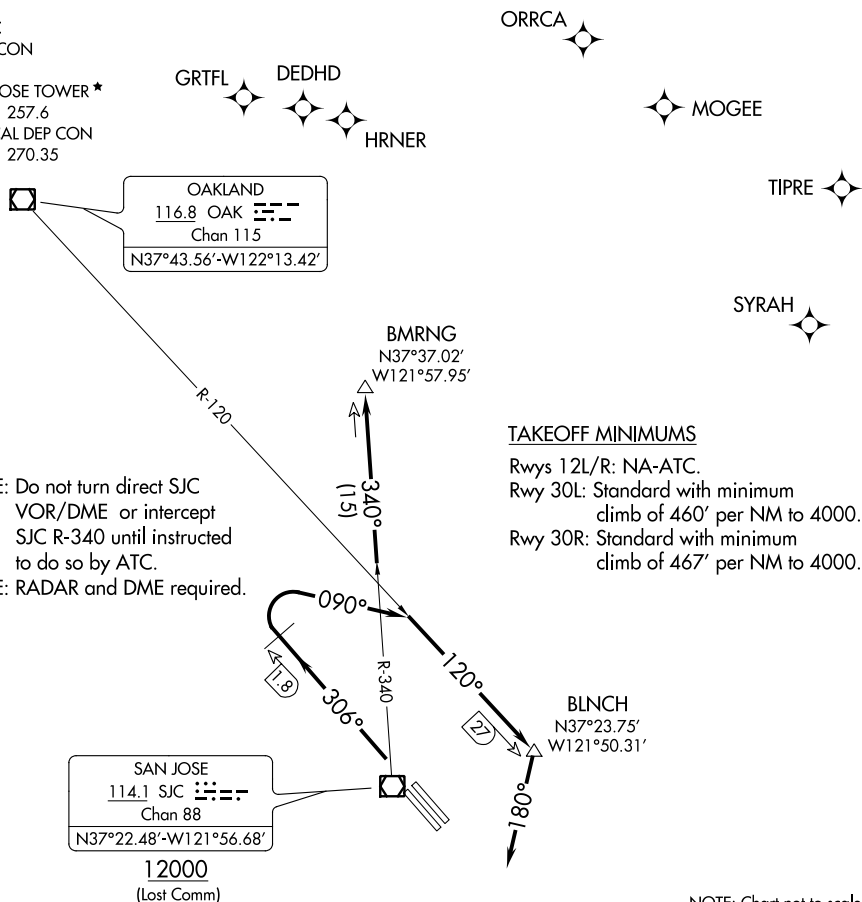
(LOUPE5.BMRNG) 19143
LOUPE FIVE DEPARTURE

NORMAN Y MINETA SAN JOSE INTL (SJC)
 SAN JOSE, CALIFORNIA

AL-693 (FAA)

D-ATIS
 126.95
 CLNC DEL
 118.0
 CPDLC
 GND CON
 121.7
 SAN JOSE TOWER ★
 124.0 257.6
 NORCAL DEP CON
 121.3 270.35

**TOP ALTITUDE:
 5000**



SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 30L/R: Climb heading 306°, at SJC VOR/DME 1.8 DME northwest turn right heading 090° to intercept OAK R-120 to BLNCH, then turn right heading 180° for RADAR vectors to SJC VOR/DME, then on SJC R-340 to BMRNG INT. Maintain 5000, expect filed altitude 10 minutes after departure.

LOST COMMUNICATIONS

RUNWAYS 30L/R: If not in contact with departure control upon reaching BLNCH, depart BLNCH heading 180°. When able turn right direct SJC VOR/DME, cross SJC VOR/DME at or above 12000, then on SJC R-340 to BMRNG INT before proceeding on course.

(LOUPE5.BMRNG) 25APR19
LOUPE FIVE DEPARTURE

SAN JOSE, CALIFORNIA
 NORMAN Y MINETA SAN JOSE INTL (SJC)

(SUNOL1.SUNOL) 20310
SUNOL ONE DEPARTURE

NORMAN Y MINETA SAN JOSE INTL (SJC)
 SAN JOSE, CALIFORNIA

AL-693 (FAA)

D-ATIS
 126.95
 CLNC DEL
 118.0
 CPDLC
 GND CON
 121.7
 SAN JOSE TOWER*
 124.0 257.6
 NORCAL DEP CON
 121.3 270.35

SACRAMENTO
 115.2 SAC
 Chan 99
 N38°26.62'-W121°33.10'
 L-2-3, H-3

LINDEN
 114.8 LIN
 Chan 95
 N38°04.47'-W121°00.23'
 L-2-3, H-3

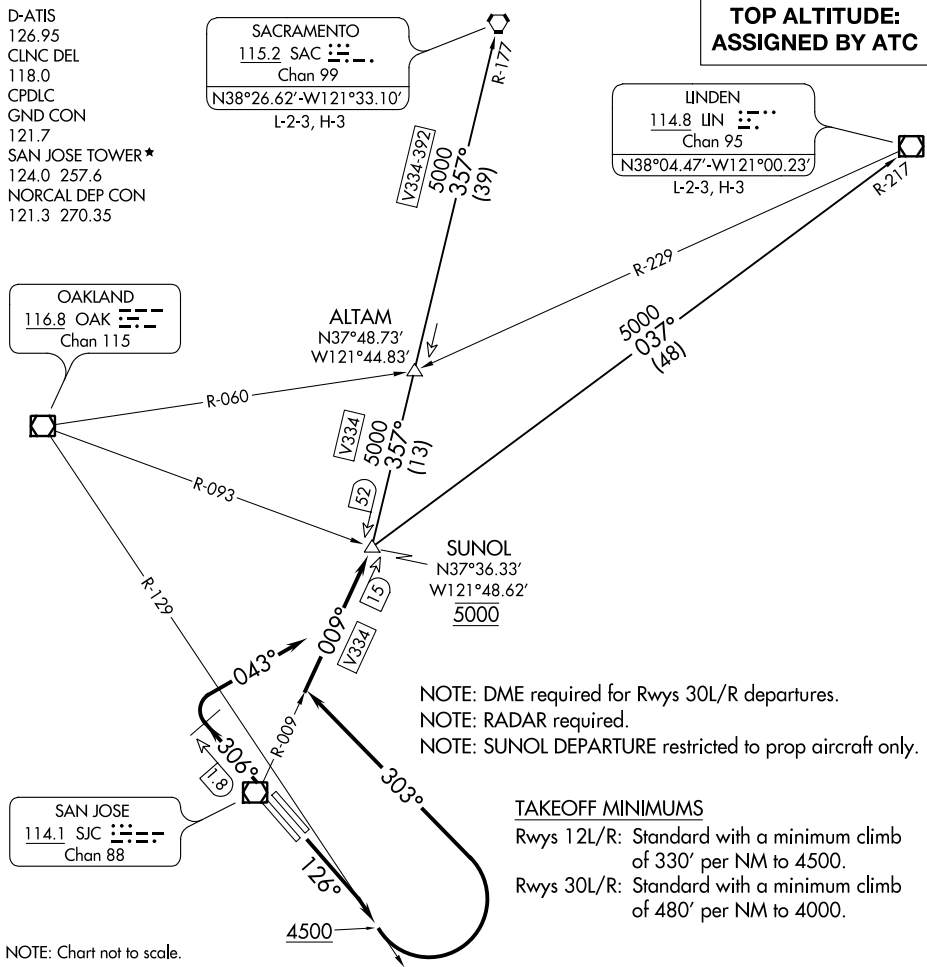
OAKLAND
 116.8 OAK
 Chan 115

ALTAM
 N37°48.73'
 W121°44.83'

SUNOL
 N37°36.33'
 W121°48.62'
 5000

SAN JOSE
 114.1 SJC
 Chan 88

**TOP ALTITUDE:
 ASSIGNED BY ATC**



NOTE: Chart not to scale.

TAKEOFF MINIMUMS

Rwys 12L/R: Standard with a minimum climb of 330' per NM to 4500.
 Rwys 30L/R: Standard with a minimum climb of 480' per NM to 4000.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L/R: Climb heading 126° to intercept and proceed on OAK R-129 to 4500, then turn left heading 303° for RADAR vectors to intercept and proceed on SJC R-009 to cross SUNOL at 5000, thence

TAKEOFF RUNWAYS 30L/R: Climb heading 306° at SJC 1.8 DME northwest of SJC VOR/DME, turn right heading 043° to intercept and proceed on SJC R-009 to cross SUNOL at 5000, thence

. . . . then on (transition) or (assigned route). Maintain ATC assigned altitude.

LINDEN TRANSITION (SUNOL1.LIN): From over SUNOL on LIN R-217 to LIN VOR/DME.

SACRAMENTO TRANSITION (SUNOL1.SAC): From over SUNOL on SAC R-177 to SAC VORTAC.

SUNOL ONE DEPARTURE
 (SUNOL1.SUNOL) 15AUG19

SAN JOSE, CALIFORNIA
 NORMAN Y MINETA SAN JOSE INTL (SJC)

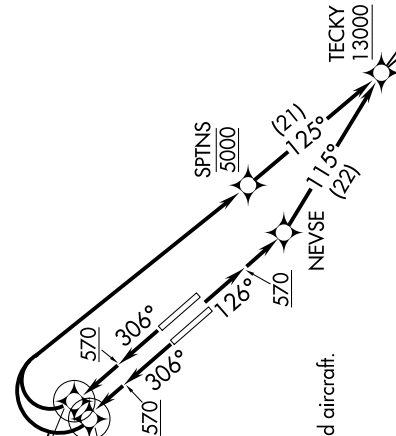
SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

SW-2, 07 OCT 2021 to 04 NOV 2021

D-ATIS 126.95
CLINC DEL 118.0
CPDLC 121.7
SAN JOSE TOWER* 124.0 257.6
NORCAL DEP CON 121.3 270.35

MLPTS 900 230K
STCLR 900 230K



TAKEOFF MINIMUMS

Rwys 12L/R: Standard with a minimum climb of 500' per NM to 570.
Rwys 30L/R: Standard with a minimum climb of 500' per NM to 700.

NOTE: RNAV 1

NOTE: RADAR required for non-GPS equipped aircraft.

NOTE: DME/DME/IRU or GPS required.

NOTE: Rwys 12L/R: LOSHN transition NA.

▼ DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L, 12R: Climb heading 126° to 570, then direct NEVSE, then on track 11.5° to cross TECKY at or above 13000, thence. . . .

TAKEOFF RUNWAY 30L: Climb heading 306° to 570, then direct to cross STCLR at or above 900 at or below 230K, then right turn direct to cross SPTNS at 5000, then on track 12.5° to cross TECKY at or above 13000, thence. . . .

TAKEOFF RUNWAY 30R: Climb heading 306° to 570, then direct to cross MLPTS at or above 900 at or below 230K, then right turn direct to cross SPTNS at 5000, then on track 12.5° to cross TECKY at or above 13000, thence. . . .

. . . on (transition), maintain FL190. Expect filed altitude 10 minutes after departure.

EBAYE TRANSITION (TECKY3.EBAYE)
LOSHN TRANSITION (TECKY3.LOSHN)

NOTE: Chart not to scale.

SW-2, 07 OCT 2021 to 04 NOV 2021

Appendix B: Construction Crane Height Guidance Analysis Meetings and Presentations

Construction Crane Height Guidance Analysis Meetings and Presentations

- **July 10, 2020** – Introduction to City of San José Construction Crane Policy
- **August 14, 2020** – City of San José Construction Crane Policy Update
- **September 11, 2020** – City of San José Construction Crane Policy Update
- **October 30, 2020** – City of San José Construction Crane Policy Update
- **December 4, 2020** – City of San José Construction Crane Height Update – PBCE Roundtable
- **February 19, 2021** – City of San José Construction Crane Height Update – PBCE Roundtable
- **February 22, 2021** – City of San José Construction Crane Height Guidance Study – Community and Economic Development Committee
- **March 9, 2021** – City of San José Construction Crane Height Guidance Study – City Council – Item 5.1 – John Aitken, Director of Aviation and Judy Ross, Assistance Director
 - **March 9, 2021** - Construction Crane Height Guidance Study Findings and Recommendation Memorandum File, No: 21-424

SILICON VALLEY'S AIRPORT



7/10/2020

Introduction to City of San Jose Construction Crane Policy

- March 2019 – City Council approved policy recommendations from Downtown Airspace & Development Capacity Study:
 - Set maximum Downtown area building heights at lowest FAA “TERPS” airspace elevations (replaces use of airline “OEI” airspace elevations, often more restrictive), contingent on FAA issuance of “No Hazard” determinations.



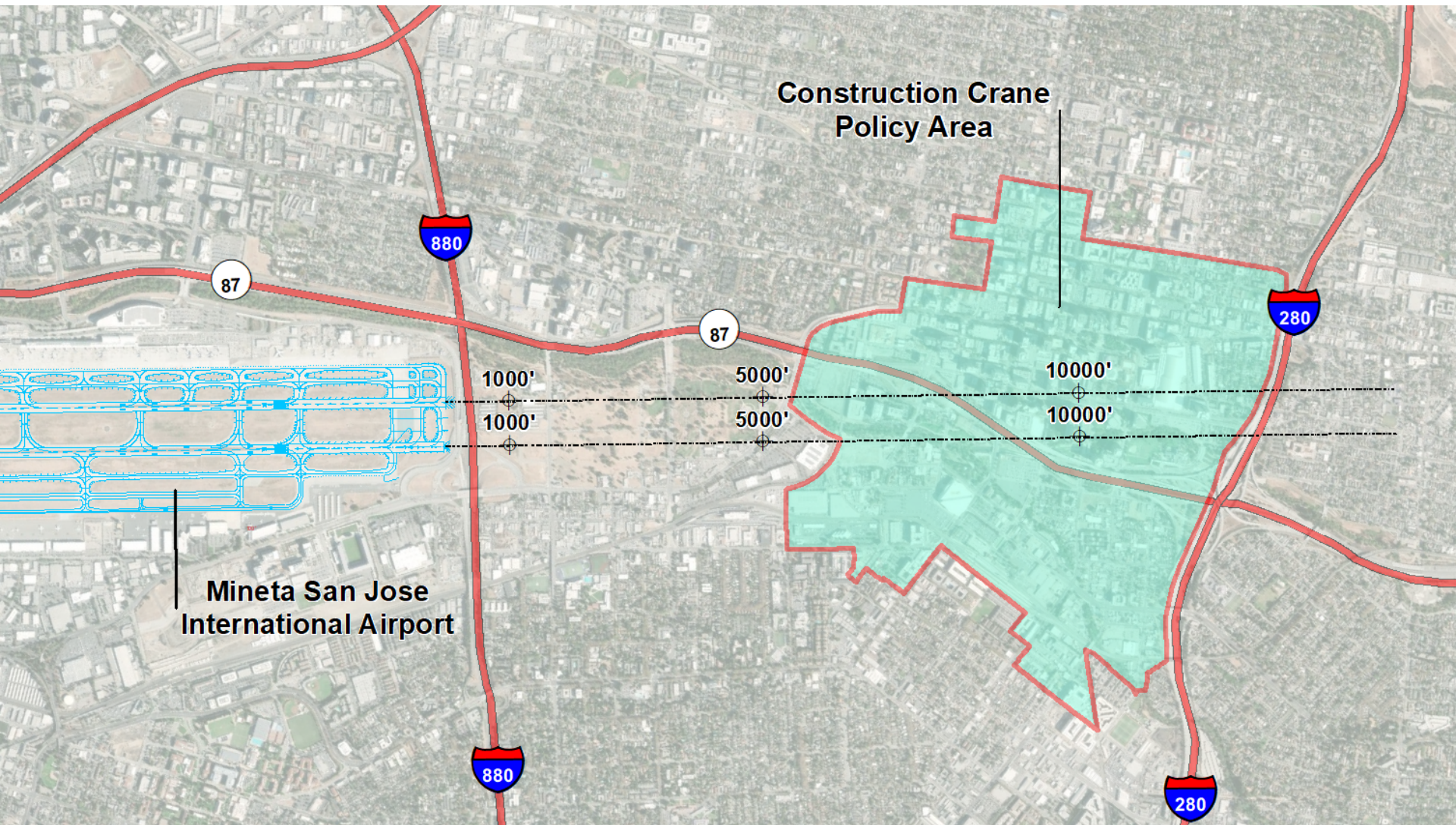
<https://www.flysanjose.com/downtown-heightlimits>

Background (cont'd)



- City staff also directed to refine City development review process to better protect the Airport, including:
“Developing a construction crane policy in the Downtown Core and Diridon Station area to minimize impacts on airline service during construction”.
- Preparation of Construction Crane Policy Study initiated by Airport Department in June 2020.

San Jose Crane Policy Area



Conceptual Airspace Surfaces

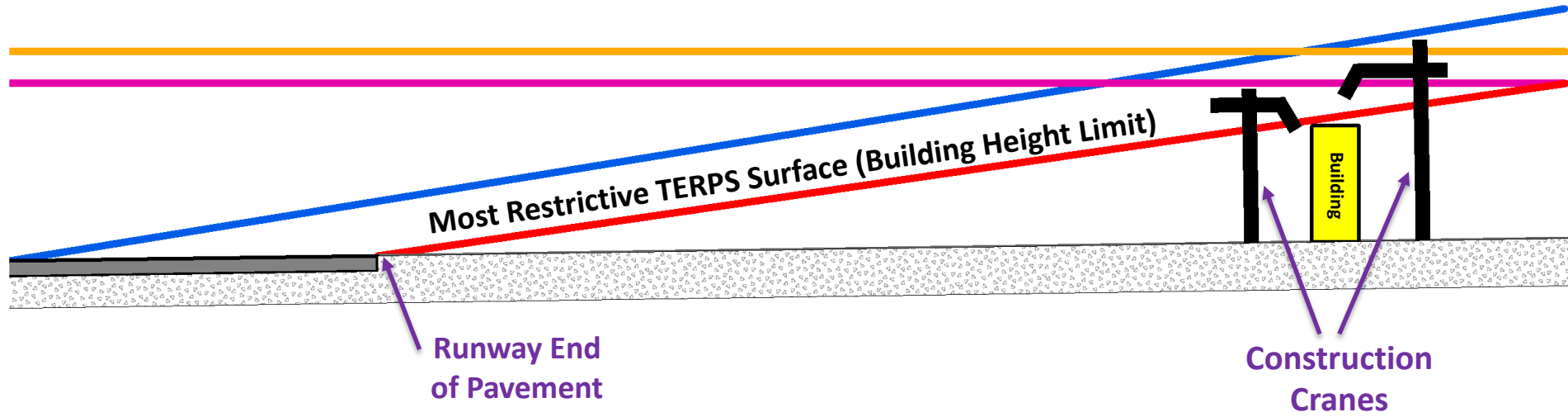


Image Source: Landrum & Brown

Construction Crane Issues



- Downtown San Jose is directly under flight paths of aircraft arrivals and departures at SJC.
- FAA typically allows construction cranes to exceed TERPS airspace elevations by imposing certain temporary modifications to flight procedures. Such modifications pose constraints to airline service.
- Experience has shown that “temporary” cranes can remain in place for years.
- With taller permittable building heights and current and anticipated development in Downtown and Diridon area, presence of construction cranes will be an ongoing condition for next decade or more.

Initial Construction Crane Feedback



- **Mobile cranes**

- Can be raised/lowered quicker than tower cranes
- May be appropriate for certain phases of a project



- **Tower cranes
(downtown high-rise
development)**

- Generally takes up to one-day to lower a crane enough to avoid impacts
- Tower cranes are raised or lowered in 20 foot sections
- Most projects use multiple cranes, which need to have adequate vertical & horizontal separation

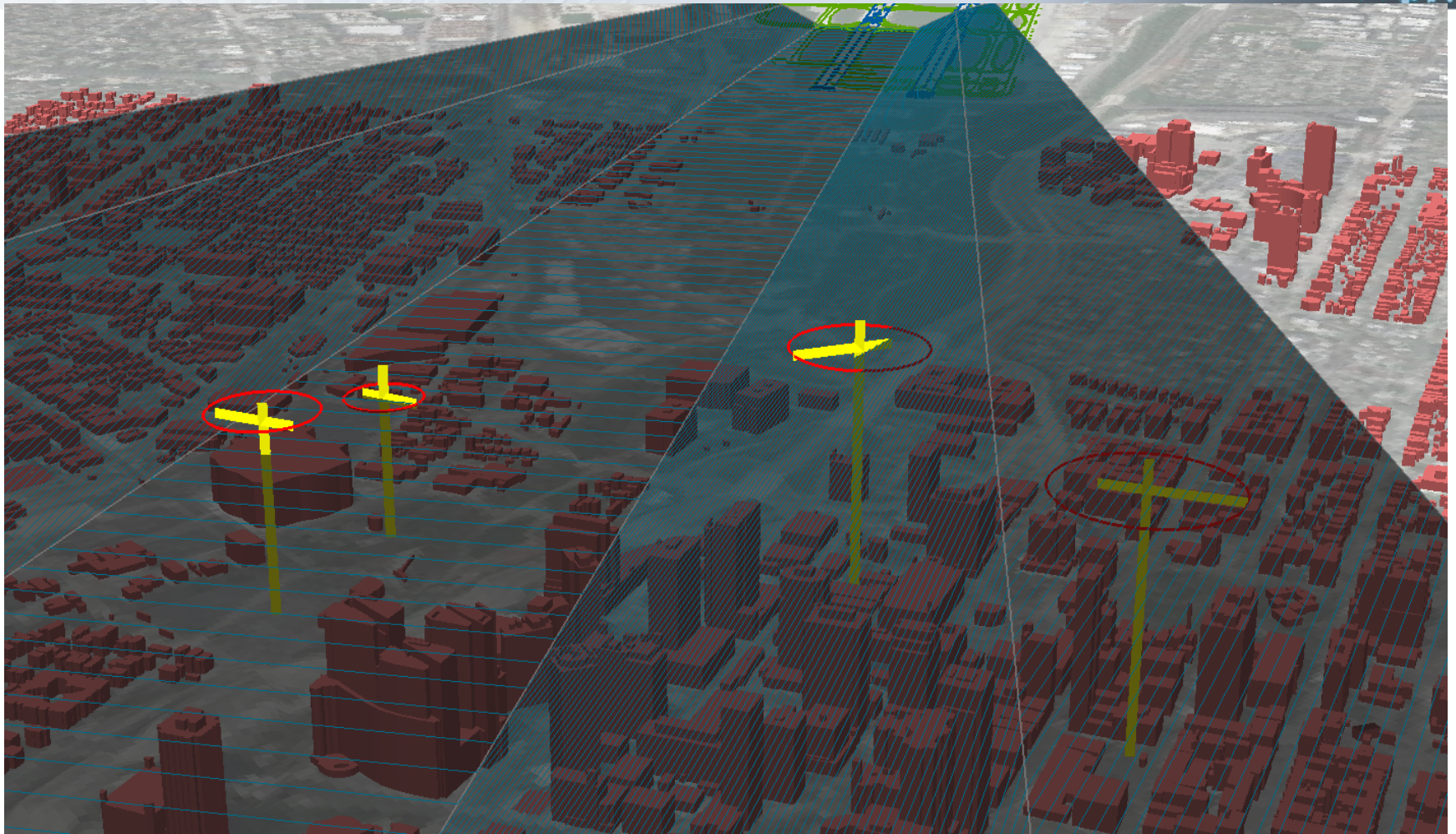


Potential Crane Policy Elements



- Determine acceptable temporary constraints to airline service, utilize information from Downtown Airspace & Development Capacity Study
- Consider duration, or triggers for, raising construction cranes to maximum height.
- Provide guidance on filing temporary cranes for required FAA airspace review (FAR Part 77).
 - Multiple points on a temporary crane location must be filed
 - Highest point may not be the most impactful
 - Radius of jib
- Add to Development Permit Conditions of Approval to comply with City Crane Policy.

Construction Crane Penetrations (3D example)



Note: Fictional crane objects and heights depicted for purposes of illustrating penetrations to the protected airspace surfaces.

- Technical analysis provided by Landrum & Brown (same consultant used in Downtown Airspace & Development Capacity Study).
- Determine those FAA TERPS airspace procedures most commonly used by airlines and assess impacts.
- Provide updates to, and solicit feedback from, Developers & Construction Roundtable.
 - Request stakeholder assistance to share information on different types of crane technology, construction methods to minimize crane duration, real-world time to raise and lower cranes
- Produce composite crane height limit map, similar to Downtown building height limit map
 - All crane heights will be contingent on FAA issuance of “No Hazard” determinations.

- Policy updates at Monthly Developers Roundtable
 - Next Meeting August 14th, 2020, 8:00 – 9:00 a.m.

- Complete policy for implementation by late 2020.

- Prior to policy completion, Airport staff working with individual approved projects to formulate an agreement on construction crane use.

- Questions/Comments/Feedback

Airport Planning & Development

Cary Greene / Ryan Sheelen

Cgreene@sjc.org / rsheelen@sjc.org

408-392-3623 / 408-392-1193

SILICON VALLEY'S AIRPORT



8/14/2020

City of San Jose Construction Crane Policy Update

Progress on City Crane Policy Formulation



- Working with airspace consultant to identify the primary aircraft arrival and departure instrument procedures (TERPS) and the air service impacts of temporary crane penetrations. *Analysis of those impacts to be used for proposing maximum crane elevation limits over downtown.*
- Continuing to seek input from development stakeholders on crane operation decisions and options (next slide). *Input to be used for proposing triggers and duration limits for cranes to be at their maximum heights.*
- Working with airspace consultant on preparing guidelines for complying with FAA regulations for airspace review of proposed temporary cranes. *Guidelines to ensure proper understanding of FAA filing requirements and subsequent notifications.*

Timeline:

September 2020	Special Airport Developers Roundtable
October 2020	Draft Crane Policy for review
November 2020	Special Airport Developers Roundtable
December 2020	Council Action

Requested Stakeholder Input



Please consider the questions below and provide feedback to the Airport by 8/28.

- What types of cranes do you use/anticipate using for your project? How do you make the determination on what type of crane to use?
- Advise of any complications in adding multiple jumps for each project crane.
- At what point during construction do you **require** extending crane above the building's maximum height? What point is ideal?
- What is the typical vertical clearance required between a crane and top of building height? What are the variables?
- What is the typical vertical/horizontal separation required between multiple cranes/jibs?

Special Airport Roundtable Meeting



Next Meeting:

Friday, September 11 8:00-9:00 a.m. (tentative)

Topics for discussion:

- a. proposed downtown crane elevation limits
- b. other potential policy elements on crane operation

- Presentation & Zoom Recording to be posted at www.flysjc.com/downtownheightlimits on 8/17.
- Questions/Comments/Feedback

Airport Planning & Development

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SILICON VALLEY'S AIRPORT



9/11/2020

City of San Jose Construction Crane Policy Update

Meeting Objectives



- To Review, Clarify, and Add to Construction Stakeholder Input Received To Date
- Existing Air Service (OEI) Protection with FAA Modifications Map
- Timeline

Types of cranes used for City projects? Determination on what type of crane to use?



"A-frame" hammerhead cranes (Image: Liebherr)



Flat top hammerhead crane (Image: Terex)



Luffing crane (Image: Cranemag.com)

- cost • schedule • height of structure • maximum weight to be lifted
- availability • multiple crane requirement • space around site • reach
- *Have hammerhead & luffing cranes been considered for your project? Why/why not?*

Mobile Cranes

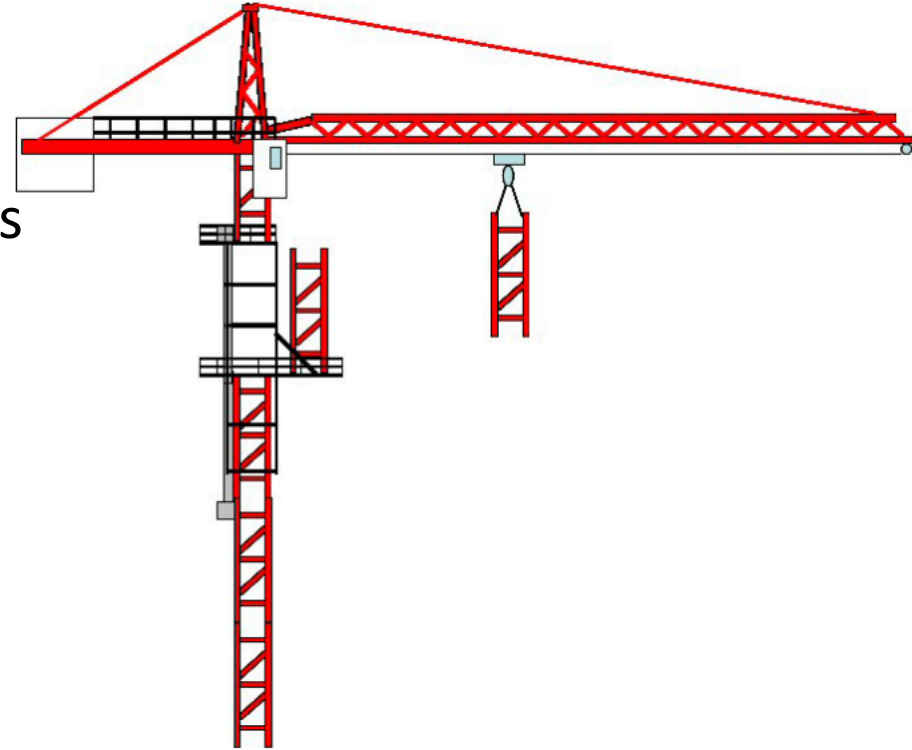


- *Can you use a mobile crane in your project at the beginning or at the end stages of construction?*
- *How much height is required above the top of building?*
- *What is the typical duration of use for a mobile crane?*
- *What is the time required to raise/lower?*

Complications in adding multiple jumps for each project crane?



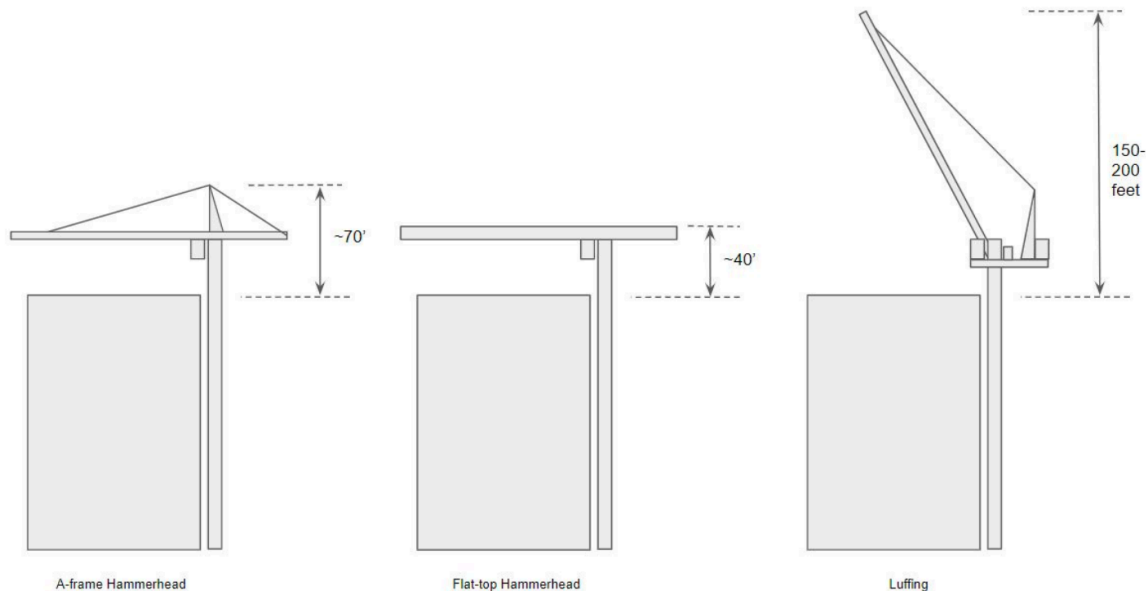
- Raised/lowered in 19-20' sections
- 1 day to raise/lower a section
- Completed on weekends
- Increased cost/schedule
- Structural tie-ins



- *Would you incorporate multiple jumps into your project to minimize the duration your crane is at its maximum height?*

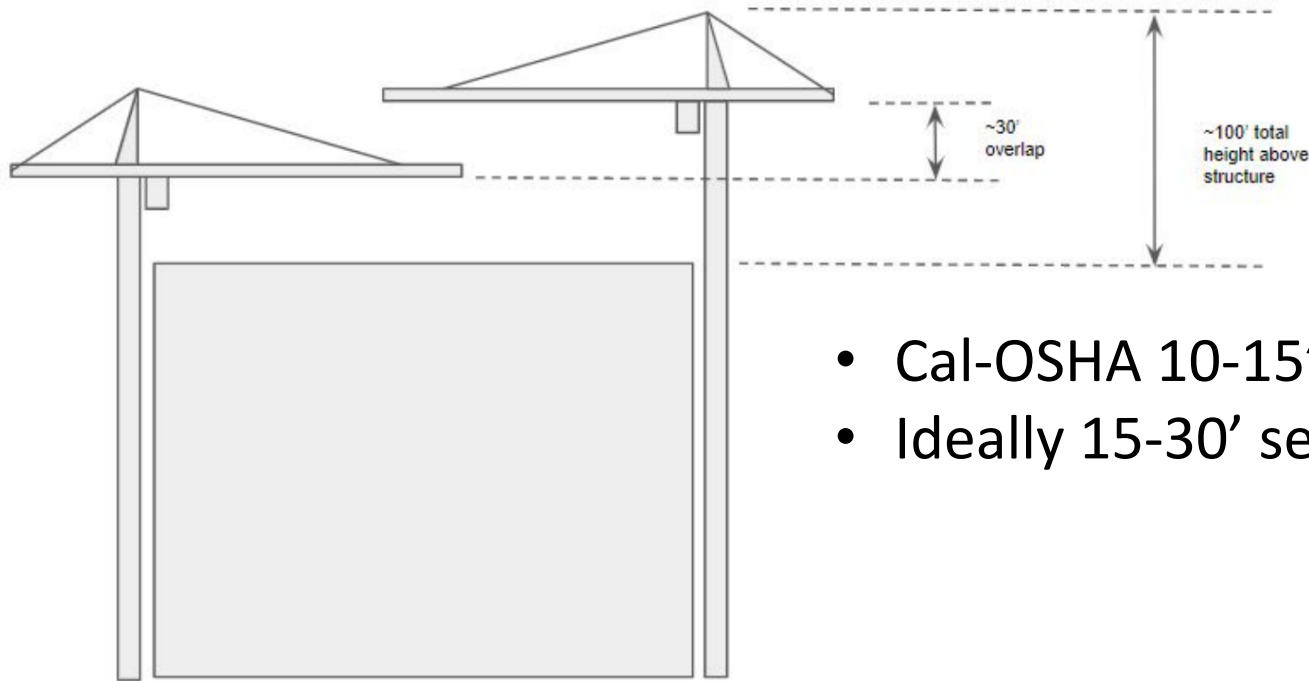
Typical vertical clearance required between crane and top of building height? Variables?

- Clearance 30-50'
(Depends on type of crane used)
- Largest material to be lifted
- Crane load capacity
- Multiple cranes



- *For your specific project, what is the absolute minimum vertical clearance between the top of building height and lowest point on crane? Explain why?*
- *Can you reduce vertical clearance by using a different type of crane pictured above?*

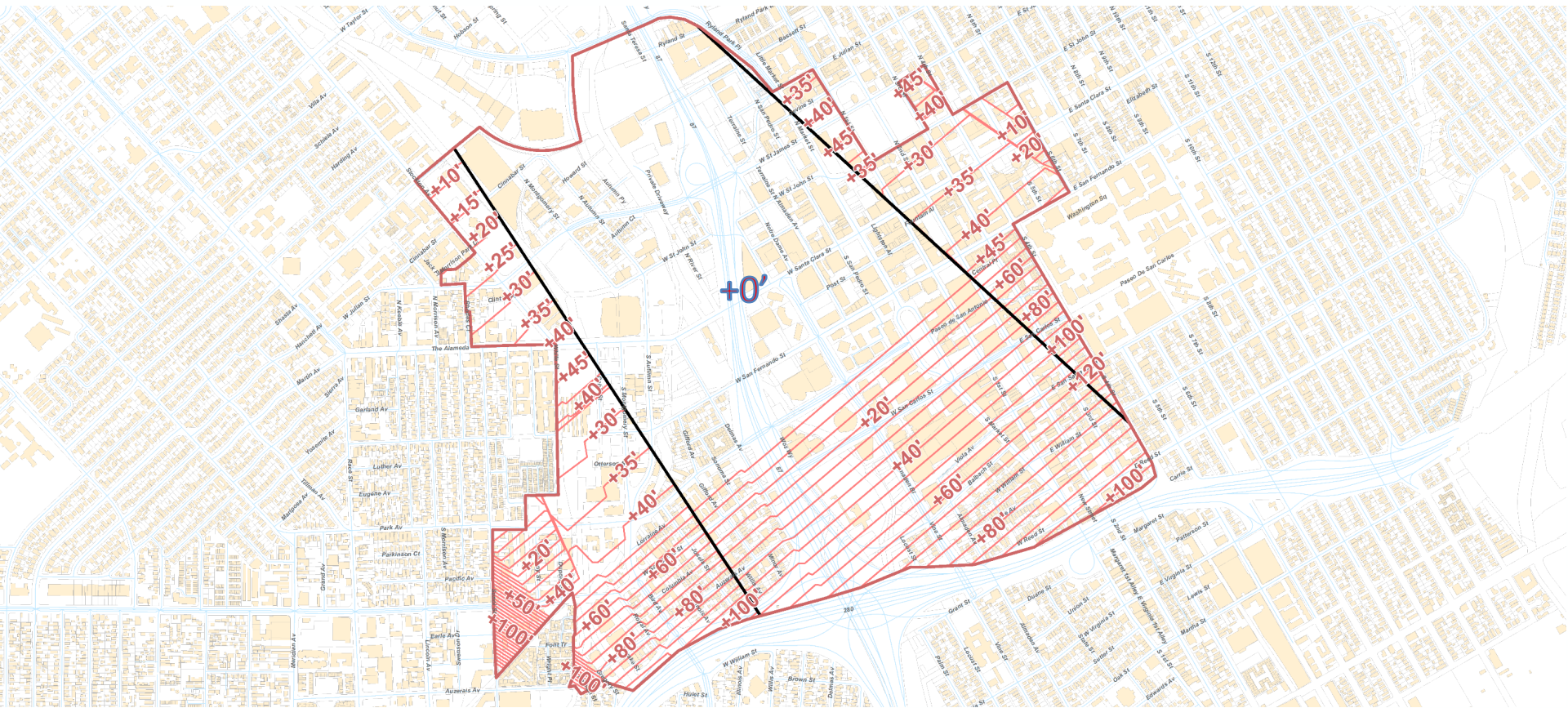
Typical vertical/horizontal separation required between Multiple cranes/jibs?



- Cal-OSHA 10-15' minimum
- Ideally 15-30' separation

- *What is the absolute minimum vertical separation that would allow you to build your project? Explain why?*
- *Is there a point in your project at which you can remove one crane and lower the second crane?*

Air Service (OEI) Protection with FAA Modifications



❖ Heights above and represent additional height above existing
Downtown Building Height Limits

Crane Policy Timeline



October 16 th 2020 8:00 – 9:00 a.m.	PBCE Developers Roundtable
October 2020	Special Airport Developers Roundtable <i>Preliminary Staff Recommendations</i>
November 2020	Special Airport Developers Roundtable <i>Refined/Completed Draft Staff Recommendations</i>
December 2020	Council Action

- Presentation & Zoom Recording to be posted at www.flysjc.com/downtownheightlimits on 9/14.

Airport Planning & Development

Cary Greene / Ryan Sheelen

Cgreene@sjc.org / rsheelen@sjc.org

408-392-3623 / 408-392-1193

SILICON VALLEY'S AIRPORT



10/30/2020

City of San Jose Construction Crane Policy Update

MEETING AGENDA



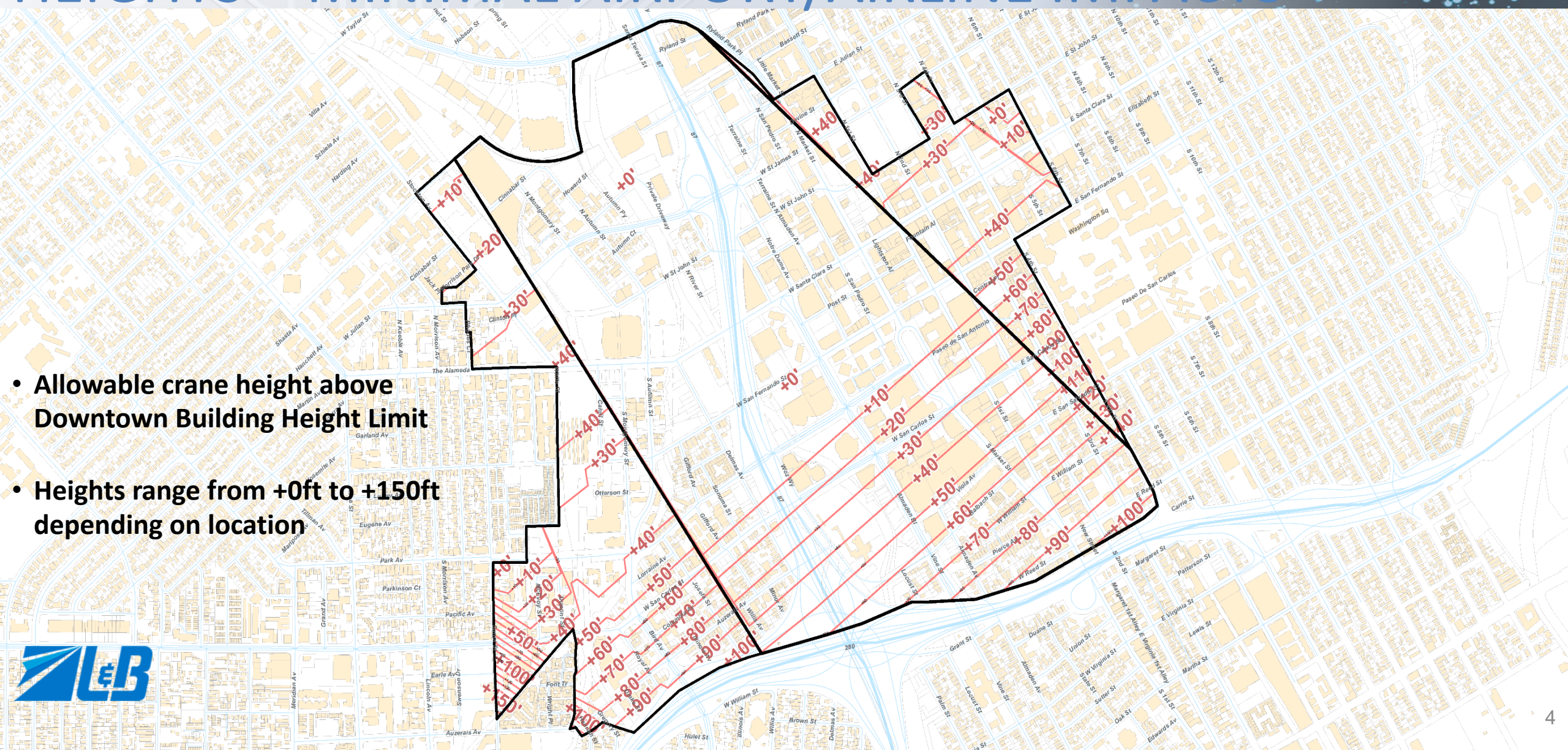
1. General Crane Policy approach
2. Construction Crane Height Impacts on Airport/Airlines
3. Mitigation Impact Discussion
4. Timeline
5. Q/A

General Crane Policy Approach



- Construction Crane Height Impacts
 - One set of crane heights Airport/Airline Impacts
- Mitigation Impact Alternatives
- Crane Policy will apply to all project construction cranes in Downtown San Jose.

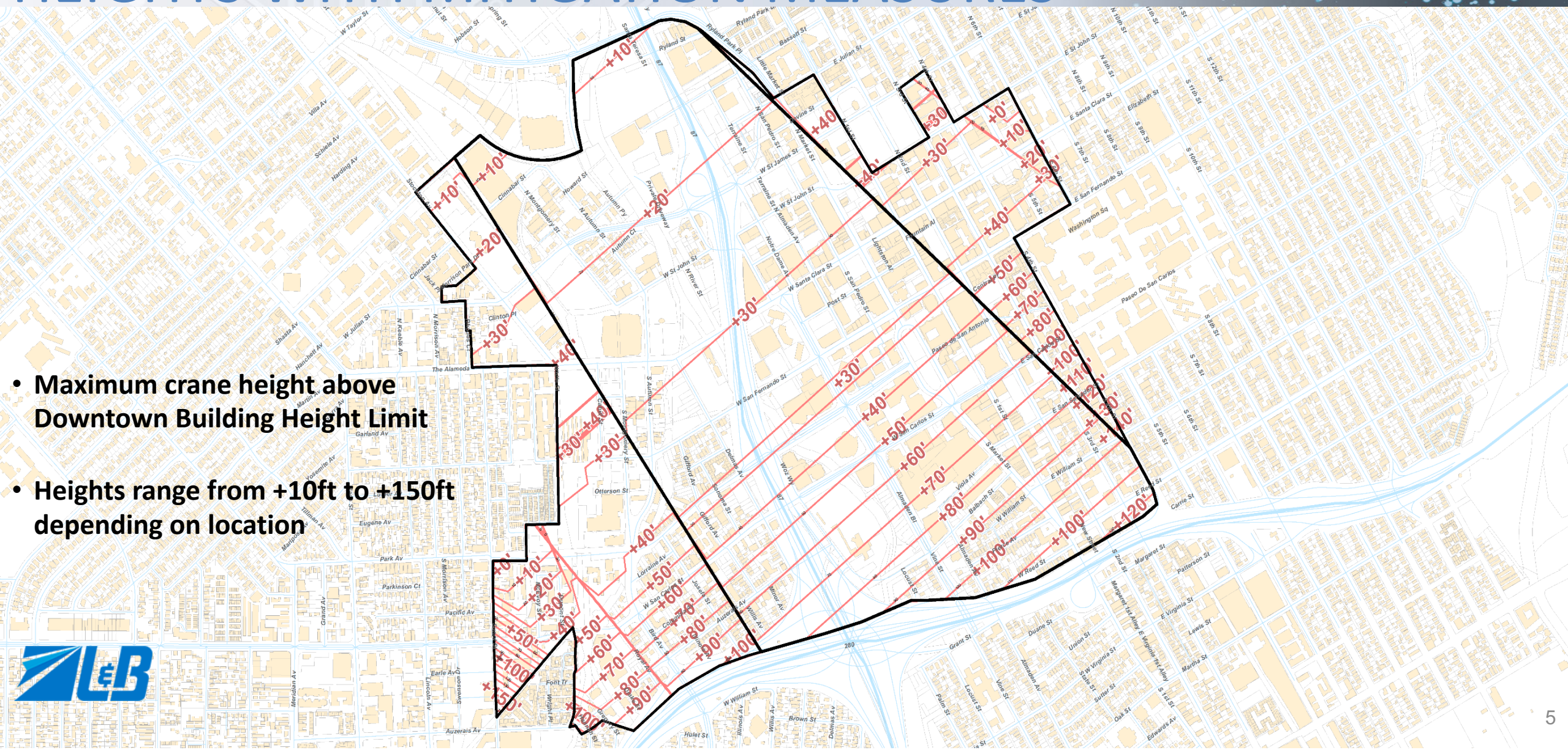
SCENARIO 1 – DOWNTOWN ALLOWABLE CRANE HEIGHTS – MINIMAL AIRPORT/AIRLINE IMPACTS



- Allowable crane height above Downtown Building Height Limit
- Heights range from +0ft to +150ft depending on location



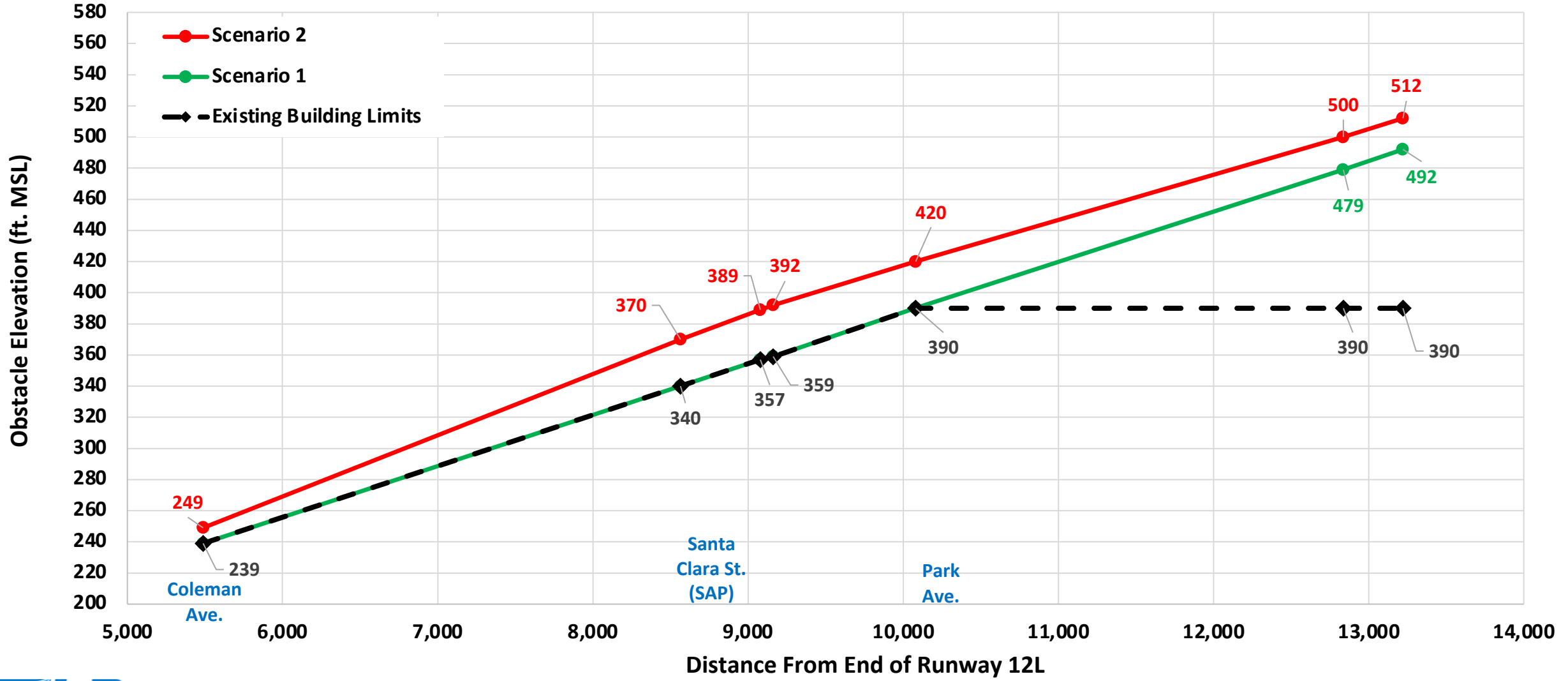
SCENARIO 2 – DOWNTOWN MAXIMUM CRANE HEIGHTS WITH MITIGATION MEASURES



- Maximum crane height above Downtown Building Height Limit
- Heights range from +10ft to +150ft depending on location



PROFILE VIEW COMPARISON – Existing Building Limits, Scenario 1, Scenario 2



- If project exceeds Option 1 crane heights, developer will compensate Airlines for lost passenger/cargo revenue as a result of crane impacts
 - Costs and mechanism for collecting funds under analysis - TBD
 - Compensation only required if Airline(s) are actually impacted for South departures (towards downtown SJ)
 - South departures occur an average of 13% annually and more frequently during the winter months
 - Compensation only required if passengers/cargo removed from aircraft vs. scheduling “blocked seats”
 - If multiple cranes impact airline service, cost will be split among projects for the impacted period of time

Next Meeting:

TBD December 2020

October 2020	Special Airport Developers Roundtable <i>Preliminary Staff Recommendations</i>
November 2020	Continued Crane Policy Development Continue to be open to meet with stakeholders
December 2020	Special Airport Developers Roundtable <i>Refined Draft Staff Recommendations</i>
First Quarter of 2021	Council Committee Review Council Action

- Presentation & Zoom Recording to be posted at www.flysjc.com/downtownheightlimits on 11/02/20.
- Questions/Comments/Feedback

Airport Planning & Development

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SILICON VALLEY'S AIRPORT

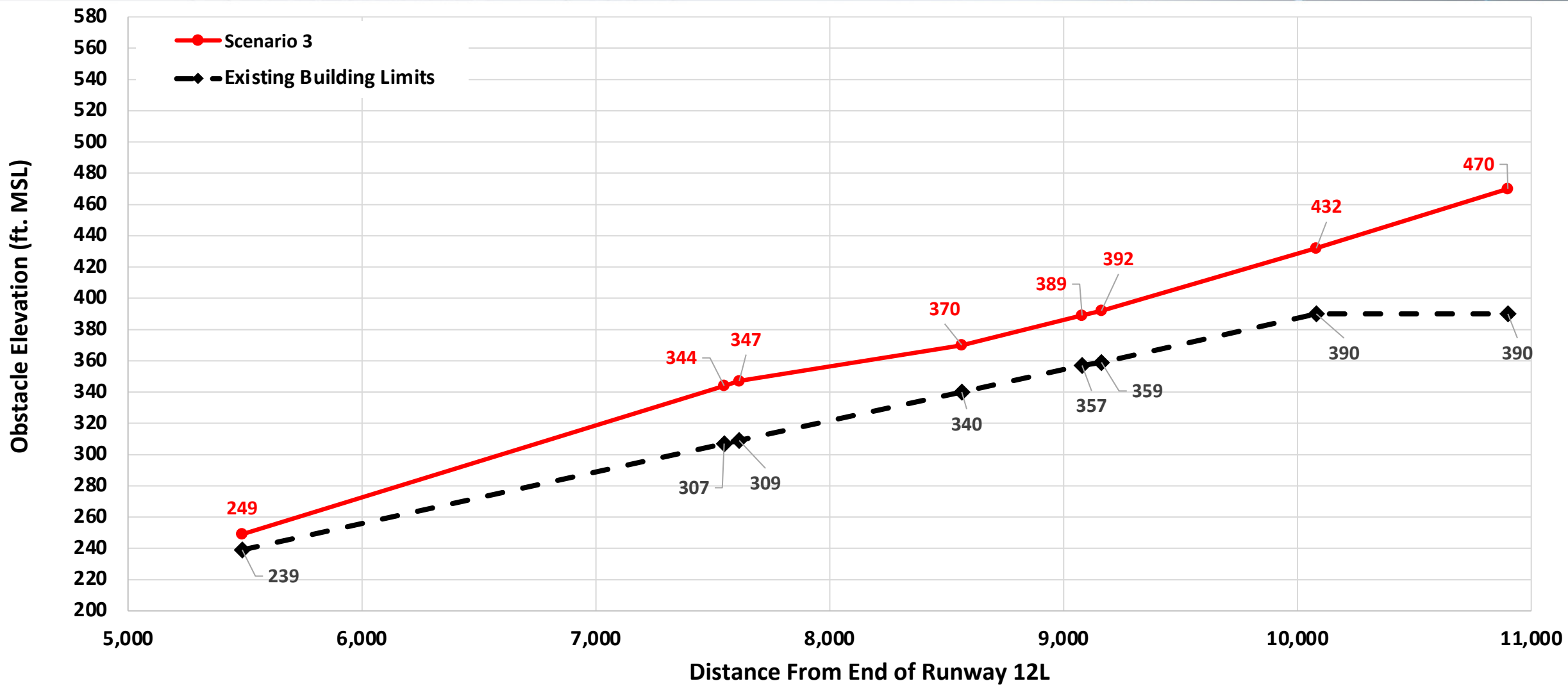


12/04/2020

City of San Jose
Construction Crane Height Update – PBCE Roundtable

- New proposed Crane Heights (Scenario 3) protect strictly Airline approach/departure procedures, rather than One Engine Inoperative (OEI) procedures.
- SJC working with FAA & Airlines to ensure adequate approach/departure procedure protection.
- Preparing Crane Guidance document for Developers
 - Attach to PBCE permit conditions of approval
 - Utilize crane jumps as needed to ensure Crane is only at maximum height for no more than 6 months (max height during April – September window least impactful).
 - FAA Part 77 guidance to minimize crane impacts

SCENARIO 3 PROFILE VIEW COMPARISON TO EXISTING BUILDING HEIGHT LIMITS



- Scenario 3 will have significant impacts to the Airport & Airline services to the community.
- Three ways Developers will minimize impacts:
 1. Jump construction cranes to max height only when needed to complete final stories of building.
 2. Limit max crane heights to 6 month timeframe.
 3. Schedule max crane heights during non South Flow months (April – September).

- Presentation & Zoom Recording to be posted at www.flysjc.com/downtownheightlimits on 12/07/20.
- Questions/Comments/Feedback

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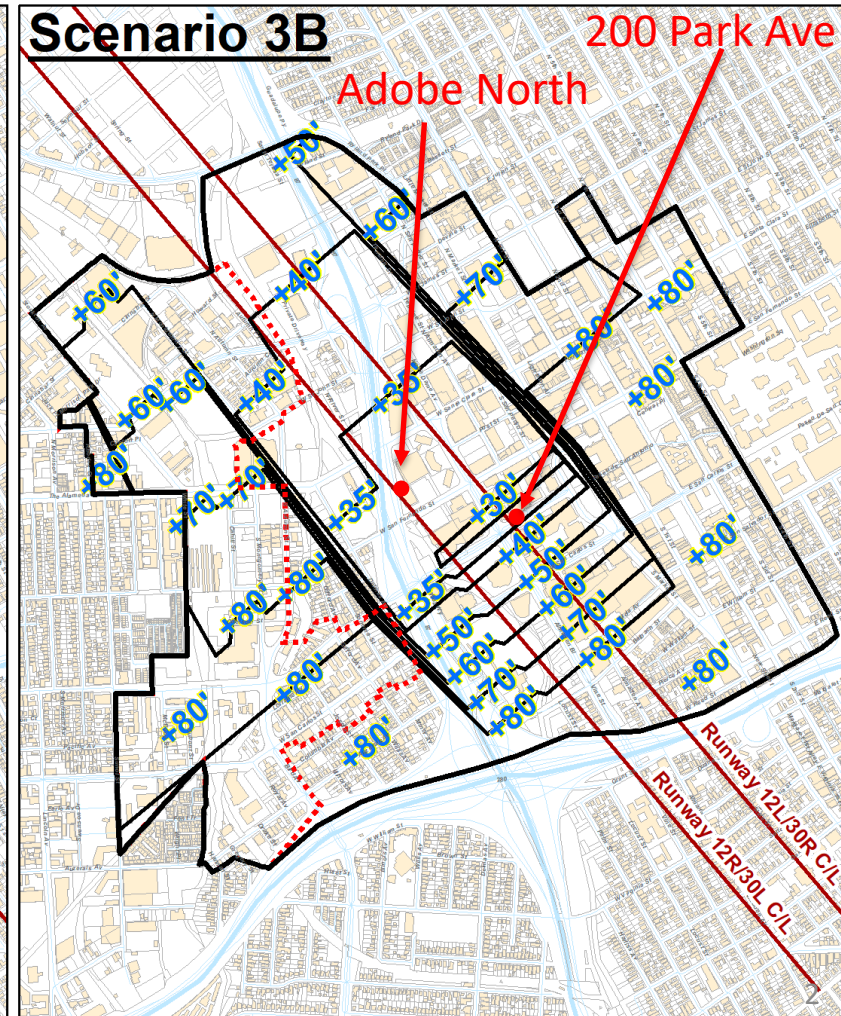
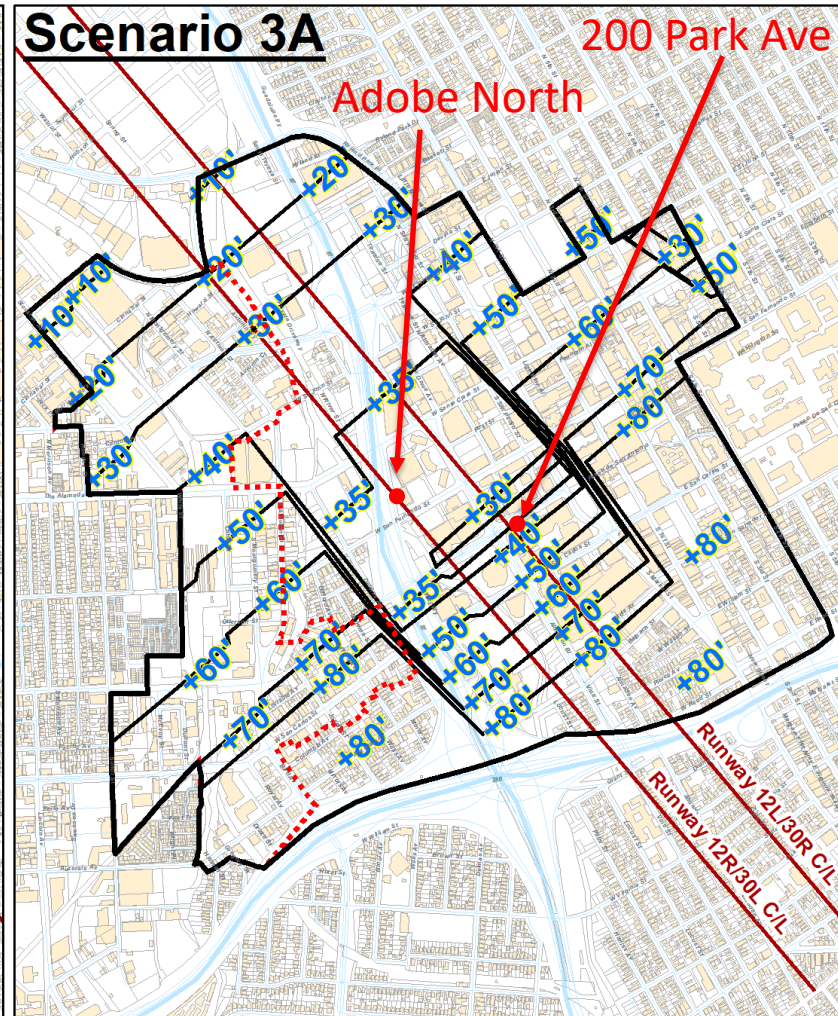
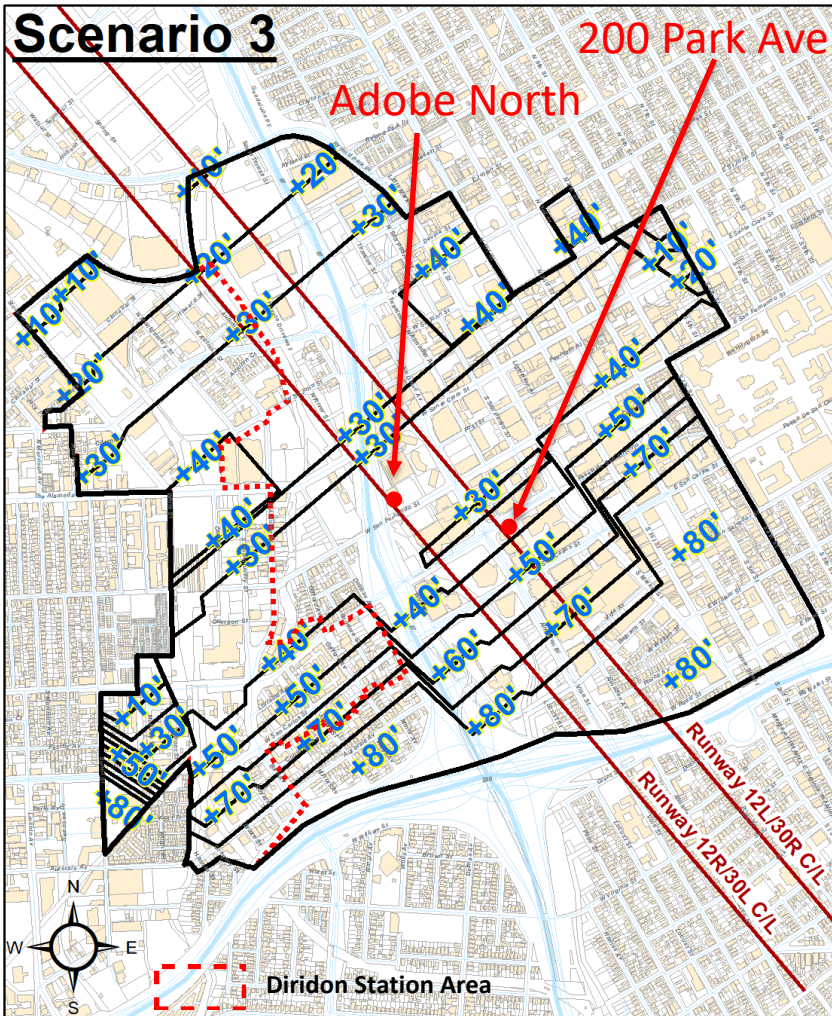
SILICON VALLEY'S AIRPORT



City of San Jose Construction Crane Height Update - PBCE Roundtable

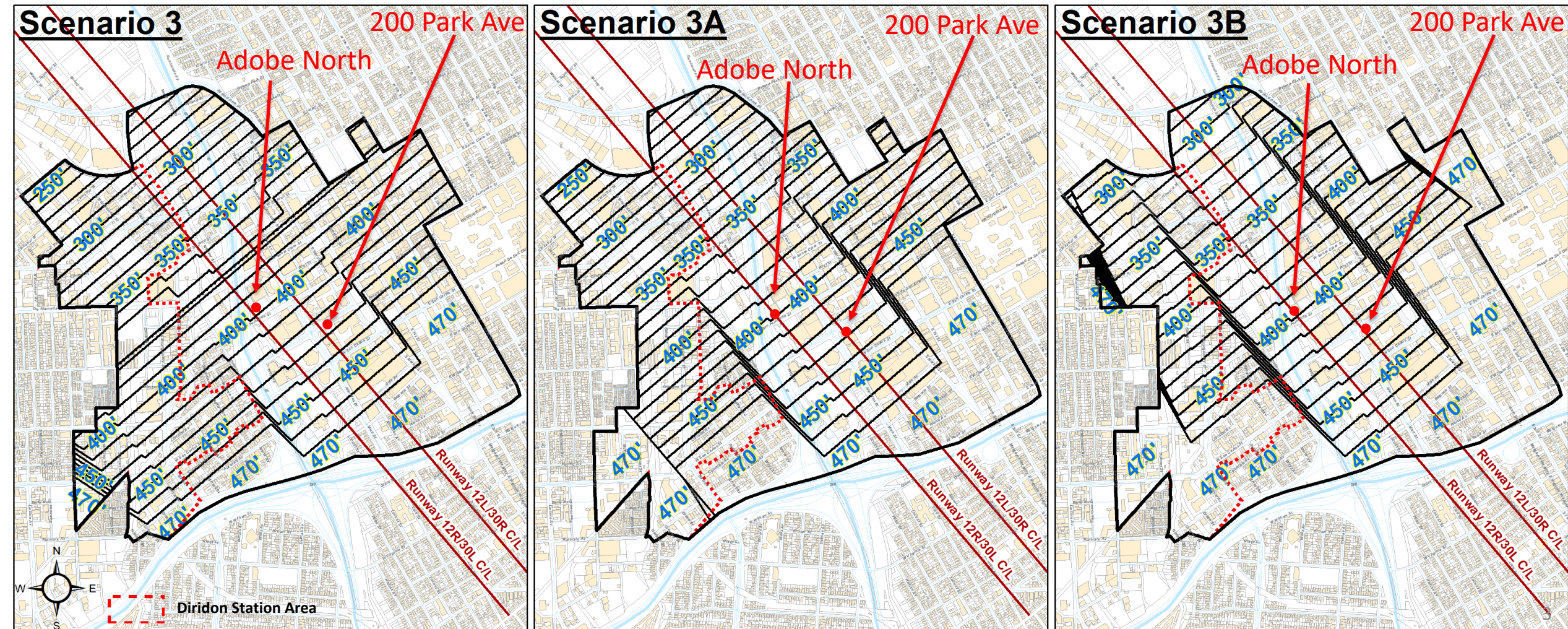
February 19, 2021

SCENARIOS 3-3A-3B CRANE HEIGHT DIFFERENTIAL TO BUILDING HEIGHTS



- Progression through Scenarios 3-3A-3B: largest height increases in the Diridon Station Area, East Downtown, minor height increases in central Downtown directly below SJC's Runway centerlines.

SCENARIOS 3-3A-3B CRANE PROTECTION HEIGHTS (MSL)



• Progression through Scenarios 3-3A-3B: largest height increases in the Diridon Station Area, East Downtown, minor height increases in central Downtown directly below SJC's Runway centerlines.

- **FAA's responsibility** to protect critical air carrier instrument procedures (TERPS surfaces)
 - FAA issuance of “Determination of No Hazard” for temporary cranes
 - FAA may require additional conditions (i.e. obstruction lighting and marking)
- Airlines and Development Community both impacted by Construction Crane Heights
 - Potential Air Service impacts on Transcontinental, Hawaii, and International Flights during South Flow Operations (13% annual average)
 - Developers to follow Construction “Crane Height Guidance Document”

CRANE HEIGHT GUIDANCE DOCUMENT



- Construction Crane Height Guidance document for Developers
 1. Utilize Crane jumps to ensure crane at maximum height for shortest period of time
 2. Cranes at maximum heights for 6 months
 3. Schedule highest heights during non-South flow months (April-September)
- Airport exploring Landing Fee Reduction Program

February 2021	PBCE Developer Roundtable - 2/19/2021 Community and Economic Development Committee (CED) - 2/22/2021
March 2021	City Council 3/09/2021
April 2021	Crane Height Guidance Implementation

- Presentation & Zoom Recording to be posted at www.flysjc.com/downtownheightlimits next week.
- Questions/Comments/Feedback

Airport Planning & Development

Andres "Drew" Niemeyer/ Ryan Sheelen

aniemeyer@sjc.org / rsheelen@sjc.org

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SILICON VALLEY'S AIRPORT



City of San Jose Construction Crane Height Guidance Study

City Council – Item 5.1

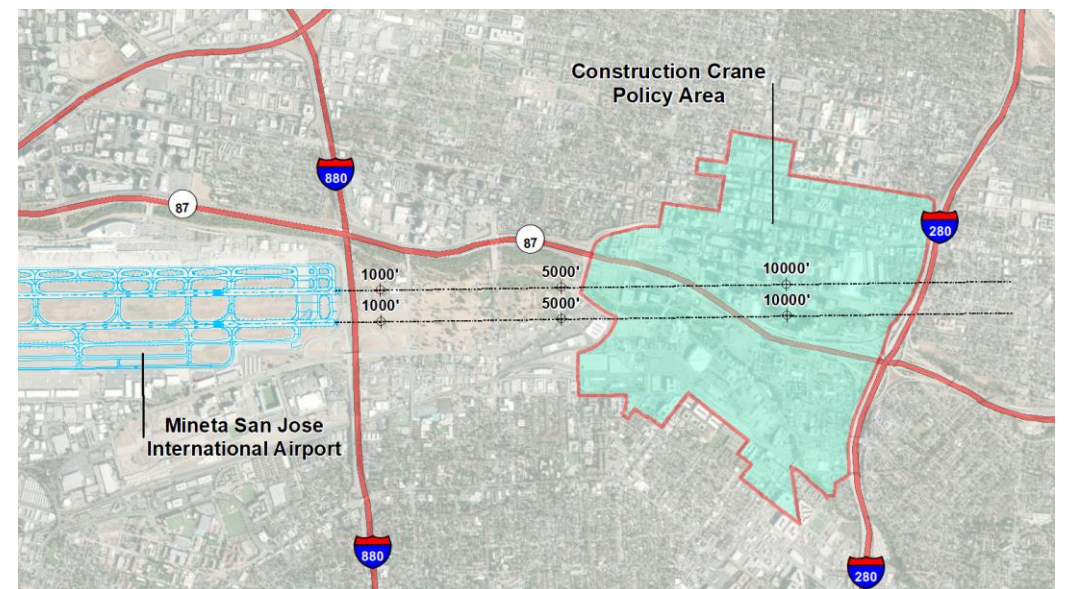
March 9, 2021

John Aitken, Director of Aviation & Judy Ross, Assistant Director

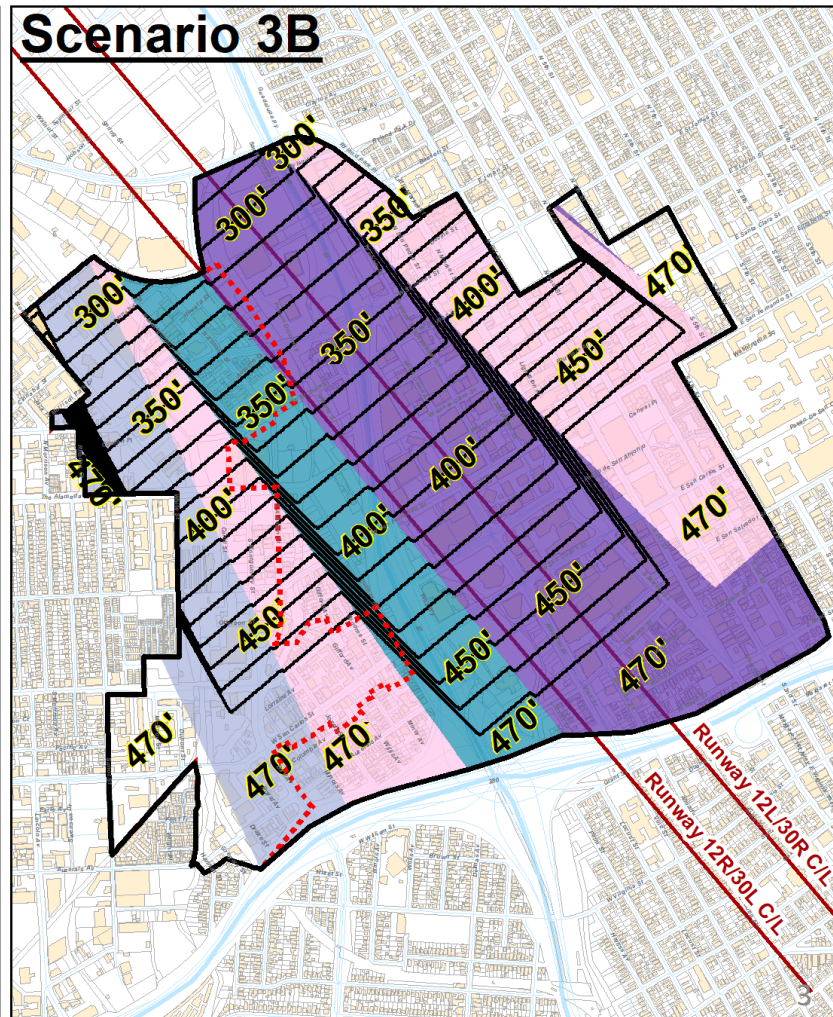
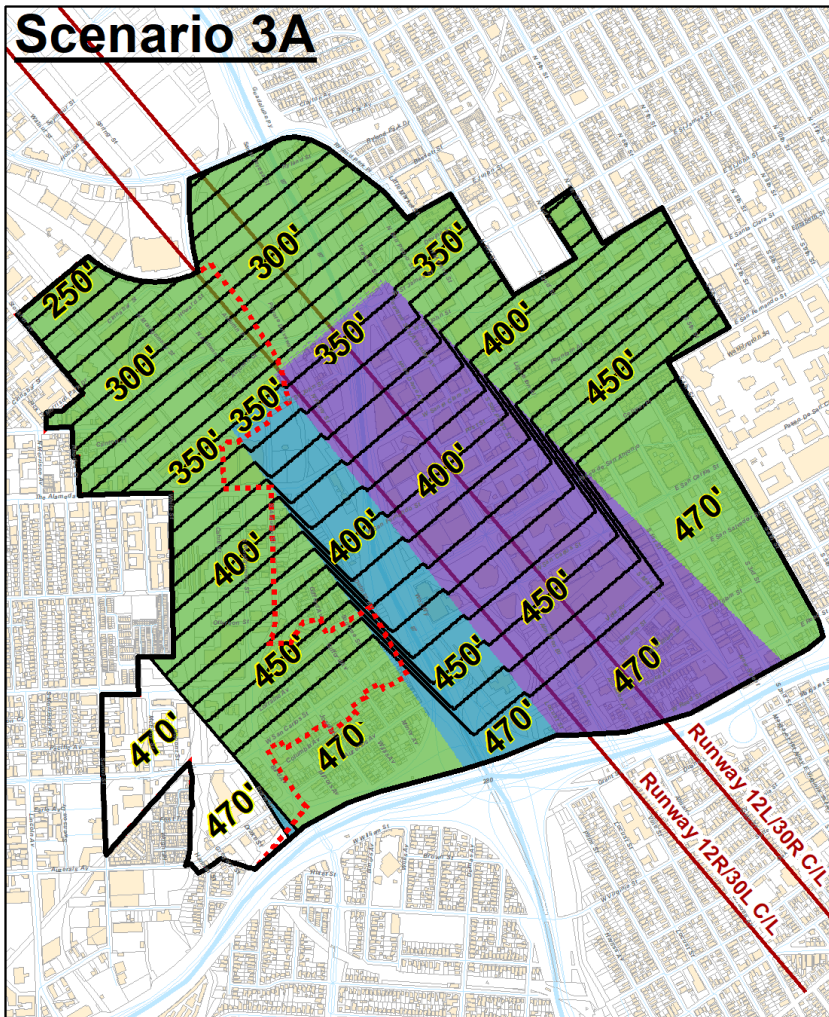
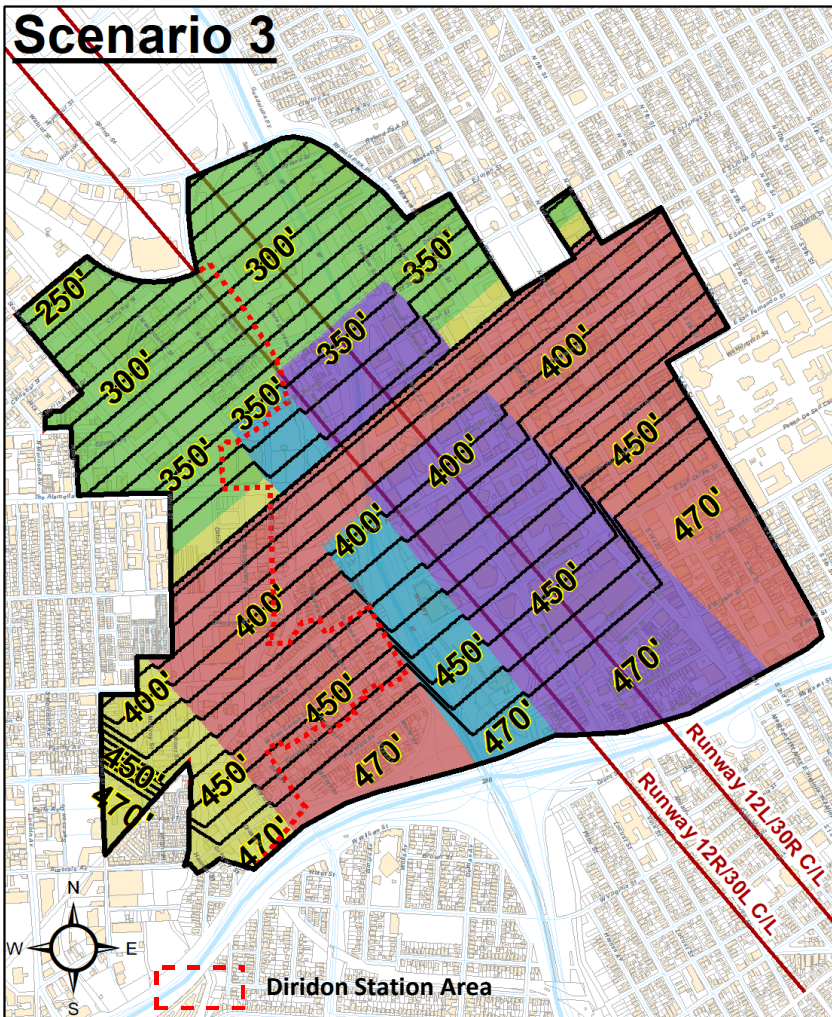
CONSTRUCTION CRANE HEIGHT GUIDANCE STUDY



- **Downtown Airspace and Development Capacity (DADCS)**
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 - Develop Construction Crane Guidelines
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 - Temporary Cranes regulated by FAA through Part 77 / TERPS Review Process
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SCENARIOS 3-3A-3B CRANE PROTECTION HEIGHTS (SIDE-BY-SIDE COMPARISON)

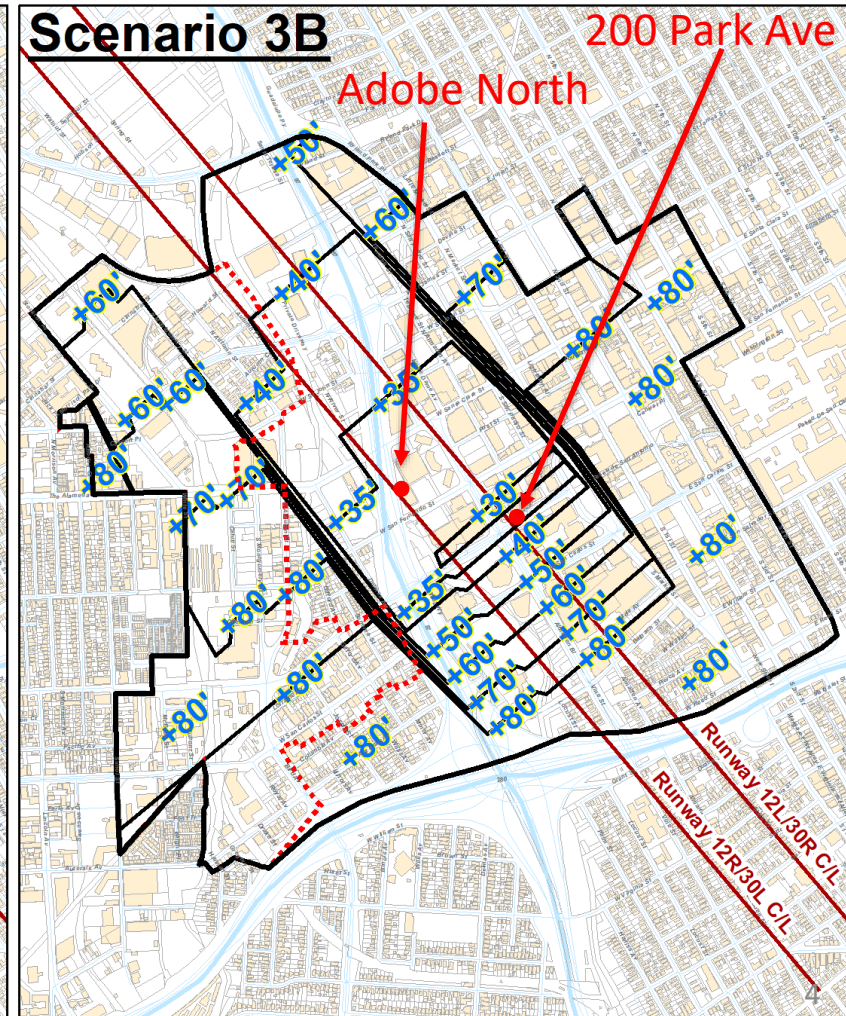
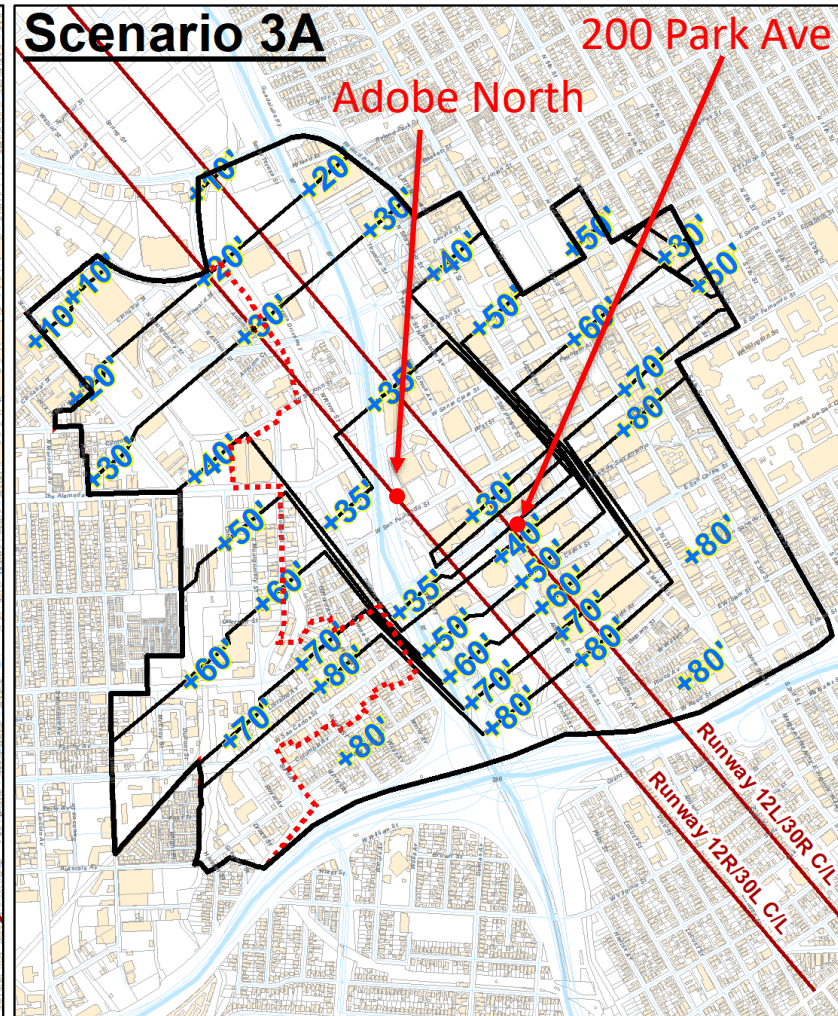
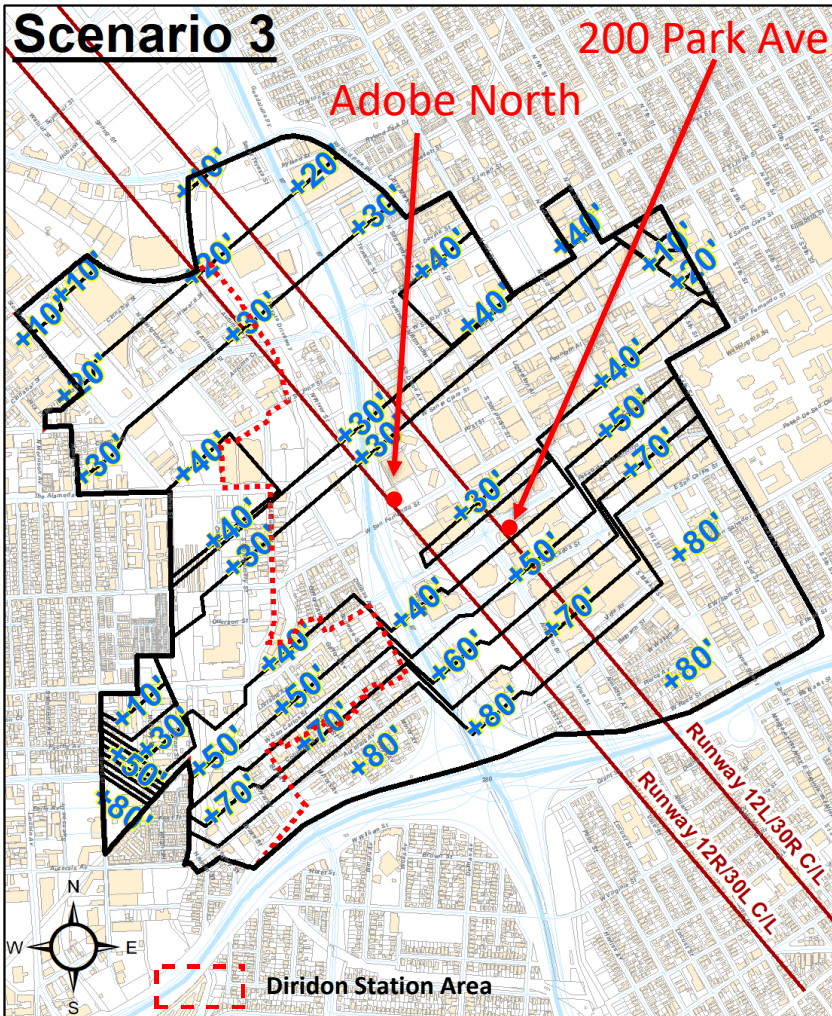


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SCENARIOS 3-3A-3B CRANE HEIGHT DIFFERENTIAL TO BUILDING HEIGHTS



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AIR SERVICE IMPACTS SUMMARY FOR RUNWAY 12L



	Asia (Beijing)				Europe (Frankfurt)			
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Presented by John Aitken & Judy Ross

SILICON VALLEY'S AIRPORT

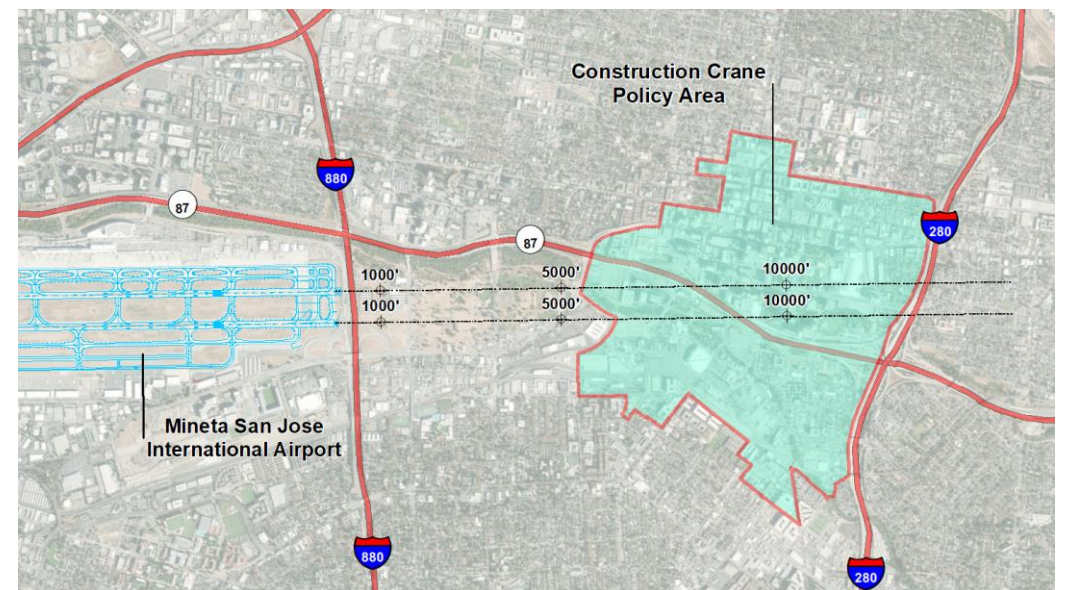


City of San Jose Construction Crane Height Guidance Study
Community and Economics Development Committee
February 22, 2021

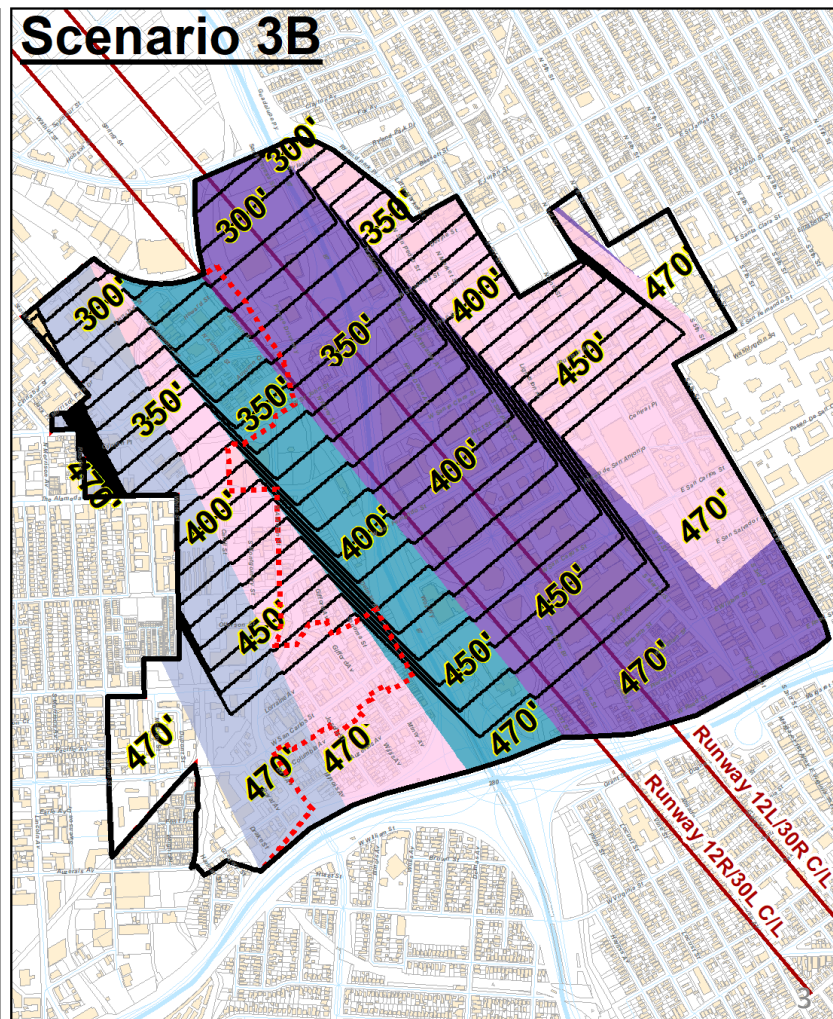
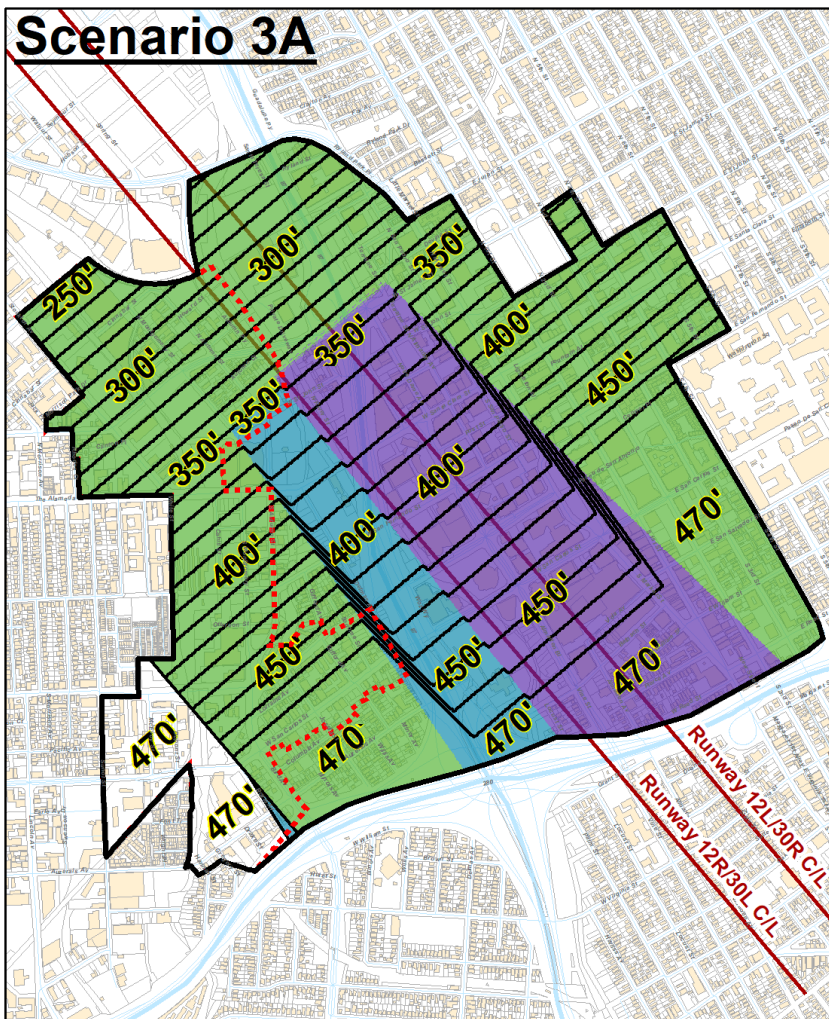
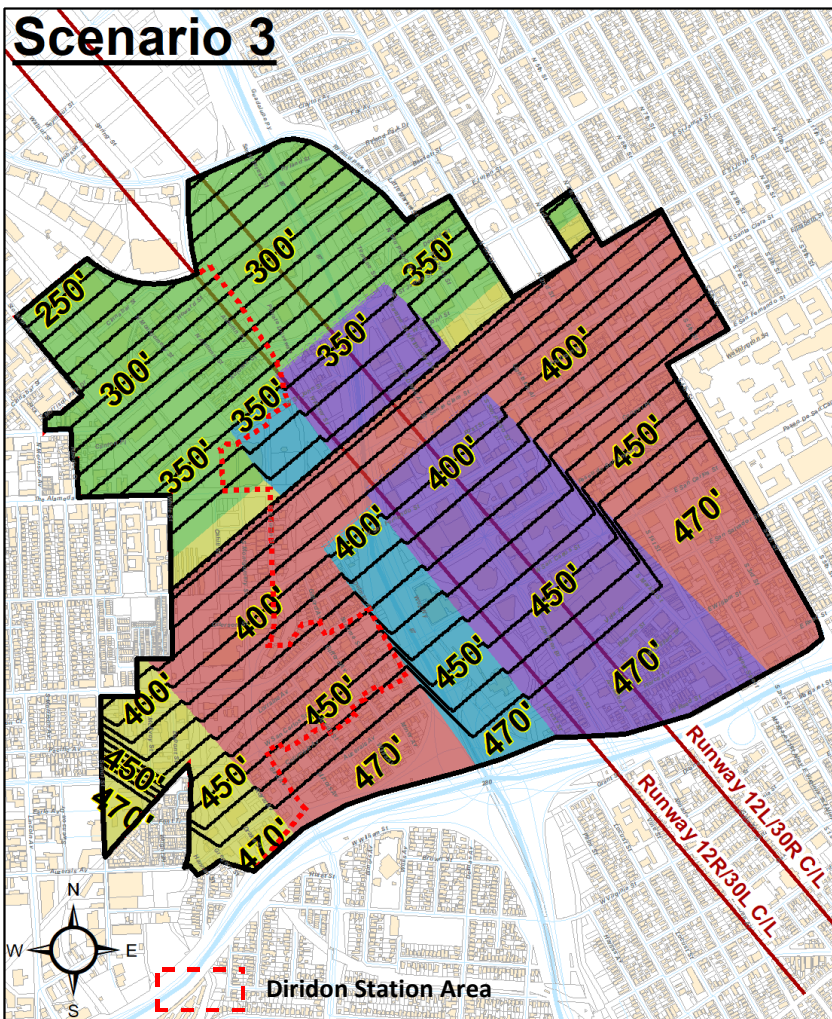
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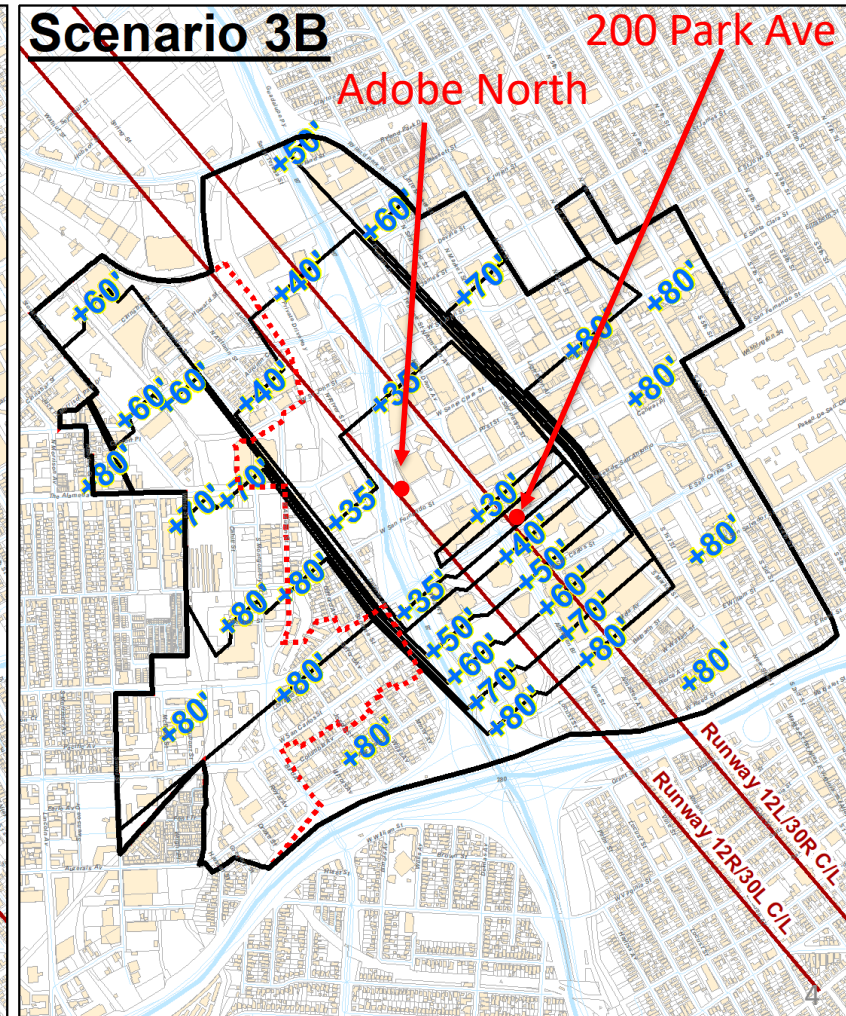
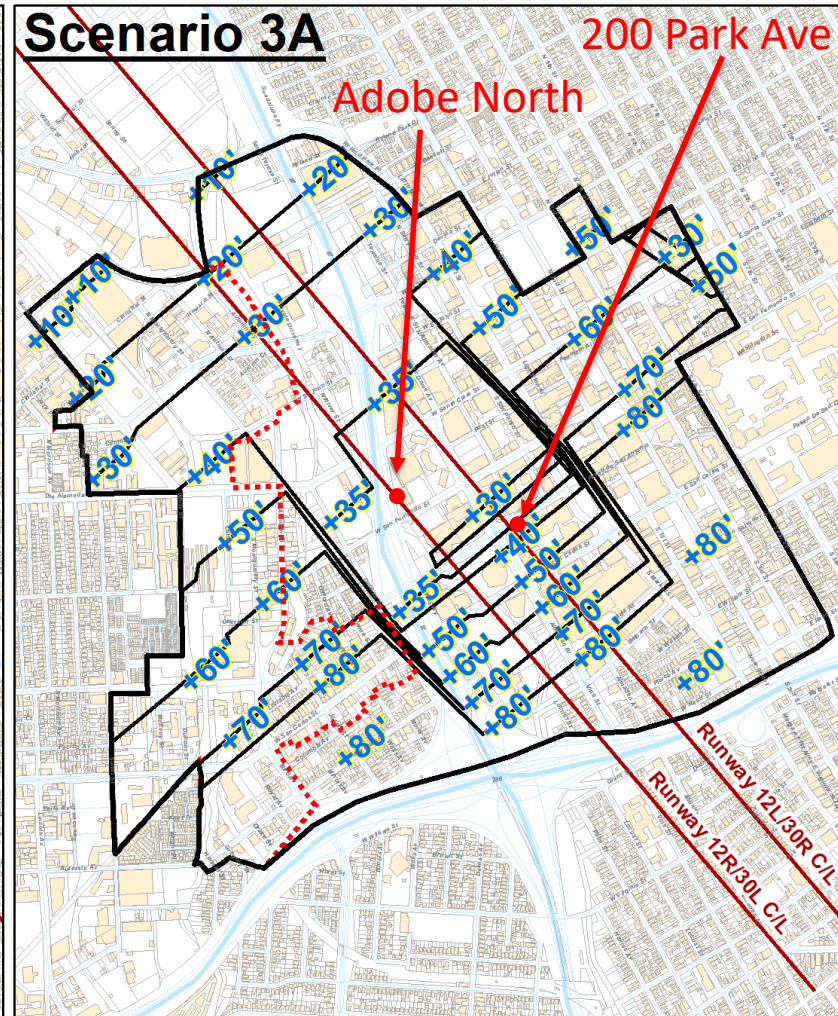
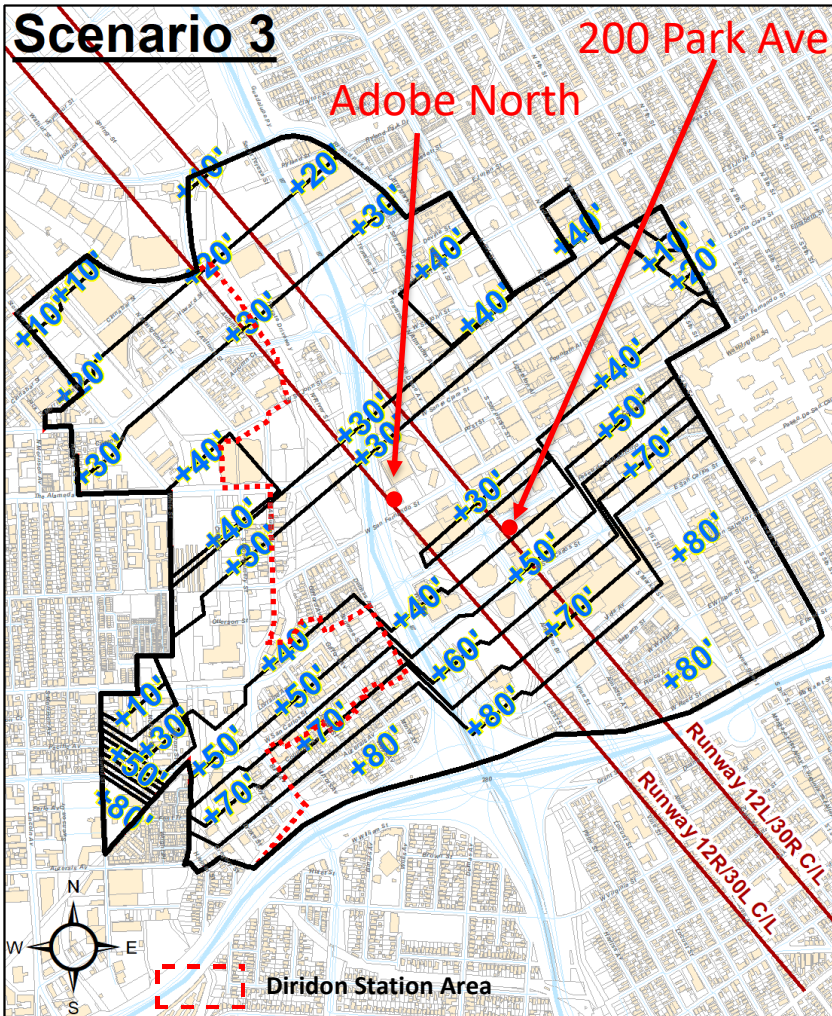


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SILICON VALLEY'S AIRPORT



City of San Jose Construction Crane Height Guidance Study

City Council – Item 5.1

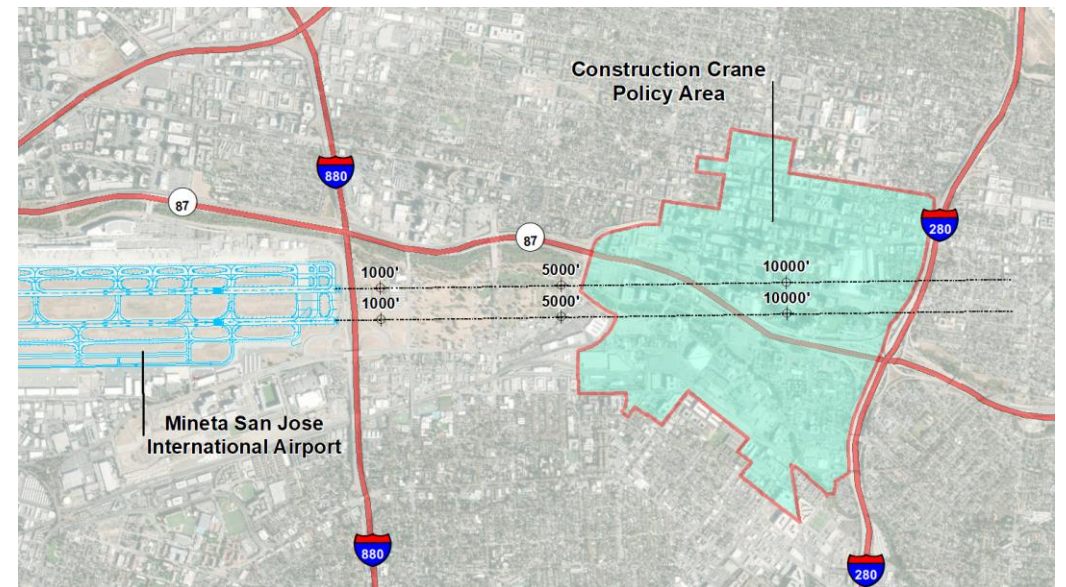
March 9, 2021

John Aitken, Director of Aviation & Judy Ross, Assistant Director

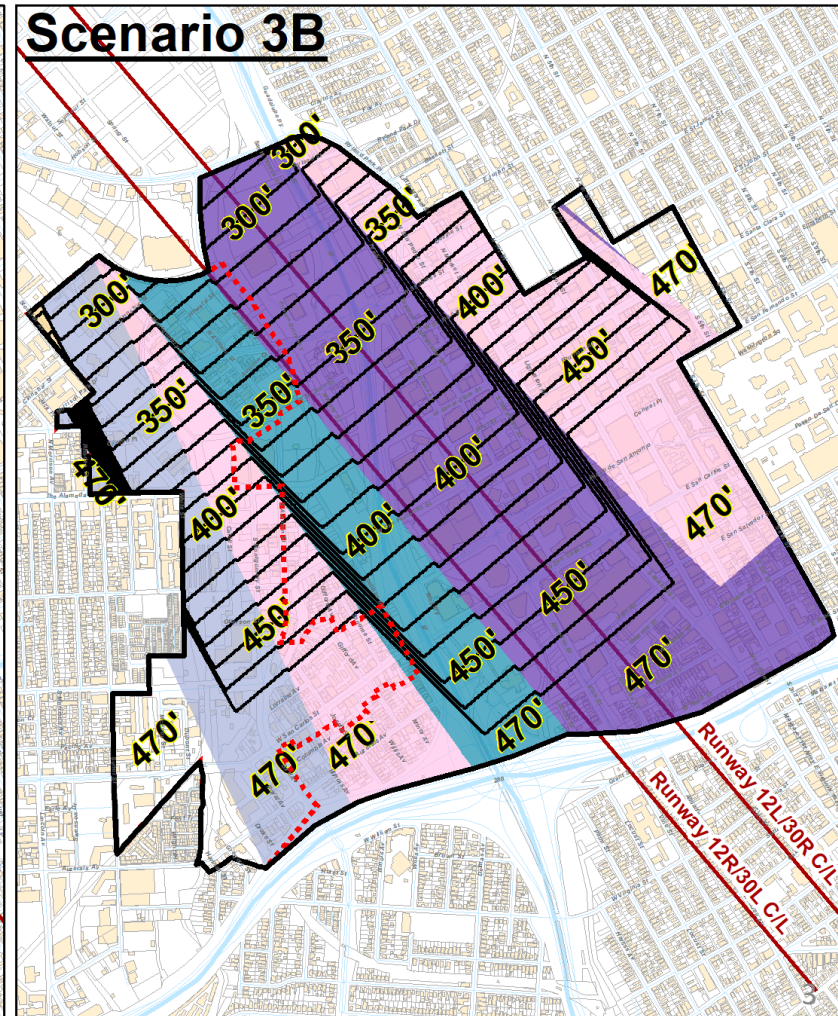
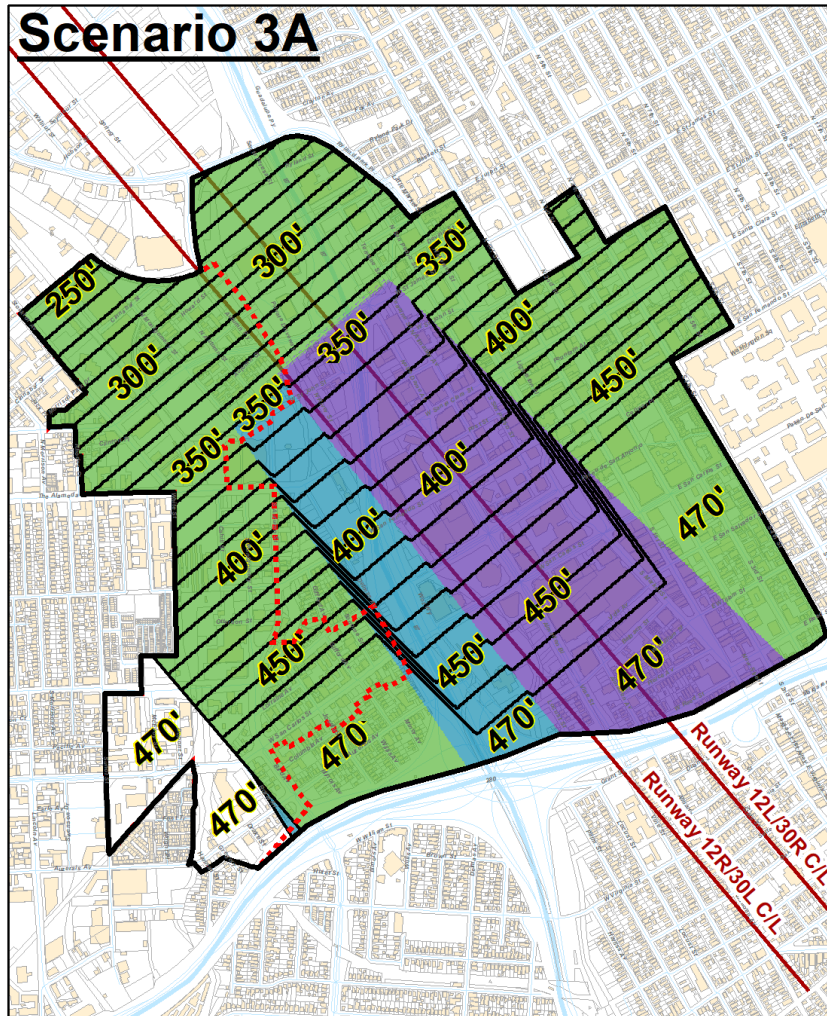
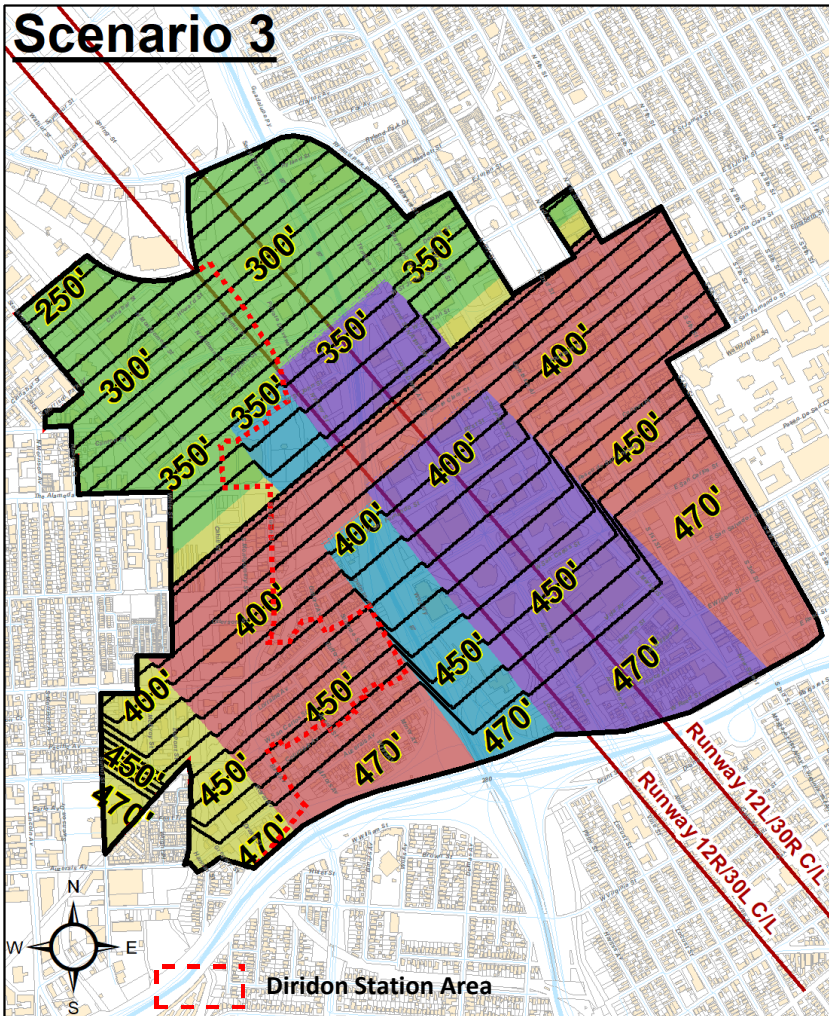
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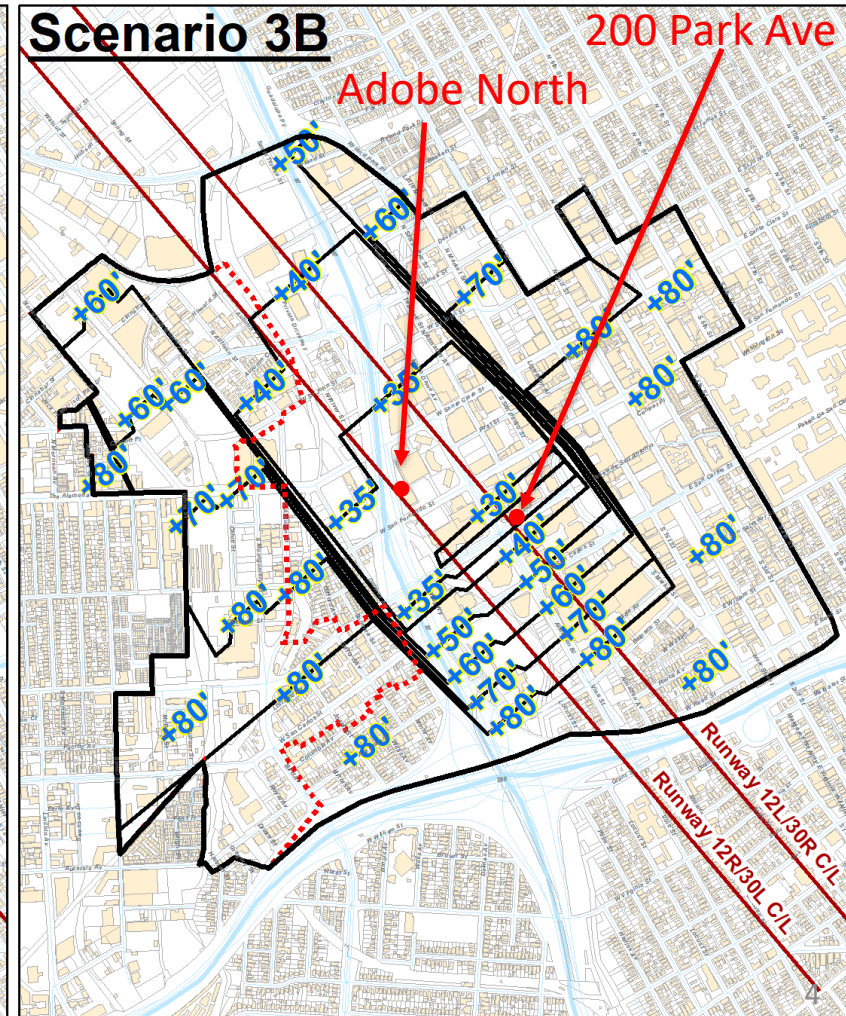
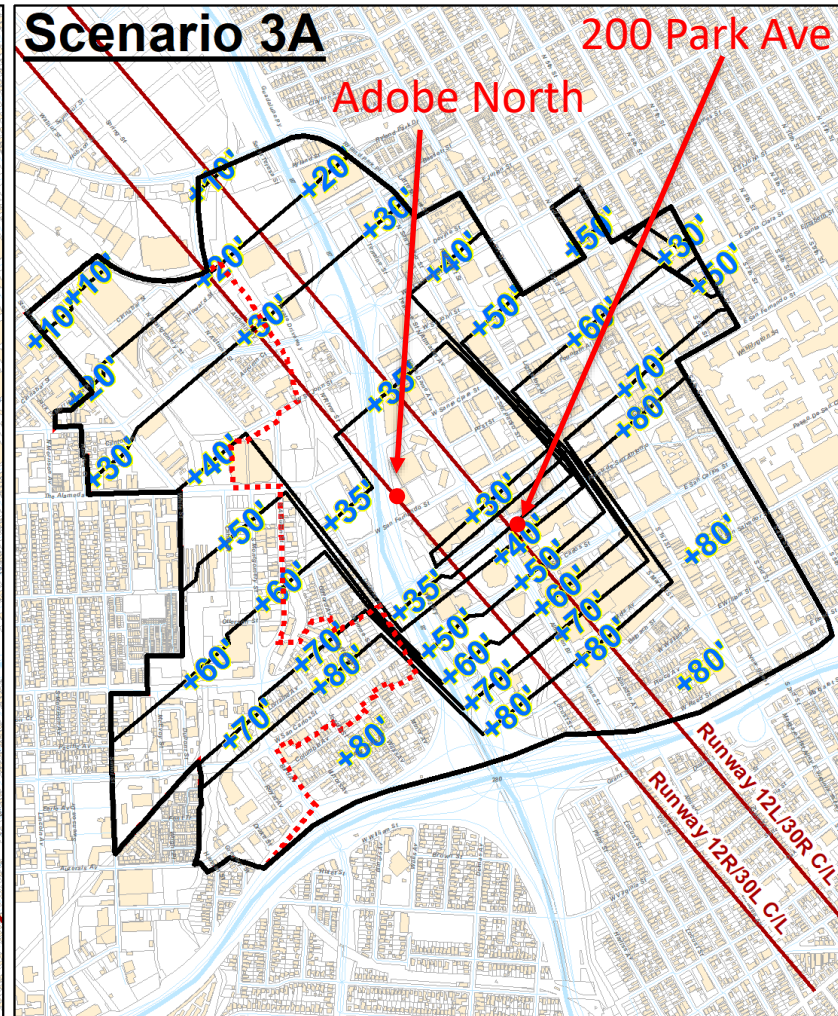
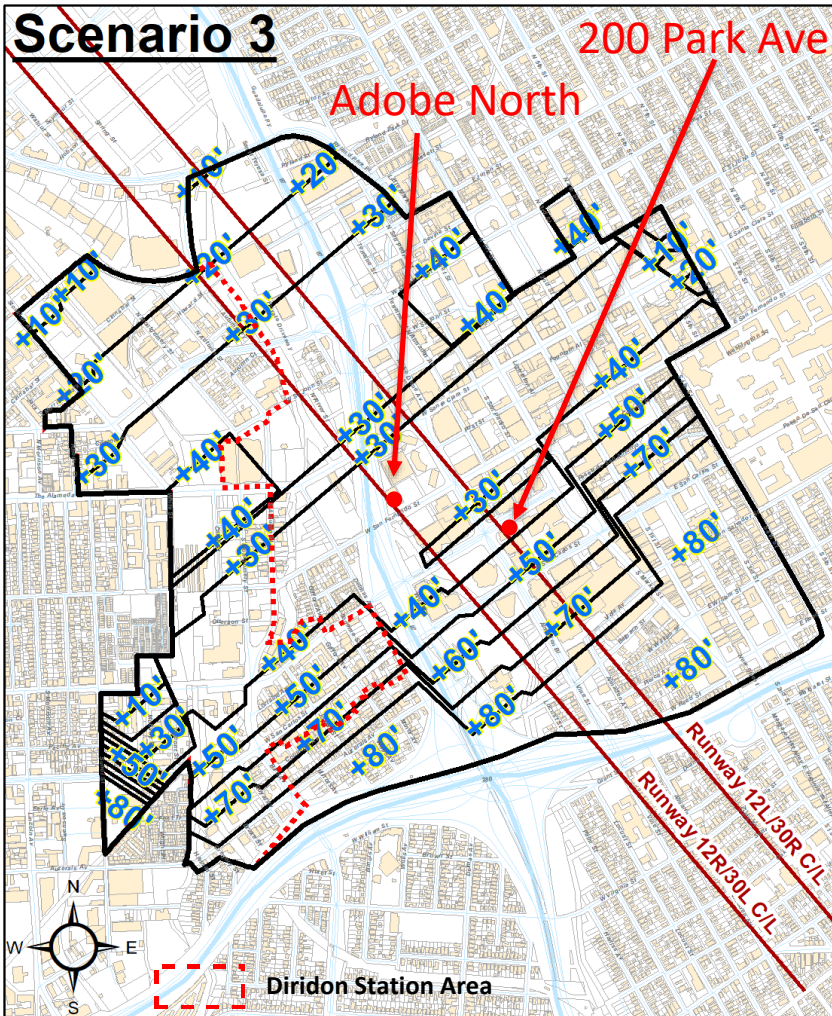


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Presented by John Aitken & Judy Ross



COUNCIL AGENDA: 03/09/2021

ITEM: 5.1

FILE NO: 21-424

Memorandum

TO: HONORABLE MAYOR AND
CITY COUNCIL

FROM: Toni J. Taber, CMC
City Clerk

SUBJECT: SEE BELOW

DATE: March 9, 2021

SUBJECT: Construction Crane Height Guidance Study Findings and Recommendation

Recommendation

As recommended by the Community and Economic Development Committee on February 22, 2021:

- (a) Accept the findings from a completed Construction Crane Height Guidance Study, which would affirm the City's development commitment for the Federal Aviation Administration (FAA) to protect the primary Terminal Instrument Procedures (TERPS) utilized by Mineta San José Airport's Air Carriers to determine the maximum crane heights in the Downtown Core and Diridon Station Area.
- (b) Direct the Administration to:
 - (1) Prepare a Construction Crane Guidance Document to be included in all development permits for projects in the Downtown Core and Diridon Station Area requiring temporary construction cranes.
 - (2) Include in the Construction Crane Guidance Document, the following three methods for developers to minimize impacts on air service:
 - (i) Utilize crane jumps to minimize duration cranes are at maximum height.
 - (ii) Limit maximum crane heights to a 6-month window.
 - (iii) Schedule maximum crane heights during non-South flow months of April through September (i.e., departures towards downtown).
 - (3) Explore a construction crane permit fee to support a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area.

CEQA: Not a Project, File No. PP17-008, General Procedure and Policy Making resulting in no changes to the physical environment. Council Districts 3 and 6. (Airport/Economic Development/Planning, Building and Code Enforcement)

[Community and Economic Development Committee referral 2/22/2021 - Item (d)2]



Memorandum

TO: COMMUNITY AND ECONOMIC
DEVELOPMENT COMMITTEE

FROM: John Aitken
Nanci Klein
Rosalynn Hughey

SUBJECT: SEE BELOW

DATE: February 12, 2021

Approved

Date

2/12/2021

COUNCIL DISTRICT: 3 & 6

**SUBJECT: CONSTRUCTION CRANE HEIGHT GUIDANCE STUDY FINDINGS AND
RECOMMENDATION**

RECOMMENDATION

1. Accept findings from a completed Construction Crane Height Guidance Study, which would affirm the City's development commitment for the Federal Aviation Administration (FAA) to protect the primary Terminal Instrument Procedures (TERPS) utilized by Mineta San José International Airport's Air Carriers to determine the maximum crane heights in the Downtown Core and Diridon Station Area.
2. Direct the Administration to:
 - a. Prepare a Construction Crane Guidance Document to be included in all development permits for projects in the Downtown Core and Diridon Station Area requiring temporary construction cranes.
 - b. Construction Crane Guidance Document to include the following three methods for developers to minimize impacts on air service:
 - (i) Utilize crane jumps to minimize duration cranes are at maximum height.
 - (ii) Limit maximum crane heights to a 6-month window.
 - (iii) Schedule maximum crane heights during non-South flow months of April through September (i.e., departures towards downtown).
 - c. Explore a construction crane permit fee to support a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area.
3. Cross-reference the proposed item to the full City Council on March 9, 2021.

OUTCOME

City Council approval of the above recommendations would allow domestic and international Air Carriers to continue to safely utilize the Mineta San José International Airport for both arrival and departures, during all weather conditions. In addition, approval of the above recommendations will minimize impacts to air service to the greatest extent possible, while maximizing temporary construction crane heights in the Downtown Core and Diridon Station Area.

BACKGROUND

On March 12, 2019, City Council approved recommendations from the City's Downtown Airspace and Development Capacity Study (DADCS), which established a new policy on airspace surface protection heights in the Downtown Core and Diridon Station Areas, allowing higher building heights with an acceptable level of Air Service impacts at the Mineta San Jose International Airport (Airport or SJC). Included in the City Council's direction was the development of a Construction Crane Policy in the Downtown Core and Diridon Station Area to minimize impacts to air service during construction.

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 that radiate out from an airport's runway and mandate FAA review of any proposed temporary or permanent structure, including construction equipment (e.g. cranes). In San José, as in most local land use jurisdictions, generally all proposed temporary structures associated with high-rise building construction exceed these surfaces and are subject to FAA airspace safety review. A "determination of no hazard" clearance from the FAA is required prior to, or as a condition of, City development permit approval.

While the DADCS considered FAA Part 77 and TERPS surfaces in determining the maximum heights of permanent structures, the analysis of potential impacts of temporary structures, such as construction cranes, on Air Carrier procedures was not included in the study. These procedures include basic safe landing and departing procedures that Air Carriers utilize on a daily basis, regardless of the weather conditions. The loss of these procedures could result in Air Carriers diverting aircraft to alternate airports, resulting in inconvenience for passengers, schedule impacts to the Air Carriers, and lost revenue for the Airport. Protecting for critical Air Carrier procedures maximizes construction crane heights, but also allows Air Carriers access to critical procedures, which are necessary during inclement weather conditions. In the extreme cases of equipment failure on an aircraft or FAA navigational aid failure at the Airport, air carriers must still be able to land at the airport.

Additionally, while the City of San José's (City) downtown building height limits are based on TERPS surfaces rather than One Engine Inoperative (OEI) surfaces, Air Carriers are still required to comply with OEI emergency procedures per FAA Part 25. OEI emergency

procedures can impact maximum building heights around an airport more strictly than the FAA restrictions per FAR Part 77 and TERPS. The FAA has determined 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 impacts the economic viability of airline service. Even small weight penalties can affect the feasibility of air service to a destination, most notably transcontinental and transoceanic destinations. These destinations require aircraft to carry larger fuel loads to reach the destination, which leads to larger passenger impacts when a weight reduction is required. Therefore, temporary or permanent obstructions within the surrounding airspace are a factor in SJC's ability to attract or retain desired air service. Additionally, City Staff gave close attention to the effect new local employees and additional downtown development can have on increasing the demand for air service.

In June 2020, Landrum & Brown, a national aviation planning/engineering consultant with extensive experience working for the City on airspace and other airport technical issues including the DADCS, was contracted to perform the technical work on the Construction Crane Height Guidance Study, which analyzed the potential impacts of temporary structures (e.g., construction cranes) on Air Carrier procedures.

The Airport Commission was briefed on the Crane Height Guidance Study on November 4, 2020 and given the opportunity to review the scope, initial technical analysis, and provide feedback. The Commission continued its discussion of this study at its meeting on February 8, 2021. City staff participation on the study included representatives from Planning, Building and Code Enforcement Department (PBCE), Office of Economic Development, City Attorney's Office, and the Airport Department. The development community was engaged through PBCE's Developers and Construction Roundtable over the course of six months including three meetings with short updates introducing the study, posing questions to the development community, and two meetings with longer presentations on preferred scenario alternatives and discussion. The meetings were well attended by the development community and served as opportunities to share their knowledge, provide input, and provide feedback to the study itself.

ANALYSIS

The Construction Crane Height Guidance Study, an extension of the DADCS, consisted of three tasks:

- Task 1: Airline Instrument Procedure Survey and Conceptual Airspace Protection Scenario Development
- Task 2: Stakeholder Outreach
- Task 3: Weight Penalty Analysis and Construction Crane Height Guidance

Task 1: Airline Instrument Procedure Survey and Conceptual Airspace Protection Scenario Development

The FAA has the regulatory responsibility on airspace determinations, including instrument approach and departure procedures to ensure the safe operation of all aircraft utilizing SJC. Staff worked with the FAA and the Airline partners to protect approach and departure procedures that were most commonly used to ensure safety can be maintained. As part of that process, Landrum & Brown surveyed all SJC Air Carriers and the Federal Aviation Administration Air Traffic Control Division to determine frequency and priority of air carrier instrument procedures. Of the 17 instrument approach procedures and 5 instrument departure procedures available for use, it was determined through the survey that Air Carriers primarily utilize five instrument approach procedures and five instrument departure procedures. Air Carriers that provided survey responses included Southwest Airlines, Alaska Airlines, Delta Airlines, Hawaiian Airlines, and UPS.

Based on the Air Carrier survey, five conceptual airspace protection scenarios were formulated and refined to test various alternative combinations of air service protection and FAA/TERPS instrument procedure protection, and their effect on maximum temporary construction equipment (e.g., crane) heights. Three conceptual airspace protection scenarios were selected for detailed analysis:

- Scenario 3: Protect primary air carrier instrument procedures
- Scenario 3A: Reduced air carrier instrument procedure protection
- Scenario 3B: Protect critical air carrier instrument procedures

For each scenario, the following table displays the range of temporary cranes heights that would be allowed above the existing downtown buildings height limits:

Scenario	Additional Crane Height Downtown Area	Additional Crane Height Diridon Station Area
Scenario 3: Protect primary air carrier instrument procedures	10'-80'	10'-80'
Scenario 3A: Reduced air carrier instrument procedure protection	10-80'*	10-80'*
Scenario 3B: Protect critical air carrier instrument procedures	40-80'	60-80'

' - feet

* - Depending on location in the Downtown and Diridon Station Areas, crane heights above particular parcels are higher in Scenario 3A than in Scenario 3.

Task 2: Stakeholder Outreach

Stakeholder outreach for this study was accomplished through PBCE’s Developers and Construction Roundtable, meetings with the Air Carriers, FAA, as well as meetings with developers and crane operators that requested to meet individually. Over the course of the study, PBCE hosted three Developers and Construction Roundtables and SJC provided short updates

introducing the study and review technical crane material with the development community. SJC hosted two meetings with longer presentations on preferred scenario alternatives and impacts discussion. The meetings were well attended by the development community and served as opportunities to ask questions and provide feedback to the study findings.

The development community’s largest concern focused on the maximum crane height permitted above buildings, as well as the schedule and cost implications associated with permitted crane heights. To address the concerns from the development community, Scenario 3B was identified to provide the most crane height flexibility to developers in the Downtown Core and Diridon Station Areas, while utilizing methods identified later in the memo to minimize Air Carrier impacts to maintain safety on approaches and departures.

Task 3: Air Service Weight Penalty Analysis and Construction Crane Height Guidance

This task analyzed the air service weight penalties associated with temporary construction crane height increases in the study area for Scenarios 3, 3A, and 3B.

Technical analysis assessed the aircraft performance impact (weight penalties) under each scenario using various combinations of aircraft types, destinations, and seasonal temperatures. The following charts illustrate the passenger (PAX) and cargo penalties that specific aircraft serving selected existing non-stop markets are projected to incur under Scenarios 3, 3A, and 3B in the summer and winter months for a fully booked plane (100% load factor). While Landrum & Brown modeled accurate weight impacts, SJC continues to work with Air Carriers to determine precise weight impacts for these specific aircraft and routes. Note that weight penalties occur only during south flow weather conditions (13% of annual operations).

Transcontinental – New York Market – Assessment of Potential Weight Penalties Runway 12L

New York - JFK Winter (63° F)		A320-200 (150 seats/2,390 lbs. cargo)				B737-800 (175 seats/6,100 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	-	-	2,390	100%	-	-	1,070	18%
Scenario 3A	Reduced air carrier instrument procedure protection	-	-	2,390	100%	-	-	1,070	18%
Scenario 3B	Protect critical air carrier instrument procedure protection	4	3%	2,390	100%	-	-	1,960	32%
New York - JFK Summer (81.3° F)		A320-200 (150 seats/840 lbs. cargo)				B737-800 (175 seats/5,270 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	7	5%	840	-	-	-	2,130	40%
Scenario 3A	Reduced air carrier instrument procedure protection	7	5%	840	-	-	-	2,130	40%
Scenario 3B	Protect critical air carrier instrument procedure protection	11	7%	840	-	-	-	3,010	57%

Hawaii – Honolulu Market – Assessment of Potential Weight Penalties Runway 12L

Hawaii - HNL Winter (63° F)		A321 NEO (189 seats/580 lbs. cargo)				B737-800 (175 seats/No cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	2	1%	580	100%	13	7%	-	-
Scenario 3A	Reduced air carrier instrument procedure protection	2	1%	580	100%	13	7%	-	-
Scenario 3B	Protect critical air carrier instrument procedure protection	5	3%	580	100%	17	10%	-	-
Hawaii - HNL Summer (81.3° F)		A321 NEO (189 seats/3,510 lbs. cargo)				B737-800 (175 seats/40 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	-	-	1,640	47%	9	5%	40	100%
Scenario 3A	Reduced air carrier instrument procedure protection	-	-	1,640	47%	9	5%	40	100%
Scenario 3B	Protect critical air carrier instrument procedure protection	-	-	2,290	65%	13	7%	40	100%

Europe - Frankfurt Market - Assessment of Potential Weight Penalties Runway 12L

Frankfurt - FRA Winter (68° F)		B787-9 (290 seats/2,970 lbs. cargo)				B777-300ER (370 seats/55,480 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	37	13%	2,970	100%	-	-	9,780	18%
Scenario 3A	Reduced air carrier instrument procedure protection	60	21%	2,970	100%	-	-	21,020	38%
Scenario 3B	Protect critical air carrier instrument procedure protection	120	41%	2,970	100%	-	-	38,060	69%
Frankfurt - FRA Summer (81.3° F)		B787-9 (290 seats/370 lbs. cargo)				B777-300ER (370 seats/53,680 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	46	16%	370	100%	-	-	10,500	20%
Scenario 3A	Reduced air carrier instrument procedure protection	69	24%	370	100%	-	-	21,390	40%
Scenario 3B	Protect critical air carrier instrument procedure protection	128	44%	370	100%	-	-	38,630	72%

Asia – Beijing Market - Assessment of Potential Weight Penalties Runway 12L

Beijing - PEK Winter (68° F)		B787-9 (290 seats/No cargo)				B777-300ER (370 seats/41,450 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	83	29%	-	-	-	-	10,210	25%
Scenario 3A	Reduced air carrier instrument procedure protection	105	36%	-	-	-	-	21,940	53%
Scenario 3B	Protect critical air carrier instrument procedure protection	163	56%	-	-	-	-	39,710	96%
Beijing - PEK Summer (81.3° F)		B787-9 (290 seats/No cargo)				B777-300ER (370 seats/39,580 lbs. cargo)			
		PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost	PAX Penalty	% of PAX Lost	Cargo Penalty (lbs.)	% of Cargo Lost
Scenario 3	Protect Primary Airline Instrument Procedures	84	29%	-	-	-	-	10,430	26%
Scenario 3A	Reduced air carrier instrument procedure protection	106	36%	-	-	-	-	21,250	54%
Scenario 3B	Protect critical air carrier instrument procedure protection	162	56%	-	-	-	-	37,360	94%

Scenarios 3 and 3A provided protection for primary Air Carrier procedures and highlighted that for most of the Downtown Core and Diridon Station Area, any minor increases in crane height created the potential for sizeable weight penalties for the Air Carriers in the four markets analyzed.

Scenario 3B which has the most significant Air Service impacts, allows for the maximum temporary crane heights above the existing building height limit while retaining the critical Air Carrier procedures at SJC. However, Scenario 3B demonstrates that higher crane heights create significant weight impacts that carry over to even SJC’s domestic markets in addition to international markets. Hawaiian markets (represented by Honolulu) see the largest weight penalty increase with the loss of 17 passengers (10%) and no cargo in the Winter months, while Transcontinental markets (represented by New York) weight penalty increase to 11 passengers (7%) and no cargo in the Summer. European markets (represented by Frankfurt) would see significant weight penalty increases, including the loss of all cargo and a 128 passenger (44%) penalty in the Summer. The Asian market (represented by Beijing) would see the largest weight penalty increase to 163 passengers (56%) and loss of all cargo year-round.

To mitigate for increased weight penalties associated with Scenario 3B construction crane heights, the City will prepare a Construction Crane Guidance Document to be included in all development permits for Downtown and Diridon Station Area projects. This includes exploring a construction crane permit fee to support a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area. This guidance document will outline three methods for developers to minimize impacts:

1. Utilize crane jumps to ensure cranes are only at their maximum height (impacting SJC air service) for the shortest duration possible and not for the entire project duration.
2. Limit maximum crane heights to a 6-month timeframe.

3. Schedule maximum crane heights during April – September, when SJC is in South flow for the shortest duration.

All air carriers are required to pay a landing fee each time they land at SJC. Landing fees are based on certified maximum gross landing weight of the aircraft. To further mitigate increased weight penalties associated with Scenario 3B construction crane heights, staff will explore a Landing Fee Reduction Program for any impacted operations. Staff will further explore a construction crane permit fee to support any such landing fee reductions provided to airlines for those operations that are impacted by crane heights and experience the removal of passengers and cargo.

CONCLUSION

The Construction Crane Height Guidance Study considered stakeholder input from the development community, crane operators, Air Carriers, FAA, Downtown Association, and multiple City departments. After much consideration, staff is recommending that the City move forward preparing a Construction Crane Guidance Document and exploring a landing fee reduction program for any impacted operations. Staff will continue to work to ensure the FAA protects the critical instrument procedures Air Carriers required to safely arrive and depart into SJC while still permitting developers to utilize construction cranes above the maximum approved downtown building heights.

EVALUATION AND FOLLOW-UP

Airport, Planning, Building and Code Enforcement and Office of Economic Development staff shall implement the recommendations brought forward in this memorandum upon Council approval and report the relevant impacts of these recommendations back to the appropriate council committee, as necessary.

CLIMATE SMART SAN JOSE

The recommendation in this memo has no effect on Climate Smart San José energy, water, or mobility goals.

POLICY ALTERNATIVES

Alternative: Allow temporary construction cranes to be erected only to the existing Downtown Building Height limits.

Pros: This alternative would provide the maximum protection of the airspace for Mineta San José International Airport.

Cons: Utilizing the downtown building height limits as the temporary construction cranes height limits would not provide any opportunities for additional development heights in the Downtown Core or the Diridon Station Area.

Reason for not recommending: Implementing this policy alternative would prevent San José from maximizing the development of its urban core, which is a fundamental principle of the Envision 2040 General Plan, without significant gains to airport or airline operations.

PUBLIC OUTREACH

Stakeholder outreach for this study was accomplished through PBCE's Developers and Construction Roundtable, meetings with the Air Carriers, FAA, and Downtown Association, as well as meetings with developers and crane operators that requested to meet individually. Over the course of the study, PBCE hosted three Developers and Construction Roundtables and SJC provided short updates introducing the study and review technical crane material with the development community. SJC hosted two meetings with longer presentations on preferred scenario alternatives and impacts discussion. The meetings were well attended by the development community and served as opportunities to ask questions and provide feedback to the study.

This memorandum will be posted to the City of San Jose's website for the February 22, 2021 Community and Economic Development Committee meeting.

COORDINATION

This memorandum has been coordinated with the Office of Economic Development, Planning, Building and Code Enforcement, Department of Transportation, Public Works, and the City Attorney's Office.

COMMISSION RECOMMENDATION/INPUT

The Airport Commission was briefed on the Crane Height Guidance Study on November 4, 2020 and given the opportunity to review the scope, initial technical analysis, and provide feedback. The commission continued its discussion of this study at a second meeting on February 8, 2021.

FISCAL/POLICY ALIGNMENT

The recommendations in this memorandum are consistent with the Envision San Jose 2040 General Plan amended on 03/10/2020 to continue developing a world-class airport and build national and international connections by attracting new air service to it (Goal IE-4.2).

COMMUNITY AND ECONOMIC DEVELOPMENT COMMITTEE

February 12, 2021

Subject: Construction Crane Height Guidance Study

Page 10

CEQA

Not a Project, PP17-008, general procedure and policy-making resulting in no physical changes to the environment.

/s/

JOHN AITKEN, A.A.E.
Director of Aviation

/s/

NANCI KLEIN
Director of Economic Development

/s/

ROSALYNN HUGHEY
Director, Planning, Building and Code Enforcement

For questions, please contact John Aitken, Airport Director, at 408-392-3610.

Appendix C: Airline Letters



03/01/2021

Honorable Mayor and San Jose City Council
City of San Jose
200 East Santa Clara Street
San Jose, CA 95113

City Council Item 5.1 - Construction Crane Height Guidance Study Findings and Recommendations

Airlines for America (A4A) represents ¹10 Major US Air Carriers, all of which have daily operations at the Mineta San Jose International Airport (SJC). Prior to the pandemic, these airlines accounted for approximately 200 flights a day.

Our members have worked with the airport staff at SJC over the years to provide airspace procedure protection and appropriate building heights that allow us to operate safely. Through continued reviews of FAA Aeronautical Study Determinations and continued dialog with airport staff at SJC, we understand that there are several proposed high-rise building developments throughout the City of San Jose, many of which are under the approach and departure paths to/from SJC, about a mile or two from the southeast ends of the runways.

While these high-rise buildings are not anticipated to significantly impact operations, it is our understanding that many of these temporary construction cranes will likely be significantly higher than the proposed buildings and in place for many months, and cumulatively for many years, which may significantly impact operations at SJC.

It is critical to the safety and efficiency of aviation operations that the approach and departure procedures at SJC and associated minimums, are fully protected. We understand that the FAA makes modifications to procedures and minimums to accommodate temporary construction activities. However, we request that the FAA protect the critical approach and departure procedures we rely on most heavily that overfly the area southeast of SJC.

Given the low visibility weather conditions that can occur at SJC, it is important to the safety of operations to protect these procedures for normal operations. We also request that FAA ensure protection for the one-engine inoperative procedure capability to the extent practical so that we can maintain longer-range services.

¹ A4A's members are Alaska Airlines, Inc.; American Airlines Group, Inc.; Atlas Air, Inc.; Delta Air Lines, Inc.; Federal Express Corp.; Hawaiian Airlines; JetBlue Airways Corp.; Southwest Airlines Co.; United Continental Holdings, Inc.; and United Parcel Service Co. Air Canada is an associate member.

We understand the need to continue to develop the City of San Jose but ask that you provide the protections needed so the airlines can maintain safe and efficient operations at SJC. Thank you and we look forward to working with the FAA and the City of San Jose on this matter. Please feel free to reach out to us if you have any questions.

Respectfully submitted,

Jack Allen

Jack Allen
Managing Director
Air Traffic Management



Honorable Mayor and San Jose City Council
City of San Jose
200 East Santa Clara Street
El Segundo, CA 90245

March 2, 2021

Re: City Council Item 5.1 – Construction Crane Height Guidance Study Findings

Dear Mayor and City Council:

Alaska Airlines serves the San Jose community with non-stop flights to over a dozen markets from SJC, including Hawaii, Mexico, and the East Coast. Pre-COVID, Alaska operated 40+ daily departures, but even with reduced operations, today we provide 26 daily departures. We have partnered with the San Jose Airport staff over the years to ensure airspace protection, as well as enabling lower approach minimums which helps us better-serve the community.

Through our continued reviews of FAA Aeronautical Study Determinations and continued dialog with airport staff at SJC, we understand there are a number of proposed high-rise building developments throughout the City of San Jose, many of which are under the approach and departure paths for SJC airport. Even though these proposed buildings are only one to two miles southeast of the runways, we do not anticipate the structures will significantly impact our operations. However, our analysis determined that the cranes needed to construct these buildings may cause a significant adverse impact to our scheduled flight operations at SJC. It is our understanding that many of these temporary construction cranes will be much higher than the proposed buildings and each crane will be in place for many months; cumulatively for up to a decade.

It is critical for the safety and reliability of our operation that the approach and departure procedures at SJC and associated minimums, are fully protected. We understand that the FAA makes modifications to procedures and minimums to accommodate temporary construction activities. However, we request that the FAA protect the critical approach and departure procedures we rely on most heavily that overfly the area southeast of SJC including:

- ILS or LOC Rwy 30L/ILS or LOC Rwy 30L SA CAT II
- RNAV (RNP) Z Rwy 30L
- ILS or LOC Rwy 12R missed approach
- RNAV (GPS) Y Rwy 12L missed approach
- Rwy 12L/12R ALMDN, BMRNG, TECHY, and SUNOL SIDS

PO Box 68900, Seattle, WA 98168-0900
P 206-433-3200





Given the low visibility weather conditions that can occur at SJC, it is important to protect these procedures for normal operations.

We also request that FAA ensure protection for our one-engine inoperative procedure capability to the extent practical so that we can maintain our longer-range service to cities such as EWR, HNL, KOA, LIH and OGG. The proposed crane options would impact our departure performance, causing 6000-8000 lb. weight penalty, resulting in us leaving 26-36 passengers behind.

We understand the need for the City of San Jose's development and ask that you provide the protections needed for Alaska Airlines to maintain and grow our operations at SJC.

Thank you for your time and we look forward to working with the FAA and the City of San Jose on this matter. Please feel free to reach out to me for coordination or if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Bret Peyton".

Captain Bret Peyton

Director, Flight Operations Engineering and Fleet Technology

cc: Ryan Sheelan, Mineta San Jose International Airport





Captain Patrick E. Burns
Vice President – Flight Operations
& System Chief Pilot

Delta Air Lines, Inc.
P.O. Box 20706
Atlanta, Georgia 30320
T. +1 404.715.1002
M. +1 404.630.6057

March 25, 2021

Federal Aviation Administration
Southwest Regional Office, Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

SUBJECT: Airspace Procedure Protection at Norman Y. Mineta San Jose International Airport

Recently, Delta Air Lines learned of multiple proposed high-rise building developments throughout the City of San Jose, many of which are under the approach and departure paths to/from SJC. Our concern is the cranes needed to construct these buildings will significantly impact our, as well as other airlines' ability to conduct safe operations. It is our understanding many of these temporary construction cranes will likely be significantly higher than the proposed buildings; each may be in place for many months due to multiple projects taking place successively, creating a risk for a span up to 20 years.

It is critical to the safety and efficiency of our operation that the approach and departure procedures at SJC and associated minimums, are protected. We understand the FAA makes modifications to procedures and minimums to accommodate temporary construction activities. However, we request that the FAA protect the critical approach and departure procedures we rely on most heavily including the following:

- **Runway 30L ILS and LPV**
 - The obstacle evaluation areas of these two types of procedures are essentially identical, so protecting one results in the protection of the other.
- **Runway 30L and 30R LNAV / VNAV**
 - Per Executive Order 13905 of February 12, 2020: Strengthening National Resilience Through Responsible Use of Positioning, Navigation, and Timing Services, navigation redundancy is critical to safety and efficiency throughout the NAS. ILS equipment routinely goes down for planned and unplanned reasons. Furthermore, many aircraft do not have the capability of flying LPV approaches; whereas, 99% of air carriers can fly LNAV approaches. By protecting LNAV criteria, essential redundancy is assured.
- **Runway 30R LPV**
 - Not only does this approach provide the lowest minimums to 30R, it also provides safe access if 30L is closed. In addition, it protects critical emergency engine out departure surfaces for flights departing from 30R, as it is the longest runway.
- **Runway 12L and 12R ALMDN FOUR, BMRNG FOUR, SUNOL ONE, and TECHY THREE departures.**

We fully understand and support the need for continued development for the City of San Jose. Furthermore, we understand that when the city thrives, so does the airline industry. We simply ask for the protections needed for Delta Air Lines and all the other airlines to serve citizens traveling through, from and to, SJC. The encroachment of this protected

airspace hurts the entire airline industry as it equates to reduced loads, as detailed in Appendix A. The airlines are in the early stages of a long road of recovery due to the devastating effects of COVID-19. Now more than ever, it is critical to maximize efficiency and safety to ensure the airline industry continues to provide the highest level of service and recovers from this historical industry downturn.

Thank you and we look forward to working with the FAA and the City of San Jose on this matter. Please feel free to reach out to our Director of Line Operations, Nancee Franklin (nancee.franklin@delta.com) or our Airspace and Procedures subject matter experts, Adam See (adam.see@delta.com) or Eric Morse (eric.morse@delta.com) for coordination or if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Patrick Burns". The signature is written in a cursive, flowing style.

Captain Patrick E. Burns
Vice President – Flight Operations & System Chief Pilot

PEB: jw
Attachment(s)

Appendix A: SJC Takeoff and Route Analysis Results

Key Routes Effected

Consulting firm Landrum & Brown provided Delta's Performance Engineering Team with location and height information of the proposed construction cranes. With that information, the team reviewed Delta's longest routes from SJC which includes service to Atlanta (ATL) and New York City (JFK). Currently, the SJC to ATL service is operated by 737-900 and 757-200 aircraft while the SJC to JFK service is operated by the 737-900 aircraft. The two routes were reviewed for those aircraft in addition to aircraft potentially used in the future which includes the 737-800 and 321 to ATL as well as the 737-800 and 757-200 to JFK.

Performance Results

The construction crane location information is constant, whereas the heights of each crane vary across three phases (3, 3A, and 3B). Data presented in the table below shows each route and aircraft along with the corresponding takeoff weight in pounds (TOWT), passengers carried (Pax), and cargo carried in pounds (Cargo). The results under the column titled 12L show the current achievable performance while the results under the columns titled 3, 3A, and 3B show the relative performance for each phase of the construction crane plans. Those relative results are compared to the current performance results under column 12L.

Current Aircraft Impacted

The 737-900 aircraft will experience both passenger and cargo capacity reductions for departures to ATL and JFK. For departures to ATL at 60F departure temperatures, cargo is reduced 1760-2160lbs. At 80F departure temperatures, cargo is reduced 5160lbs and passenger capacity reduced from 180 to 174 in the worst-case scenario. For departures to JFK at 60F, cargo is reduced 3800lbs and passenger capacity is reduced from 180 to 176. At 80F departure temperatures, cargo is reduced 1900lbs and passenger capacity is reduced to as low as 157 in the most limiting case.

Future Aircraft and Markets Impacted

The 737-800 aircraft will experience passenger capacity restrictions for departures to JFK and cargo reductions for departures to ATL and JFK. The passenger impact to JFK is a reduction from 160 to 153, while the cargo reductions to JFK are 1900-2600lbs for both departure temperatures. The cargo reductions to ATL are 100-1000lbs at 60F and 1500-2400lbs at 80F. Additionally, the 321 to ATL experiences a cargo reduction of 300lbs and the 757-200 to JFK sees cargo reduced 500-700lbs.

Evaluation Methods

Obstacle data was provided by Landrum & Brown for three scenarios. The obstacle locations were the same for each scenario, however the heights varied. These obstacles were mapped in Google Earth to determine if each point was in or out of the accountability splay for runways 12L and 12R. Test runways (12L-OBS and 12R-OBS) were then created for each runway. Takeoff performance was run for the current non-obstacle runways 12L/R and the newly created test runways and applied to the evaluated routes. Additionally, the following assumptions were made in evaluating the takeoff and route performance:

- Takeoff performance calculated at 60F and 80F
- July winds used to provide smallest tailwind for SJC-ATL/JFK
- 195LB/PAX and 40LB/BAG weights used

Takeoff Performance				12L		Scenario 3		Scenario 3A		Scenario 3B					
Dept Arp	Arvl Arp	Subfleet	TEMP 29.92 inHG	TOWT	Pax	Cargo	TOWT	Pax	Cargo	TOWT	Pax	Cargo			
SJC	ATL	739	60	190000	180	5160	-5303	0	-1760	-5303	0	-1760	-5847	0	-2160
SJC	ATL	739	80	185377	180	5160	-7816	-3	-5160	-7816	-3	-5160	-8724	-6	-5160
SJC	ATL	75D	60	242709	199	2300	-8554	0	0	-8554	0	0	-8730	0	0
SJC	ATL	75D	80	241525	199	2300	-9594	0	0	-9594	0	0	-9842	0	0
SJC	ATL	321	60	205685	192	2600	MAX STRUCT	0	0	MAX STRUCT	0	0	MAX STRUCT	0	0
SJC	ATL	321	80	203726	192	2600	MAX STRUCT	0	0	MAX STRUCT	0	0	-415	0	-300
SJC	ATL	738	60	180086	160	4500	-3436	0	-1000	-2405	0	-100	-3436	0	-1000
SJC	ATL	738	80	178253	160	4500	-5155	0	-2400	-4004	0	-1500	-5155	0	-2400
SJC	JFK	739	60	190000	180	2800	-5303	-3	-3800	-5303	-3	-3800	-5847	-4	-3800
SJC	JFK	739	80	185377	180	1900	-7816	-19	-1900	-7816	-19	-1900	-8724	-23	-1900
SJC	JFK	75D	60	242709	199	2300	-8557	0	0	-8554	0	0	-8730	0	0
SJC	JFK	75D	80	241525	199	2300	-9594	0	-500	-9594	0	-500	-9842	0	-700
SJC	JFK	738	60	180086	160	2600	-2405	0	-1960	-2405	0	-1960	-3436	-1	-2600
SJC	JFK	738	80	178253	160	2600	-4004	-3	-2600	-4004	-3	-2600	-5155	-7	-2600

Southwest Airlines Co.
2702 Love Field Drive
Dallas, Texas 75235



February 18th, 2021

Mr. John Aitken
Director of Aviation
Norman Y. Mineta San Jose International Airport (SJC)
1701 Airport Blvd, Suite B1130
San Jose, Calif, 95110

Re: Airspace Procedure Protection at Norman Y. Mineta San Jose International Airport (SJC)

Dear Mr. Aitken,

Southwest Airlines has been operating at SJC since June 1st, 1993 and currently serves 16 markets with approximately 32 daily operations. We have worked with the airport staff at SJC over the years to provide airspace procedure protection and appropriate building heights that allow us to operate safely and continue to serve our existing markets and expand to new markets.

Through our continued reviews of FAA Aeronautical Study Determinations and continued dialog with airport staff at SJC, we understand that there are several proposed high-rise building developments throughout the City of San Jose, many of which are under the approach and departure paths to/from SJC, about a mile or two from the southeast ends of the runways.

While these high-rise buildings are not anticipated to significantly impact our operations, the construction cranes needed to construct these buildings may significantly impact our operations at SJC. It is our understanding that many of these temporary construction cranes will likely be significantly higher than the proposed buildings and in place for many months, and cumulatively for many years.

It is critical to the safety and efficiency of our operation that the approach and departure procedures at SJC and associated minimums, are fully protected.

We understand that the FAA makes modifications to procedures and minimums to accommodate temporary construction activities. However, we request that the FAA protect the critical approach and departure procedures we rely on most heavily that overfly the area southeast of SJC including the following:

- ILS or LOC Rwy 30L
- ILS Rwy 30L SA CAT I
- ILS Rwy 30L SA CAT II
- RNAV (GPS) Y Rwy 30L
- RNAV (RNP) Z Rwy 30L
- RNAV (GPS) Y Rwy 30R
- RNAV (RNP) Z Rwy 30R

John Aitken
Feb 18th, 20212

- Runway 12L and 12R ALMDN FOUR, BMRNG FOUR, TECHY THREE and SUNOL ONE Departures.

Given the low visibility weather conditions that can occur at SJC, it is important to our operations to protect these procedures for normal operations. We also request that FAA ensure protection for our one-engine inoperative procedure capability to the extent practical so that we can maintain our longer range service to cities such as OGG, KOA, HNL, MDW, and AUS.

We understand the need to continue to develop the city of San Jose but ask that you provide the protections needed so Southwest Airlines can maintain and continue to expand its operations at SJC. We look forward to continuing working with the FAA and the City of San Jose on this matter in the future.

Please do not hesitate to contact me at any time with any additional questions, concerns, or information (contact information located below).

Sincerely,

A handwritten signature in black ink, appearing to read "RW Dalton". The signature is written in a cursive style with a large, stylized "D".

Richard Dalton

Richard W. Dalton
Director Airspace and ATM
Network Operations Control
Email: rick.dalton@wnco.com
O: 469-603-0925
C: 214-674-6930

Appendix D: Construction Crane Fee Program Meetings and Presentations

Construction Crane Fee Program Meetings and Presentations

- **April 21, 2021** – City of San José Construction Crane Fee Program Working Group Meeting #1
- **June 30, 2021** – City of San José Construction Crane Fee Program Analysis – Developer Working Group Meeting #2
- **July 14, 2021** – City of San José Construction Crane Fee Program Analysis – Load Factor Assumptions
- **September 1, 2021** – City of San José Construction Crane Fee Program Analysis – Developer Working Group Meeting #3
- **September 25, 2021** – Construction Crane Fee Memorandum to City Council (Approved September 25, 2021)
- **September 28, 2021** – City of San José Construction Crane Fee Program Study – City Council – Item 5.1, John Aitken, Director of Aviation
 - **September 13, 2021** – Construction Crane Fee Program Study Findings and Recommendation Memorandum to City Council – File: 21-2109 (Approved September 17, 2021)
- **Construction Crane Fee Program Ordinance**

SILICON VALLEY'S AIRPORT



City of San Jose Construction Crane Fee Program Working Group

April 21, 2021

- Airport

Airport Planning & Development

Andres "Drew" Niemeyer/ Ryan Sheelen

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- Working Group

- Name / Company / Development Projects

Crane Fee Program Working Group Meeting #1 Agenda:

1. Council Recap
2. Historical Southflow weather data
3. Potential fee structure
4. Reporting process
5. Next Steps

(a) Accept the findings from a completed Construction Crane Height Guidance Study

- Affirm City's development commitment for the FAA to protect the primary (TERPS) surfaces utilized by SJC's Air Carriers to determine the maximum crane heights in the Downtown Core and Diridon Station Area.

(b) Direct the Administration to:

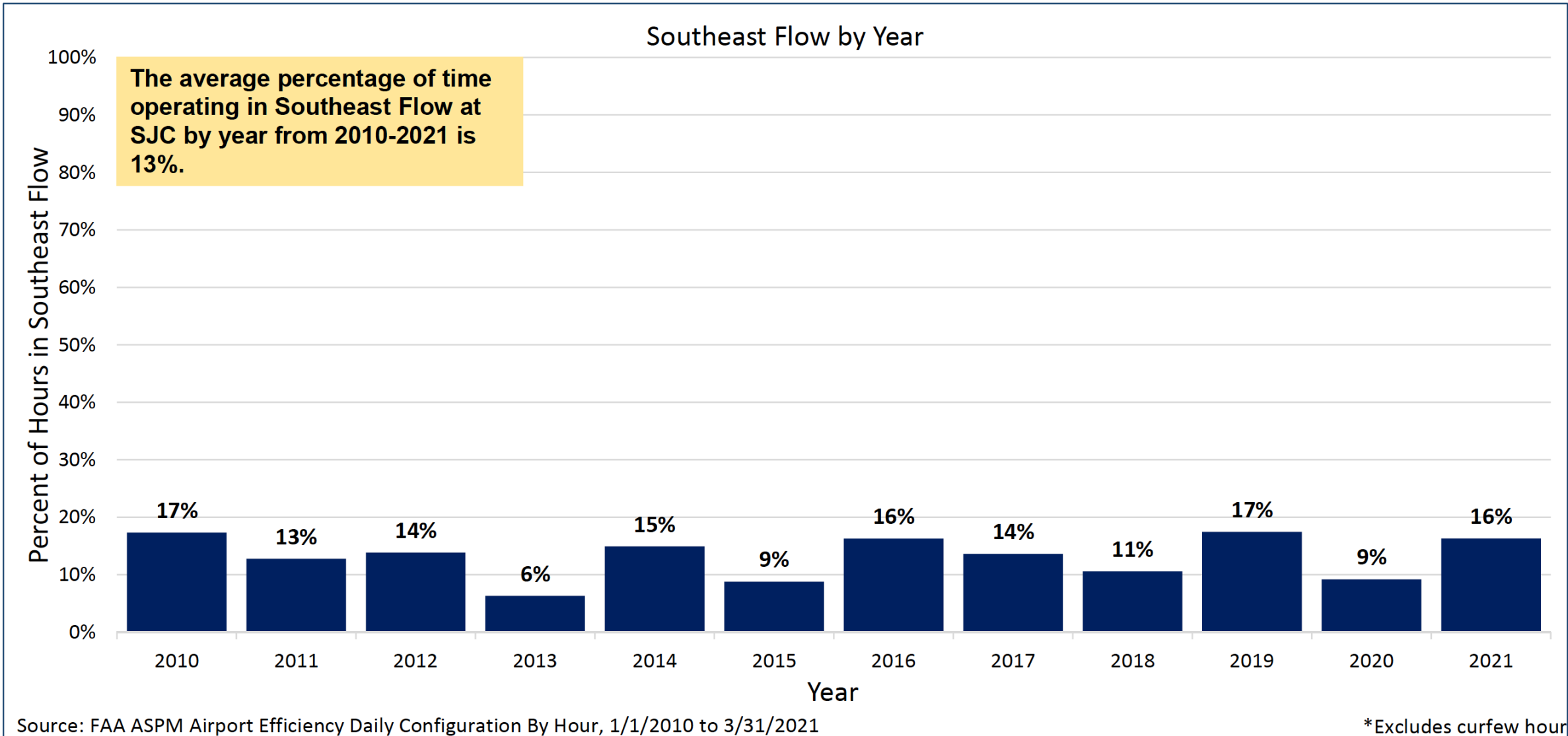
- (1) Prepare Construction Crane Guidance Document & include in all development permits for projects with temporary construction cranes

(2) Include in the Construction Crane Guidance Document, the following three methods for developers to minimize impacts on air service:

- (i) Utilize crane jumps to minimize duration cranes are at maximum height.
- (ii) Limit maximum crane heights to a 6-month window.
- (iii) Schedule maximum crane heights during non-South flow months of April through September (i.e., departures towards downtown).

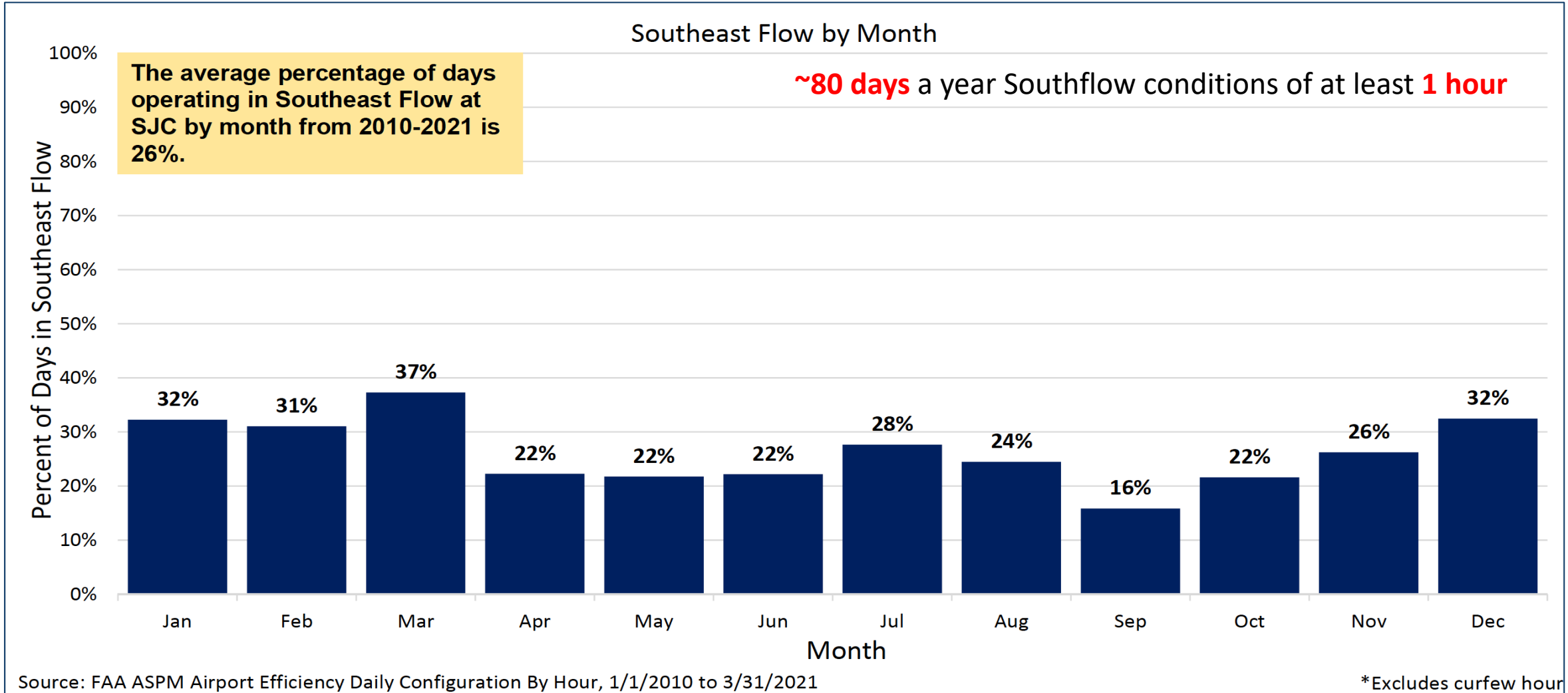
(c) Explore a construction crane permit fee to support a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area.

% OF HOURS OPERATING IN SOUTHEAST FLOW BY YEAR



Notes:
• Analysis

% OF DAYS OPERATING IN SOUTHEAST FLOW BY MONTH



Notes:
• Analysis

How to structure the fee program?

Flat Fee

- **Paid to offset adverse impacts to airline operations**
- Fee based on forecasted number of passengers adversely impacted by crane operations within a calendar year

Pros	Cons
<ul style="list-style-type: none"> • Developers able to identify and budget risk early in process 	<ul style="list-style-type: none"> • % of fee shared is susceptible to number of concurrent developments exceeding Downtown Building Height Limits with cranes
<ul style="list-style-type: none"> • Reduces administrative time & costs to be paid by developers in crane fee 	<ul style="list-style-type: none"> • Formulas susceptible to anomalies (weather, etc..)
<ul style="list-style-type: none"> • Potential for developments to share fee where cranes exceed Downtown Building Height Limits 	
<ul style="list-style-type: none"> • No fee reconciliation / true-up 	<ul style="list-style-type: none"> • No fee reconciliation / true-up

How to structure the fee program?

Actual Impact Fee:

- Fee based on actual airline weight impact that occurred while project's crane(s) exceed Downtown Building Height Limits

Pros	Cons
<ul style="list-style-type: none"> • Developer only pays fee for actual airline weight impacts 	<ul style="list-style-type: none"> • All fees will not be equal (i.e. cost associated with weight impacts for an international flight to Asia or Europe could be significantly more expensive than a domestic flight to JFK)
	<ul style="list-style-type: none"> • Significant Developer/City staff time to report and reconcile
	<ul style="list-style-type: none"> • Annual budgeting for these fees will be more difficult



Crane Reporting Process

- Need reporting process to track maximum crane heights and administer a crane permit fee
- Reporting process will include notifications when cranes are raised, reaching max height, lowered, etc...
 - Use crane notification form on Airport’s website that the developer/contractor fills in
 - Shared outlook calendar / database
- Alternate ideas? How would you like to see it?

DRAFT

Construction Crane Notification Form

Crane Notification Form Requirement: City notification of crane operation is required a minimum of 10-days prior to selected crane operation and each time the crane operation changes (crane erection, change in height, lowered for removal).

Project Name:		Crane Operator:	
Permit Number(s):		Phone:	
Authorized Project Representative:		Email:	
FAA OEAAA 7460 Case Numbers:			
Type of Crane Operation (Select One):	Dates Scheduled at New Crane Height:	Height of Crane:*	
<input type="checkbox"/> Initial Crane Erection	3/4/2021	<u>Crane Highest Point</u>	
<input type="checkbox"/> Increase Crane Height (Jump)	To	___ feet AGL	
<input type="checkbox"/> Decrease Crane Height	3/4/2021	___ feet MSL	
<input type="checkbox"/> Lower Crane for Removal		<u>Crane Jib Height</u>	
		___ feet AGL	
		___ feet MSL	

All notifications required in the FAA’s “Determination of No Hazard” letter must still be made and are separate from the City Construction Crane notification process.

*Height of crane must not exceed approved FAA height in “Determination of No Hazard” letter.

Visit www.flysanjose.com/downtownheightlimits to submit the Crane Notification Form.

- Additional discussion
 - Created shared question/comment document available to this working group

[Crane Fee Program - Questions/Comments](#)

- Next Steps
- Next meeting : 2-3 weeks tentative

SILICON VALLEY'S AIRPORT



06/30/2021

City of San Jose Construction Crane Fee Program Analysis Developer Working Group Meeting #2

Crane Fee Program Analysis Executive Summary

- Forecasted airline impacts that occur during Runway 12L/12R departures (south flow)
- Winter season has more impacted departures, summer season is characterized by higher load factors (LF), this creates similar Denied Boarding Cost (DBC) across both seasons
- Denied Boarding (DB) financial impact
 - 63% of DBs are on international routes
 - Tokyo, London & mostly Beijing

Forecasted Costs to Airlines

	Full Schedule	No Beijing	No International
Full Year	\$2.8 m	\$1.7m	\$1.1m
Apr-Sept	\$1.1m	\$777k	\$615k
Oct-Mar	\$1.7m	\$959k	\$417k

Denied Boarding Methodology

- Two types of DBs, voluntary and involuntary
 - A voluntary DB is where a passenger has been offered a seat on their current flight but has accepted compensation in exchange for a seat on a later flight or another carrier
 - An involuntary DB is where a passenger has not been offered a seat on their current flight regardless of their flight re-accommodation and any compensation they may receive
- According to data from the Bureau of Transportation Statistics and the Government Accountability Office (GAO) (domestic passengers only) on average less than 5% of DBs are involuntary
 - For the purposes of this study, it should be assumed the ratio of involuntary (5%) and voluntary (95%) DBs will be in-line with these statistics
 - There are a couple scenarios where this industry data errors towards being more conservative on involuntary DBs
 - The DBs are occurring close to departure and the volunteer solicitation process is compromised
 - The DBs are a significant percentage of aircraft capacity and well beyond the upper end of how many passengers would volunteer



Voluntary Denied Boarding Cost (DBC)

- Domestic voluntary DB cost numbers \$300/\$600 are in-line with the value of a free ticket which is the compensation typically offered when airlines solicit volunteers
 - The GAO reports that it does not have any data on compensation received from voluntary DBs because it typically isn't a monetary amount but rather a free ticket/travel voucher
- The compensation numbers for voluntary domestic and international DBs, do not include the additional cost of hotel and meal/travel accommodations.
 - Based on input from a major US carrier, per diem costs were set at \$200 for SJC origin flights (domestic/intl) and include any meal and transportation accommodations in addition to inconvenience factor
 - Due to the likelihood of not being able to provide a same day flight re-accommodation, hotel costs should be added to intl DBs (\$300)
 - Domestic destination passengers, the probability of this hotel cost being incurred significantly increases for flights that are later in the day

Denied Boarding Cost (per passenger)		
	Domestic	International
Voluntary	\$300	\$600
Per Diem (Origin)	\$200	\$200
Per Diem (Destination)	\$500	\$500



Involuntary Denied Boarding Cost (DBC)

- For an involuntary DB the U.S. DOT minimum compensation (i.e. money) that must be given to involuntary DBs is based on the length of the passenger’s delay
 - \$775 for 1-2 hour domestic delay and 1-4 hour international delay
 - \$1550 for 2+ hours domestic and 4+ hours international delays
- For the purposes of this study, a domestic involuntary DB will receive cash compensation of \$1000.
 - According to the GAO, in 2018, the average amount of cash compensation a passenger received who was involuntarily denied boarding was \$937
 - A major network carrier uses \$1000 for its involuntary DB cost as an input in their overbooking model based on historical amounts paid out
- An international passenger who is involuntarily denied boarding will receive cash compensation of \$2000.
 - The higher cost for international passengers is mainly due to less flight re-accommodation options

Denied Boarding Cost (per passenger)		
	Domestic	International
Involuntary	\$1000	\$2000
Per Diem (Origin)	\$200	\$200
Per Diem (Destination)	\$500	\$500

Denied Boarding Cost Per Passenger Assumptions

Assumed Denied Boarding Cost per Passenger: By Point of Origin & Denied Boarding Compensation (DBC) Type

<u>Impacted SJC Market</u>	Traffic mix of Denied Boardings				Hotels, Per Diem Vouchers		Airline DBC per Passenger		DBC per Passenger		
	<u>SJC Origin &</u>		<u>SJC Destination &</u>		<u>SJC Origin</u>	<u>SJC as Destination</u>	<u>Voluntary</u>	<u>Involuntary</u>	<u>Hotels, Per Diem</u>	<u>Air Fare</u>	<u>Total</u>
	<u>Voluntary</u>	<u>Involuntary</u>	<u>Voluntary</u>	<u>Involuntary</u>							
	<u>(A)</u>	<u>(B)</u>	<u>(C)</u>	<u>(D)</u>	<u>(E)</u>	<u>(F)</u>	<u>(G)</u>	<u>(H)</u>	<u>(I)</u>	<u>(J)</u>	<u>(K)</u>
Asia: Beijing (PEK), Tokyo (NRT)	57%	3%	38%	2%	\$200	\$500	\$600	\$2,000	\$320	\$670	\$990
Hawaii: HNL, KOA, OGG	78%	4%	17%	1%	\$200	\$500	\$300	\$1,000	\$254	\$335	\$589
Europe - Lufthansa***	59%	3%	36%	2%	\$200	\$500	\$600	\$2,000	\$314	\$670	\$984
Europe - British Airways	55%	3%	40%	2%	\$200	\$500	\$600	\$2,000	\$326	\$670	\$996
Newark (EWR) - Alaska Airlines	52%	3%	43%	2%	\$200	\$500	\$300	\$1,000	\$335	\$335	\$670
JFK - Alaska & Delta	50%	3%	45%	2%	\$200	\$500	\$300	\$1,000	\$341	\$335	\$676
JFK - Alaska & jetBlue	50%	3%	45%	2%	\$200	\$500	\$300	\$1,000	\$341	\$335	\$676

***Lufthansa not in operation

Estimation/Model of Denied Boardings

- Maximum Load Factors (LF) derived from aircraft assessment studies done earlier
- Ran current LFs based upon CY 2019, by month, carrier, route and aircraft type
- Comparison by route, aircraft and carrier of maximum LFs versus actual LFs to estimate DBs
- In addition, select airlines supplied their own estimates...

Seat Penalty Assumptions by Route/Airline/Aircraft



<u>Market/Aircraft/Carrier</u>	<u>(A)</u> Seats/Departure (DOT T100) *	Estimated Seats that can be Filled/Lost			
		<u>Oct-Mar: Max. Seats Filled Calc.</u>		<u>Apr-Sept: Max. Seats Flown Calc.</u>	
		<u>(B)</u> Max Seats Filled**	<u>(C=A-B)</u> Lost Seats	<u>(D)</u> Max Seats Filled**	<u>(E=A-D)</u> Lost Seats
NRT-787-800 (NH)	172	119	53	129	43
NRT-787-900 (NH)	217	166	51	172	45
PEK-787-800 (HU)	213	128	85	127	86
PEK-787-900 (HU)	288	128	160	127	161
LHR 787-900 (BA)	216	182	34	175	41
FRA-A340-300 (LH)	300	300	0	300	0
NYC-A320 (B6)	150	146	4	139	11
NYC-A319 (AS)	148	146	2	139	9
NYC-737-800					
- AS	159	175	0	175	0
- DL	160	174	0	168	0
NYC-737-900ER					
- AS	178	175	3	175	3
- DL	180	173	7	157	23
Hawaii-A321-NEO (HA)	189	189	0	184	5
Hawaii-A330-200 (HA)	278	278	0	278	0
Hawaii-767-300 (HA)	264	264	0	264	0
Hawaii-737-800					
- AS	159	139	36	133	26
- WN	175	175	0	175	0
Hawaii-737-900ER (only AS)	178	139	36	152	26

* For CY 2019. Is what was reported to USDOT in aggregate. For NH, is a mix of aircraft, although was primarily the 169-seat 787-800; Note that as of October 2019, NH operated 3 configurations of the 787-800 (169, 184 and 240 seats)

** Based upon modeled runway impacts in Appendix (all Scenario 3B) or airline recommendations (AS, WN & DL)



% of Departures in South Flow

SJC: % of Departures in Southeast Flow by Hour and Month

Hour	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6	20%	24%	25%	16%	14%	18%	24%	20%	12%	15%	17%	22%
7	20%	24%	29%	17%	16%	19%	26%	22%	13%	14%	18%	23%
8	22%	22%	31%	17%	17%	19%	25%	22%	14%	14%	17%	24%
9	22%	23%	30%	17%	17%	18%	24%	21%	14%	14%	17%	24%
10	21%	21%	28%	16%	14%	12%	18%	15%	11%	14%	17%	23%
11	20%	20%	28%	13%	11%	9%	9%	8%	8%	12%	17%	22%
12	20%	20%	25%	13%	8%	5%	4%	4%	5%	10%	15%	22%
13	18%	19%	24%	12%	8%	4%	2%	2%	3%	8%	13%	22%
14	19%	18%	22%	11%	7%	3%	1%	2%	3%	7%	13%	21%
15	18%	18%	22%	11%	7%	2%	1%	2%	2%	6%	12%	19%
16	17%	16%	20%	9%	7%	2%	1%	1%	3%	6%	12%	19%
17	17%	16%	20%	9%	6%	2%	1%	1%	3%	6%	12%	19%
18	18%	15%	19%	8%	6%	2%	1%	1%	3%	7%	12%	19%
19	18%	16%	19%	8%	6%	2%	1%	1%	2%	7%	11%	17%
20	19%	15%	18%	8%	5%	1%	1%	1%	3%	7%	12%	18%
21	19%	16%	19%	9%	6%	2%	1%	1%	3%	8%	13%	19%
22	20%	16%	18%	9%	6%	2%	1%	2%	3%	8%	14%	19%
23	19%	17%	18%	9%	6%	2%	1%	2%	4%	8%	14%	19%
Average	19%	19%	23%	12%	9%	7%	8%	7%	6%	10%	14%	21%

Source: FAA ASPM Airport Efficiency Daily Configuration By Hour, 1/1/2010 to 12/31/2020

- Relative to monthly averages, there are more deviations at the hourly level
- Morning departures are more heavily impacted consistently for both seasons
- Afternoon & evening departures less impacted
- Biggest deviations are during summer months



SJC Departure Detail: August

August Scheduled SJC Departing Flights by Time, Airline, Destination and Aircraft Time

% of Flights SE Flow	Airline Code Destination Code Equipment Code Depart Time	AS EWR 738 Departs	AS HNL 738 Departs	AS HNL 739 Departs	AS JFK 738 Departs	AS JFK 739 Departs	AS KOA 738 Departs	AS KOA 739 Departs	AS OGG 738 Departs	B6 JFK 320 Departs	BA LHR 789 Departs	DL JFK 739 Departs	HA HNL 321 Departs	HA OGG 321 Departs	HU PEK 789 Departs	NH NRT 788 Departs	LH FRA 343 Departs	WN HNL 738 Departs	WN OGG 738 Departs	TOTAL Departs
22%	0700		4	19																23
22%	0715													31						31
22%	0720				24	2														26
22%	0730			3					2											5
22%	0800						9	13												22
21%	0830	22																		22
21%	0840	4																		4
21%	0850						3		23											26
21%	0915												31							31
15%	0940																		5	5
8%	1055																	26		26
8%	1115															31		5		5
4%	1225																			31
2%	1240																		26	26
2%	1400				4	1														5
2%	1430														18					18
2%	1505																22			22
1%	2010										31									31
2%	2150											16								16
2%	2154											14								14
2%	2245											1								1
2%	2254									31										31
	TOTAL	26	4	22	28	3	12	13	25	31	31	31	31	31	18	31	22	31	31	421



DB Summary by Season & Financial Impact

Estimated Financial Impact: Denied Boardings & Denied Boardings Compensation (DBC)								
<u>Airline</u>	<u>Destination</u>	<u>Aircraft Type</u>	<u>Oct - March</u>		<u>Apr-Sept</u>		<u>Full Year</u>	
			<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>
AS	EWR	Boeing 737-800	-	-	-	-	-	-
AS	EWR	Boeing 737-900ER	-	-	-	-	-	-
AS	HNL	Boeing 737-800	122	\$71,790	78	\$46,027	200	\$117,816
AS	HNL	Boeing 737-900ER	210	\$123,408	299	\$176,190	509	\$299,598
AS	JFK	Airbus Industrie A319	1	\$949	-	-	1	\$949
AS	JFK	Airbus Industrie A320-100/200	5	\$3,677	-	-	5	\$3,677
AS	JFK	Boeing 737-800	0	-	-	-	0	-
AS	JFK	Boeing 737-900ER	-	-	-	-	-	-
AS	KOA	Boeing 737-800	82	\$48,335	81	\$47,765	163	\$96,100
AS	KOA	Boeing 737-900ER	122	\$71,648	155	\$91,466	277	\$163,114
AS	OGG	Boeing 737-800	149	\$87,927	283	\$166,449	432	\$254,376
B6	JFK	Airbus Industrie A320-100/200	13	\$8,555	21	\$14,258	34	\$22,813
B6	JFK	Airbus Industrie A321	2	\$1,032	-	-	2	\$1,032
BA	LHR	B787-900 Dreamliner	100	\$99,166	72	\$72,195	172	\$171,361
DL	JFK	Boeing 737-800	\$0	\$0	\$0	\$0	0	\$0
DL	JFK	Boeing 737-900ER	-	-	37	\$24,905	38	\$26,004
DL	JFK	Boeing 757-200	-	-	-	-	-	-
HA	HNL	Airbus Industrie A321-200n	0	-	45	\$26,240	45	\$26,240
HA	HNL	Airbus Industrie A330-200	-	-	-	-	-	-
HA	HNL	Boeing 767-300/300er	-	-	-	-	-	-
HA	OGG	Airbus Industrie A321-200n	0	-	38	\$22,145	38	\$22,145
HU	PEK	B787-800 Dreamliner	270	\$267,688	18	\$18,034	289	\$285,722
HU	PEK	B787-900 Dreamliner	481	\$475,729	295	\$291,965	775	\$767,694
LH*	FRA	A340-300	-	-	-	-	-	-
NH	NRT	B787-800 Dreamliner	439	\$434,232	84	\$83,460	523	\$517,692
NH	NRT	B787-900 Dreamliner	8	\$8,276	6	\$5,718	14	\$13,994
WN*	HNL	Boeing 737-800	0	-	0	-	0	-
WN*	OGG	Boeing 737-800	0	-	0	-	0	-
TOTAL			2,005	\$1,702,411	1,512	\$1,086,819	3,517	\$2,790,328

Example Monthly Crane Fee Rates (Forecasted Costs to Airlines + Admin Fee)

	April - September (Summer Season)			October - March (Winter Season)		
# Developers	Full Schedule	No Beijing	No International	Full Schedule	No Beijing	No International
1 Developer	\$210,833/mo.	\$148,925/mo.	\$117,875/mo.	\$325,833/mo.	\$183,808/mo.	\$79,925/mo.
2 Developers	\$105,417/mo.	\$74,463/mo.	\$58,938/mo.	\$162,917/mo.	\$91,905/mo.	\$39,963/mo.
3 Developers	\$70,278/mo.	\$49,642/mo.	\$39,292/mo.	\$108,611/mo.	\$61,270/mo.	\$26,642/mo.



Developer Fee – Methodology

- The DFs could be charged on a differential rate by season (i.e., summer / winter)
- Note: Differential rates are not necessarily skewed to one season. E.g., Without international DB costs are greater in summer season than winter.
- Annual South Flow #s and seasonality:
 - Percentage of time in SE flow operation: 8.7% summer (S); 17.5% winter (W); 13% annual
 - Seasonal percentage impacted DBs: 7.16% summer (S); 9.5% winter (W); 8.33% annual
- The Developer Fee should be charged at the time of building permit processing
 - It is essential that the DF can be estimated prior to a project commencing. Changes due to overlapping construction periods or individual disruptions for flights would not provide the developers the foresight to properly budget for the Developer Fee.
 - A flat fee would be charged at this time covering the period of time within the construction period when the developer would be using cranes above the building height restriction
- The DB cost recovery is estimated at \$2.8MM annually, at \$1.7MM without PEK, and at \$1.1MM without international.

Developer Fee – Administration

- Rates would be adjusted annually and applied to new project building permits
- There would be a reconciliation/true-up at season end or at project close out
 - Developers would not be allowed to close out permits until all fees have been paid and reconciled
- The airlines would need to make a request for reimbursement. It would not be the obligation of the Airport to seek out airline DB information
 - An airline reporting form will be established to document the DBs of a particular flight to which that airline seeks reimbursement
- Conclusion:
 - The DF structured in this manner could provide consistency and predictability to the developers and funding to the airlines via an airport program for airline DB costs



Airport Planning & Development

Andres "Drew" Niemeyer

Deputy Director

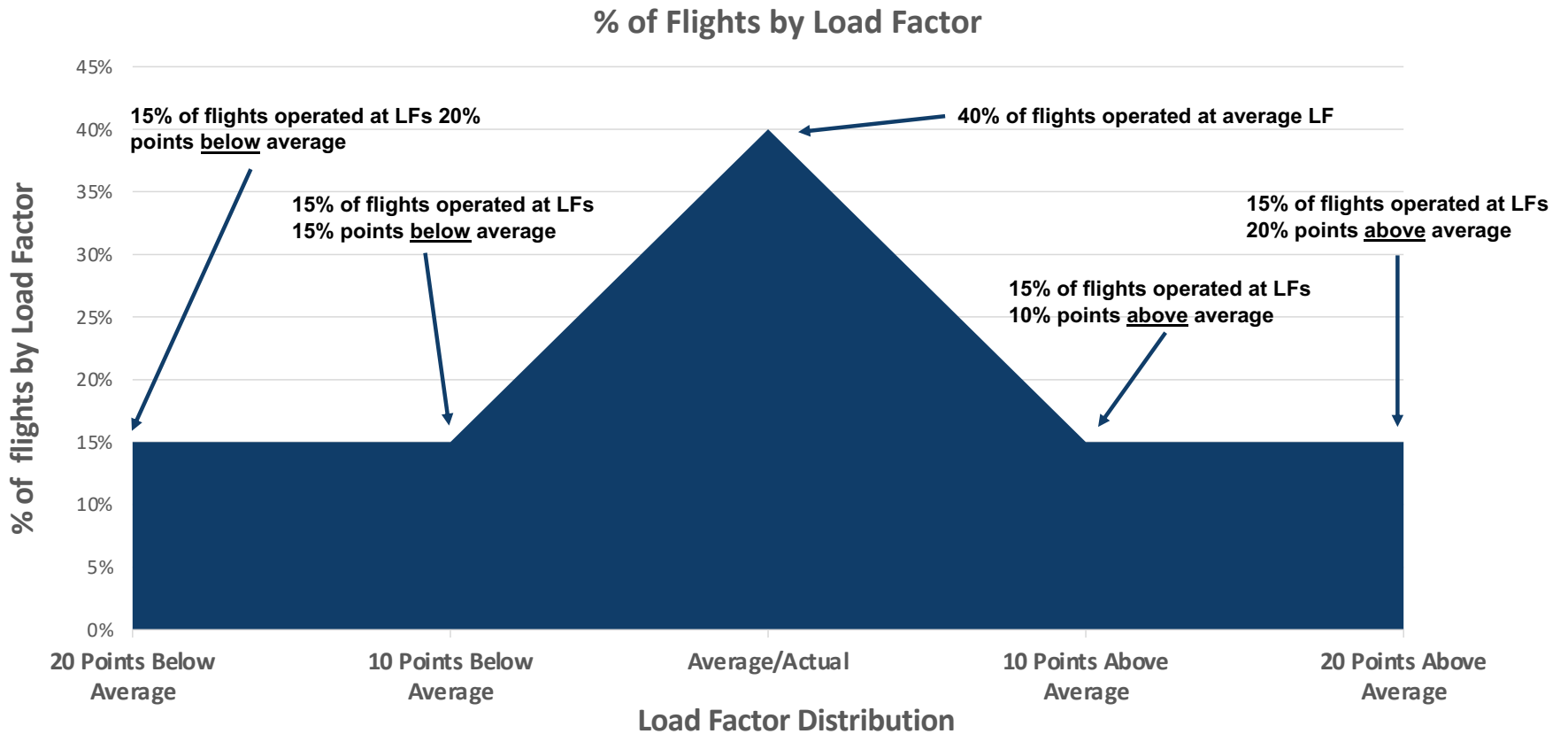
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LOAD FACTOR ASSUMPTIONS



- Typical bell-shaped curve indicative of load factor distribution

SILICON VALLEY'S AIRPORT



09/01/2021

City of San Jose Construction Crane Fee Program Recommendation
Developer Working Group Meeting #3

City Council Action – March 29th, 2021

Construction Crane Height Guidance Study



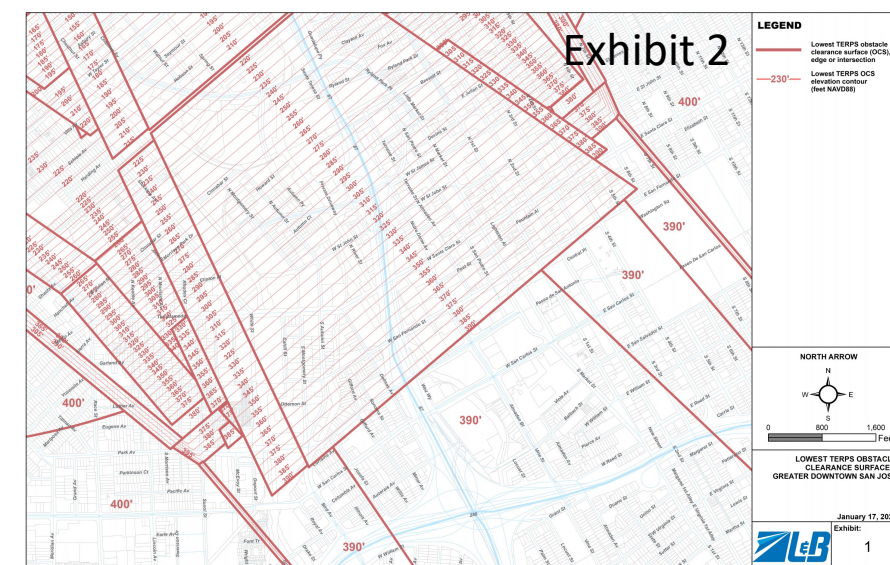
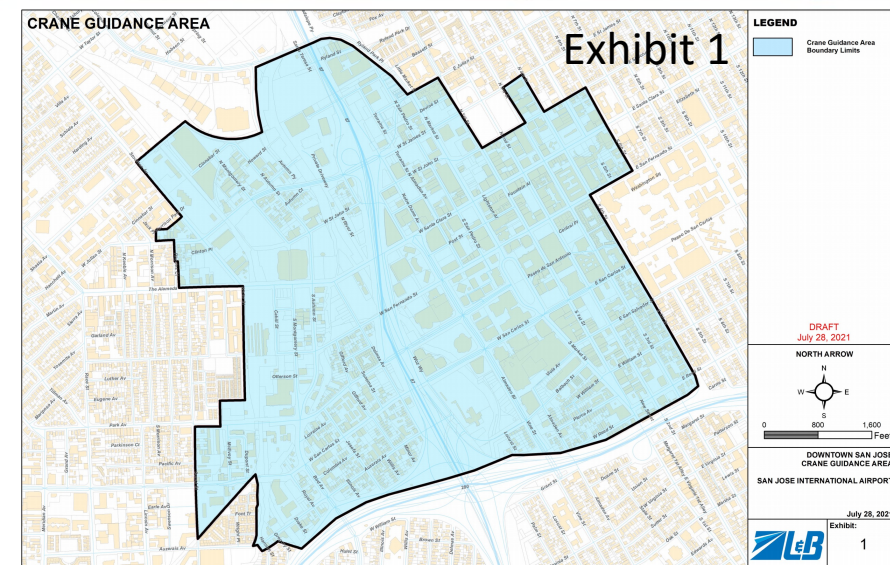
1. Accept findings from a completed Construction Crane Height Guidance Study, which would affirm the City's development commitment for the Federal Aviation Administration (FAA) to protect the primary Terminal Instrument Procedures (TERPS) procedures utilized by SJC's Air Carriers to determine the maximum crane heights in the Downtown Core and Diridon Station Area.

2. Direct the Administration to:
 - Prepare a Construction Crane Guidance Document to be included in all development permits for projects in the Downtown Core and Diridon Station Area requiring temporary construction cranes.
 - Construction Crane Guidance Document to include the following three methods for developers to minimize impacts on air service:
 1. Utilize crane jumps to minimize duration cranes are at maximum height.
 2. Limit maximum crane heights to a 6-month window.
 3. Schedule maximum crane heights during non-South flow months of April through September (i.e., departures towards downtown).

3. Explore a construction crane permit fee to support a Landing Fee Reduction Program for air carriers that incur either cargo or passenger weight impacts on account of construction cranes in the Downtown Core and Diridon Station Area.

Crane Fee Program Recommendation

- Crane Fee Program only applies to developers in “Construction Crane Guidance Area” (**Exhibit 1**) and only for the period a Developer operates construction cranes above the Council approved Downtown Building Height Limits (TERPS surfaces) **Exhibit 2**
- Staff’s recommendation is to reimburse the airlines at 75% of the total airline financial impacts and base the fee on SJC’s current flight schedule conditions
 - The City would also charge a 15% fee to administer the program
- Fee recommendation is Option 3, all impacted domestic flights including Hawaii and London (British Airways)
 - 75% of total Airline financial impacts is estimated at **\$1.1 million** annually



DB Summary by Season & 100% Airline Financial Impacts



Estimated Financial Impact: Denied Boardings & Denied Boardings Compensation (DBC)								
<u>Airline</u>	<u>Destination</u>	<u>Aircraft Type</u>	<u>Oct - March</u>		<u>Apr-Sept</u>		<u>Full Year</u>	
			<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>
AS	EWR	Boeing 737-800	-	-	-	-	-	-
AS	EWR	Boeing 737-900ER	-	-	-	-	-	-
AS	HNL	Boeing 737-800	122	\$71,790	78	\$46,027	200	\$117,816
AS	HNL	Boeing 737-900ER	210	\$123,408	299	\$176,190	509	\$299,598
AS	JFK	Airbus Industrie A319	1	\$949	-	-	1	\$949
AS	JFK	Airbus Industrie A320-100/200	5	\$3,677	-	-	5	\$3,677
AS	JFK	Boeing 737-800	0	-	-	-	0	-
AS	JFK	Boeing 737-900ER	-	-	-	-	-	-
AS	KOA	Boeing 737-800	82	\$48,335	81	\$47,765	163	\$96,100
AS	KOA	Boeing 737-900ER	122	\$71,648	155	\$91,466	277	\$163,114
AS	OGG	Boeing 737-800	149	\$87,927	283	\$166,449	432	\$254,376
B6	JFK	Airbus Industrie A320-100/200	13	\$8,555	21	\$14,258	34	\$22,813
B6	JFK	Airbus Industrie A321	2	\$1,032	-	-	2	\$1,032
BA	LHR	B787-900 Dreamliner	100	\$99,166	72	\$72,195	172	\$171,361
DL	JFK	Boeing 737-800	\$0	\$0	\$0	\$0	0	\$0
DL	JFK	Boeing 737-900ER	-	-	37	\$24,905	38	\$26,004
DL	JFK	Boeing 757-200	-	-	-	-	-	-
HA	HNL	Airbus Industrie A321-200n	0	-	45	\$26,240	45	\$26,240
HA	HNL	Airbus Industrie A330-200	-	-	-	-	-	-
HA	HNL	Boeing 767-300/300er	-	-	-	-	-	-
HA	OGG	Airbus Industrie A321-200n	0	-	38	\$22,145	38	\$22,145
HU	PEK	B787-800 Dreamliner	270	\$267,688	18	\$18,034	289	\$285,722
HU	PEK	B787-900 Dreamliner	481	\$475,729	295	\$291,965	775	\$767,694
LH*	FRA	A340-300	-	-	-	-	-	-
NH	NRT	B787-800 Dreamliner	439	\$434,232	84	\$83,460	523	\$517,692
NH	NRT	B787-900 Dreamliner	8	\$8,276	6	\$5,718	14	\$13,994
WN*	HNL	Boeing 737-800	0	-	0	-	0	-
WN*	OGG	Boeing 737-800	0	-	0	-	0	-
TOTAL			2,005	\$1,702,411	1,512	\$1,086,819	3,517	\$2,790,328



Developer Monthly Crane Fee Rates (100% Forecasted Costs to Airlines + 15% Admin Fee)

	Crane Fee Monthly Rates April – September “Summer Season”				Crane Fee Monthly Rates October – March “Winter Season”			
Options	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
# Projects*	Full Schedule	Full schedule No Beijing	No International + London	No International	Full Schedule	Full schedule No Beijing	No International + London	No International
1 Projects*	\$210,833	\$148,925	\$131,799	\$117,875	\$325,833	\$183,808	\$99,822	\$79,925
2 Projects*	\$105,417	\$74,463	\$65,900	\$58,938	\$162,917	\$91,905	\$49,911	\$39,963
3 Projects*	\$70,278	\$49,642	\$43,944	\$39,292	\$108,611	\$61,270	\$33,274	\$26,642

*Each project that requires a building permit is considered a single project.

Note: Each column above is calculated separately and cannot be added to reach a total.



Developer Monthly Crane Fee Rates

(75% Forecasted Costs to Airlines + 15% City Administrative Fee)

	Crane Fee Monthly Rates April – September “Summer Season”				Crane Fee Monthly Rates October – March “Winter Season”			
Options	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
# Projects	Full Schedule	Full schedule No Beijing	No International + London	No International	Full Schedule	Full schedule No Beijing	No International + London	No International
1 Projects*	\$158,125	\$111,694	\$98,849	\$88,406	\$244,375	\$137,856	\$74,867	\$59,944
2 Projects*	\$79,063	\$55,847	\$49,425	\$44,204	\$122,188	\$68,929	\$37,433	\$29,972
3 Projects*	\$52,709	\$37,232	\$32,958	\$29,469	\$81,458	\$45,953	\$24,956	\$19,982

*Each project that requires a building permit is considered a single project.

Note: Each column above is calculated separately and cannot be added to reach a total.

 Staff's recommendation highlighted in yellow

Administration of Crane Fee Program



- Crane fees charged a differential rate by season (i.e., summer / winter)
- Rates adjusted annually based on SJC flight schedule, weather conditions
- Developer deposits crane fee at time of issuance of building permit for new projects only
- Fee reconciliation to occur prior to PBCE issuance of Temporary Certificate of Occupancy (TCO) for project
- **Landing Fee Reduction Program:** The airlines must request Landing Fee credit. It would not be the obligation of the Airport to seek out airline denied boarding information



Memorandum

TO: CITY COUNCIL

FROM: Mayor Liccardo
Councilmember Carrasco
Councilmember Davis

SUBJECT: Construction Crane Fee

DATE: September 25, 2021

Approved:

Date: 9/25/21

RECOMMENDATION

Approve airport staff's recommendation with the following addition:

1. Exempt pipeline projects that have already applied for building permits and begin construction within 6 months of permit issuance.

BACKGROUND

The City of San José has a challenging distinction as one of North America's largest cities with a bustling airport immediately adjacent to its growing downtown core. The San José International Airport is key to the success of Silicon Valley's innovation economy. At the same time, Downtown San José is a growing hub of commercial and residential construction activity with many new high-rise buildings poised to break ground. Balancing the need for a strong downtown core with the vital importance of an international airport presents challenging trade offs for both.

We appreciate the data-driven work done by airport staff to guide the development of a comprehensive Construction Crane Fee Program that ameliorates many of the concerns raised by both the airline and development industries. The staff recommendation provides a reasonable structure to meet the City's primary policy objective by rewarding developers who minimize the time that cranes are at the maximum height.

However, it is essential to recognize the small handful of projects (approximately 4) that are already in the building permit process. These projects have secured the most expensive type of financing to begin construction—and are dependent on a stable, "locked in" pro forma in order to commence with vertical construction. Our recommendation is in line with many other fee-based policies recently adopted by this City Council that allow for approved and permitted projects to begin construction in a timely manner.

SILICON VALLEY'S AIRPORT



City of San Jose Construction Crane Fee Program Study

City Council – Item 5.1

September 28, 2021

John Aitken, Director of Aviation

Construction Crane Fee Program Study



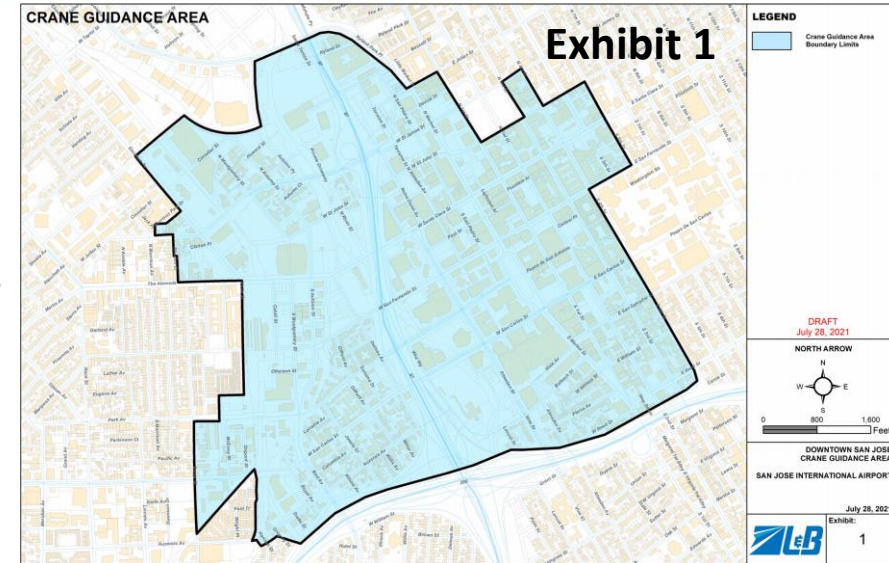
- **Downtown Airspace and Development Capacity (DADCS) - 2019**
 - Adopted new Building Height Limits
 - Develop Construction Crane Guidelines
- **Construction Crane Height Guidance Study - 2021**
 - Deferred to FAA to regulate temporary crane heights through Part 77 / TERPS Review Process
 - Temporary cranes impact SJC's approach & departure procedures
 - FAA does not protect for One Engine Inoperative (OEI), which impacts Air Service
 - City's Construction Crane Guidance provides three ways developers can minimize impacts to Air Service:
 1. Utilize crane jumps to minimize duration cranes are at maximum height.
 2. Limit maximum crane heights to a 6-month window.
 3. Schedule maximum crane heights during non-South flow months of April through September (i.e., departures towards downtown).
 - Explore a Construction Crane Permit Fee to fund a Landing Fee Reduction Program

Construction Crane Fee Program Study



- **Crane Fee Program Summary**

- Crane fees apply to projects in “Crane Guidance Area” **Exhibit 1** only for duration projects operate construction cranes above the Downtown Building Height Limit **Exhibit 2**
- Developer deposits a percentage of the estimated crane fee prior to issuance of building permit, costs reconciled at Temporary / Certificate of Occupancy based on actual Air Carrier denied boardings
- Landing Fee Reduction Program offers voluntary landing fee credits to offset up to 75% of Air Carrier costs associated with denied passenger boardings on departure in South Flow, as identified in the study



Air Carrier Estimated Annual Financial Impacts



Estimated Financial Impact: Denied Boardings & Denied Boardings Compensation (DBC)								
<u>Airline</u>	<u>Destination</u>	<u>Aircraft Type</u>	<u>Oct - March</u>		<u>Apr-Sept</u>		<u>Full Year</u>	
			<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>	<u>DB Psgrs</u>	<u>Financial Impact</u>
AS	EWR	Boeing 737-800	-	-	-	-	-	-
AS	EWR	Boeing 737-900ER	-	-	-	-	-	-
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HA	OGG	Airbus Industrie A321-200n	0	-	38	\$22,145	38	\$22,145
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LH*	FRA	A340-300	-	-	-	-	-	-
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TOTAL			2,005	\$1,702,411	1,512	\$1,086,819	3,517	\$2,790,328



Developer Monthly Crane Fee Rates

(75% Forecasted Costs to Airlines + 15% City Administrative Fee)

	Crane Fee Monthly Rates April – September “Summer Season”				Crane Fee Monthly Rates October – March “Winter Season”			
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*Each project that requires a building permit is considered a single project.

Note: Each column above is calculated separately and cannot be added to reach a total.

 Staff’s recommendation highlighted in yellow

Administration of Crane Fee Program

- **Applicability:**
 - Crane fees apply to projects in “Crane Guidance Area” only for duration projects operate construction cranes above the Downtown Building Height Limits
- **Deposit / Reconciliation:**
 - Prior to issuance of building permit for new projects, a developer will be required to deposit up to 50% of total estimated crane fees due
 - Fee reconciliation to occur prior to PBCE issuance of Temporary or Certificate of Occupancy, whichever occurs sooner
 - Based on actual Air Carrier denied boarding impacts
- **Fee Cap:**
 - Program will start with a fee cap of 5 X single project monthly rate published in the “Crane Fee Monthly Rate” table
 - Fee Cap eliminated after 6 months and full monthly rate applied at reconciliation starting with month 7
- **Landing Fee Reduction Program:**
 - Provide landing fee credits to offset Air Carrier impacts associated with denied passenger boardings in South Flow due to construction cranes

Crane Fee Program Recommendation



1. Require developers whose means or methods of construction exceed the City's Downtown Building Height Limits to indemnify the City for all costs or losses arising out of developers construction means or methods.
 - Make a deposit of estimated costs or losses prior to the city issuing a building permit, and to reconcile a percentage of costs associated with actual Air Carrier denied boarding impacts, prior to the city issuing a temporary or permanent certificate of occupancy.
2. Implement a Landing Fee Reduction Program for air carriers that incur passenger weight impacts caused by a developers construction means and methods in the "Construction Crane Guidance Area".
 - Grant the Director of Aviation authority to waive landing fees up to 75% of the total Air Carrier denied boarding costs due to construction means and methods, to set the estimated crane fee deposit percentage up to 50%, and fee cap on an annual basis.



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: John Aitken

SUBJECT: SEE BELOW

DATE: September 13, 2021

Approved

Date

9/17/2021

COUNCIL DISTRICT: 3 & 6

SUBJECT: CONSTRUCTION CRANE FEE PROGRAM STUDY FINDINGS AND RECOMMENDATION

RECOMMENDATION

- (a) Approve an ordinance requiring developers whose means or methods of construction exceed the City's Downtown Building Height Limits to indemnify the City for all costs or losses arising out of developers construction means or methods, to make a deposit of estimated costs or losses prior to the city issuing a building permit, and to reconcile a percentage of costs associated with actual Air Carrier denied passenger boardings, prior to the city issuing a temporary or permanent certificate of occupancy.
- (b) Adopt a resolution to implement a Landing Fee Reduction Program for air carriers that incur passenger weight impacts caused by a developers construction means and methods in the "Construction Crane Guidance Area" and to grant the Director of Aviation authority to waive landing fees up to 75% of the total Air Carrier denied boarding costs due to construction cranes and to set the estimated crane fee deposit percentage up to 50% and fee cap on an annual basis.

OUTCOME

City Council approval of the above recommendations would allow the Construction Crane Fee Program to be implemented, requiring developers to pay an estimated crane fee deposit (30 – 50% of total fees due) at the time of building permit issuance based on the expected duration a project's construction means and methods (e.g. construction cranes, temporary hoisting devices, etc.), referred to as "construction cranes" that will operate above the City of San Jose's Downtown Building Height Limits. Construction crane fees will have a cap for the first six

months, with the cap being eliminated after six months and the full estimated crane fee to be due. Fees will be reconciled before the issuance of temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (COO), whichever occurs sooner and will be based on actual Air Carrier denied boarding impacts. In addition, approval of the above recommendations will help attract and retain domestic and international Air Carriers by allowing them to participate in the Landing Fee Reduction Program at the Mineta San Jose International Airport (SJC). The Airport will be the administrator of the fee program and will not fund the program on behalf of either the development community or the Air Carriers.

EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) protects various airspace surfaces surrounding an airport, known as Terminal Instrument Procedures (TERPS) surfaces, and in turn makes the final decision on the height of permanent buildings and temporary construction cranes. The City of San Jose's Construction Crane Fee Program Study (Study) explored a crane permit fee to offset the potential Air Carrier weight penalties (denied passenger boardings) associated with operating construction cranes above the Council approved Downtown Building Height Limits when the Airport is in South Flow operations (aircraft departing the airport towards the Downtown).

The Study calculated a crane fee by determining the annual denied boarding costs to the Air Carriers, directly attributed to project construction cranes exceeding the Downtown Building Height Limits. The estimated Air Carrier denied boarding cost impacts are estimated at a current total of \$2.8 million annually, based on SJC's full 2019 flight schedule. Four flight schedule options were analyzed, covering 75% of the Airlines annual estimated denied boarding costs. Option 3 was ultimately selected for the start of the program based on SJC's current flight schedule and is estimated at \$935,000. Option 3 includes SJC's full domestic flight schedule (East Coast and Hawaii) and London (British Airways) as the only international flight.

To offset the Air Carrier's denied boarding costs, each development project will be required to provide a crane fee deposit (including a 15% City administrative program fee) prior to issuance of building permit, based on the estimated number of months construction crane(s) will operate above the Downtown Building Height Limits. The deposit will be set by the Director of Aviation up to 50% of the total estimated fees and will later be reconciled at TCO or COO, whichever occurs sooner based on the actual denied boardings reported by the Air Carriers. A fee cap will be set by the Director of Aviation for projects that operate construction cranes above the Downtown Building Height Limits for six months or less, with the cap being eliminated for cranes operating for longer than six months.

BACKGROUND

On February 26, 2019 the City Council accepted the Downtown Airspace and Development Capacity Study to use the FAA obstruction evaluation determinations as a maximum building height limit in the Downtown Core and Diridon Station Area. The selected scenario was to allow building heights up to the FAA TERPS surfaces. Further, Council directed the development of a construction crane policy to minimize impacts to airline service during construction.

As directed by City Council on February 26, 2019 Council, the Construction Crane Height Guidance Study was presented to City Council on March 9th, 2021. The City Council approved recommendations from the study and directed staff to explore a construction crane permit fee to support a Landing Fee Reduction Program for Air Carriers that incur either cargo or passenger weight impacts on account of construction crane impacts in the Downtown Core and Diridon Station Area “Construction Crane Guidance Area”.

City Council approved preparation of a Construction Crane Guidance document to include three ways developers can minimize impacts on Air Service:

1. To utilize crane jumps to ensure crane at maximum height for shortest period of time
2. Minimize the maximum crane height for 6 months
3. Schedule the highest heights during non-South for months (April – September)

The Construction Crane Height Guidance Study considered the potential weight reduction impacts to commercial aircraft associated with construction cranes penetrating the TERPS surfaces. Estimating the financial impacts to Air Service associated with denied boardings was not included in the previous study. The goal of the Construction Crane Fee Program Study (Study) was to develop a fee program that balances the financial impacts to both the Airlines and the development community. The Construction Crane Fee Program will only apply to developers operating construction cranes above the Downtown Building Height Limits (TERPS surfaces).

The Airline industry denies boarding to passengers on a regular basis for a variety of reasons such as overbooking, weather, or maintenance. This Study focused on the financial impacts from passenger air carrier denied boardings cause by construction cranes penetrating the TERPS surfaces within the study area.

Denied boardings are categorized by two types: voluntary and involuntary denied boardings. A voluntary denied boarding is when a passenger has a seat on their current flight but has voluntarily accepted compensation in exchange for a seat on a later flight or another carrier. An involuntary denied boarding is where a passenger has not been issued a seat on their current flight, will be re-accommodated on a later flight, and is required to receive compensation. Removing passengers involuntarily from a flight is not a sound business practice for the airline industry and therefore voluntary denied boardings are estimated to occur the majority of the time (95%), while involuntary denied boardings make up the remaining 5%.

The United States Department of Transportation (USDOT) regulates involuntary denied boardings and sets the minimum compensation an Air Carrier is required to pay passengers based on the length of delay. The minimum compensation ranges from \$775 to \$1550 depending on the length of delay and whether the flight is a domestic or international flight. Air Carriers are also required to document and submit a denied boarding form to USDOT each time an involuntary denied boarding occurs on one of their flights.

In March 2021, Landrum & Brown, a national aviation planning/engineering consultant with extensive experience working for the City on airspace and other airport technical issues, was contracted to perform the technical work on the Study, which analyzed the factors associated with Air Carriers' denied boardings as a result of construction cranes operating above the Downtown Building Height Limits in the "Construction Crane Guidance Area".

The Airport Commission was briefed on the Study on May 4, 2021 and August 9, 2021 and given the opportunity to review the scope, technical analysis, and provide feedback. City staff participation in the Study included representatives from Planning, Building and Code Enforcement Department (PBCE), Office of Economic Development and Cultural Affairs, City Attorney's Office, and the Airport Department. The development community was engaged over the course of six months through both a "Developer Working Group", a group of 17 developers, 3 contractors, and through individual developer meetings upon request. Over the course of three "Developer Working Group" meetings, discussion topics included: fee program scope, technical fee analysis, administration of the program, and preferred fee structure recommendation. The meetings were well attended by the development community and served as opportunities for developers to share their knowledge, provide input, and provide feedback to the study itself.

ANALYSIS

The Study, an extension of the Construction Crane Height Guidance Study, consisted of 3 major tasks:

- Task 1: Estimate Construction Crane Fee Structure
- Task 2: Determine Administration of Crane Fee Program
- Task 3: Formulate Landing Fee Reduction Program

Task 1: Estimate Construction Crane Fee Structure

This task estimated the annual financial impact from construction cranes to the Air Carriers associated with denied boardings in order to determine the developer fee amount. The analysis included data collection and review, estimated per passenger costs, and determined an estimated annual Air Carrier financial impact.

Staff collected data from the USDOT and SJC including:

- The annual and monthly flight data for all impacted routes (Hawaii, Transcontinental, Asia, and Europe), by aircraft type and air carrier, using 2019 pre-pandemic schedules.
- Average aircraft load factors (percentage of seats filled) and passenger volumes from 2019 flight schedules to compare to the maximum aircraft load factor assessments completed in the Construction Crane Height Guidance Study and produce an estimate of the number of denied boardings for each flight.
- Historical weather data from 2010 to 2021 identifying the total number of days and percentage of time (hours) when SJC operates in a south flow runway configuration. This weather data was merged with SJC's 2019 flight schedule to isolate where the denied boardings would occur.
- Potential impacts to air cargo and associated cost factor. (It was determined that Air Carrier belly cargo operations would mitigate any loss at SJC by ground shipping to another airport or putting belly cargo on another flight. Freightier cargo operators would mitigate any losses by utilizing their ground networks, moving cargo to SFO or OAK to be shipped.)

Staff evaluated the costs associated with Air Carrier denied boardings for both domestic and international flights by completing the following steps:

- Estimated voluntary and involuntary compensation and per diem amounts based on whether SJC was a passenger's origin or destination.
- Sorted the USDOT traffic mix of denied boardings into percentage of voluntary versus involuntary denied boardings for both SJC local (originating) and SJC non-local (destination) passengers.
- Weighted the average denied boarding cost for domestic and international flights utilizing the per passenger cost and traffic mix.

Voluntary domestic (e.g., Hawaii and Transcontinental) denied boardings were set at \$300, which is in line with the value of a ticket voucher. The voluntary denied boarding cost for international flights was set at \$600, based on fewer flight re-accommodation options, as most international flights operate only once a day and not seven days a week. Involuntary domestic flights were set at \$1,000, which is in line with statistics from the Government Accountability Office (GAO) reporting airlines paid out an average of \$937 in 2018. Involuntary international flights were doubled to \$2,000 due to even fewer flight re-accommodation options.

Air Carriers also factor per diem costs (e.g., overnight lodging, meal vouchers, and transportation vouchers) into their denied boarding costs. For local passengers flying out on an SJC flight (originating), the per diem cost was set at \$200 for both domestic and international denied boardings based on input from Air Carriers. For non-local passengers where SJC is their destination, a \$300 hotel voucher is included, for a total of \$500, based on industry standards.

The total denied boarding cost per passenger was determined by multiplying the traffic mix of denied boardings by flight origin point (e.g., SJC local or SJC non-local) by per diem cost and voluntary and involuntary denied boarding costs.

Table 1 displays the total annual financial impacts by route, carrier, aircraft type, and season. A full year of financial impacts to the Air Carriers operating flights to all impacted markets is estimated to be \$2.8 million.

Table 1

Estimated Financial Impact: Denied Boardings & Denied Boardings Compensation (DBC)								
Airline	Destination	Aircraft Type	Oct - March		Apr-Sept		Full Year	
			DB Psgrs	Financial Impact	DB Psgrs	Financial Impact	DB Psgrs	Financial Impact
AS	EWR	Boeing 737-800	-	-	-	-	-	-
AS	EWR	Boeing 737-900ER	-	-	-	-	-	-
AS	HNL	Boeing 737-800	122	\$71,790	78	\$46,027	200	\$117,816
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AS	JFK	Airbus Industrie A319	1	\$949	-	-	1	\$949
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BA	LHR	B787-900 Dreamliner	100	\$99,166	72	\$72,195	172	\$171,361
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DL	JFK	Boeing 737-900ER	-	-	37	\$24,905	38	\$26,004
DL	JFK	Boeing 757-200	-	-	-	-	-	-
HA	HNL	Airbus Industrie A321-200n	0	-	45	\$26,240	45	\$26,240
HA	HNL	Airbus Industrie A330-200	-	-	-	-	-	-
HA	HNL	Boeing 767-300/300er	-	-	-	-	-	-
HA	OGG	Airbus Industrie A321-200n	0	-	38	\$22,145	38	\$22,145
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WN*	HNL	Boeing 737-800	0	-	0	-	0	-
WN*	OGG	Boeing 737-800	0	-	0	-	0	-
TOTAL			2,005	\$1,702,411	1,512	\$1,086,819	3,517	\$2,790,328

Four flight schedule scenarios were developed based on SJC’s flight schedules, consisting of the various domestic and international flight schedule combinations. Based on the current and near-term flight schedule activity at SJC, staff is recommending Option 3 which includes domestic flights, but does not include any international flights except for the London route.

1. Option 1: Full Schedule – SJC’s full domestic and international flight schedule
2. Option 2: Full Schedule with No Beijing – SJC’s full domestic and international flight schedule without Beijing
3. Option 3: No International and London – SJC’s full domestic flight schedule with London included as the only international route
4. Option 4: No International – SJC’s full domestic flight schedule, no international flights included.

All four flight schedule options and the associated monthly crane fees are shown in **Table 2**. The monthly crane fee amounts are based on 75% of the annual Air Carrier denied boarding costs, plus a 15% City administrative fee. Based on analysis performed and for the purpose of a 75% fee waiver, Air Carriers will receive \$445 for each domestic denied boarding and \$747 for each international denied boarding.

Table 2 is sorted by season, flight schedule options, and number of simultaneous developers operating temporary structures above the Downtown Building Height Limits.

Table 2

**Developer Monthly Crane Fee Rates
(75% Forecasted Costs to Airlines + 15% City Administrative Fee)**

Options	Crane Fee Monthly Rates April – September “Summer Season”				Crane Fee Monthly Rates October – March “Winter Season”			
	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
# Projects	Full Schedule	Full schedule No Beijing	No International + London	No International	Full Schedule	Full schedule No Beijing	No International + London	No International
1 Projects*	\$158,125	\$111,694	\$98,849	\$88,406	\$244,375	\$137,856	\$74,867	\$59,944
2 Projects*	\$79,063	\$55,847	\$49,425	\$44,204	\$122,188	\$68,929	\$37,433	\$29,972
3 Projects*	\$52,709	\$37,232	\$32,958	\$29,469	\$81,458	\$45,953	\$24,956	\$19,982

*Each project that requires a building permit is considered a single project.

Note: Each column above is calculated separately and cannot be added to reach a total.

Staff's recommendation highlighted in yellow

Task 2: Determine Administration of Crane Fee Program

This task determined the best way to administer this new program within existing City processes. After much review and dissecting of the issues related to new City program, the best way was determined to be an estimated crane fee deposit from the developer at issuance of a building permit. The deposit will be set at up to 50% of the estimated fee and will be evaluated annually by the Director of Aviation. At the start of the program, the deposit will be 40% of the total fees due. The crane fee formula is listed below:

$$40\%¹ \times \frac{\text{Published Monthly fee rate X Estimated \# months construction crane(s) will exceed Downtown Building Height limits}}{\text{\# of projects with crane(s) exceeding Downtown Building Height Limits.}}$$

¹ 40% is the starting deposit percentage for the first year of implementation.

At issuance of building permit, a crane fee cap will be calculated based on the current published monthly fee rates. The cap will apply for only the first six months a project's construction crane(s) exceed the Downtown Building Height Limits. The ordinance gives the Director of Aviation the authority to set a fee cap and the program will start the cap at five times the published monthly fee rate. The fee cap formula is below and is based on the single developer rates in **Table 2**:

5	X	Published Monthly fee rate
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If a project's construction crane(s) exceed the Downtown Building Height Limits for more than six months, the cap will be eliminated and the full published monthly crane fee rates listed in **Table 2** will be applied to months greater than 6 months due at time of reconciliation.

Note that the March 9, 2021 Construction Crane Guidance Study that was approved by City Council identified that the developers would utilize crane jumps to ensure that construction cranes are at their maximum heights for no longer than 6 months.

A fee reconciliation based on actual Air Carrier denied boarding impacts will occur prior to the time of building permit TCO or COO for the project, whichever occurs first. SJC will prepare a reconciliation invoice for the developer's project and either refund the remaining deposit or request additional funds from the developer to be paid prior to issuance of TCO/COO. The reconciliation is based on the current year's crane fee.

The 15% City administrative fee will cover staff time to review airline denied boarding reports and documentation, invoicing, reconciliations, PBCE crane fee coordination with Developers and Airport Department, administration of fee account, and administration of landing fee reduction program and associated accounting elements.

The current construction crane fee rates will be posted on SJC's website and will be updated on an annual basis, based on Air Carrier flight schedule changes and actual weather conditions. Additionally, a schedule will be posted to SJC's website to only include projects that have paid a construction crane fee deposit to SJC to allow developers to minimize impacts to Air Service by constructing during the same time frames originally indicated. This schedule will be updated monthly based on information provided by developers and is subject to change based on actual construction schedules. Both items will be available at:
www.flysanjose.com/downtownheightlimits.

Task 3: Formulate Landing Fee Reduction Program

All Air Carriers are required to pay a landing fee each time they land at SJC, which are based on certified maximum gross landing weight of the aircraft. The average costs for denied boardings determined in Task 1 will be utilized in the Landing Fee Reduction Program.

Air Carriers can voluntarily request a landing fee reduction to SJC by submitting a landing fee credit form, which includes the affected flight number, date, time, and number of passengers

denied boardings due to construction crane heights. SJC will verify the flight details are accurate, the Airport was in South Flow at the time of the flight, and construction cranes were operating above the Downtown Building Height Limits (TERPS surfaces) at the time of flight.

As actual weight impacts occur (denied boardings) and Air Carriers request landing fee credits, developers with a crane fee deposit on file at SJC will receive quarterly statements indicating balance. Auditing of the program may occur at any time by the City's auditor.

CONCLUSION

The Study considered stakeholder input from the development community, crane operators, Air Carriers, Downtown Association, Silicon Valley Leadership Group and multiple City departments. After much consideration, staff is recommending that the City move forward with a Construction Crane Fee Program with rates that are 75% of the airlines' denied boarding financial impacts. Developers will be eligible to provide a reduced crane fee deposit (40% at the start of the program) at PBCE issuance of building permit. A fee cap will be implemented for project's that operate construction cranes above the Downtown Building Height Limits for six months or less. The goal of the Construction Crane Fee Program is to partner with the airlines and development community, offsetting a portion of the potential cost impacts to the Air Carriers via the Landing Fee Reduction Program. Staff will continue to work with the Air Carriers and development community to ensure the Construction Crane Fee Program is successfully implemented, for projects in the "Construction Crane Guidance Area," that require operation of construction cranes above the City's Downtown Building Height Limits.

EVALUATION AND FOLLOW-UP

Airport and PBCE staff shall implement the recommendations brought forward in this memorandum upon Council approval and report the relevant impacts of these recommendations back to the appropriate Council committee, as necessary.

CLIMATE SMART SAN JOSE

The recommendation in this memo has no effect on Climate Smart San José energy, water, or mobility goals.

POLICY ALTERNATIVES

Alternative: Accept the Construction Crane Fee Program, at a different partnership rate lower than 75% of the Air Carrier financial impacts.

Pros: Developer fees associated with construction cranes will be reduced in Downtown San Jose.

Cons: This alternative further jeopardizes long-haul air service routes at SJC due to the significant potential for denied boardings.

Reason for not recommending: Implementing this policy does not support a key economic development policy in the Envision 2040 General Plan to “Continue developing a world-class Airport, maintaining a high level of partnership with the air carriers while and building national and international connections by attracting new air service to it.”

PUBLIC OUTREACH

Stakeholder outreach for this study was accomplished through a “Developer Working Group” consisting of 17 developers and 3 contractors and the PBCE “Developers and Construction Roundtable.” Over the course of the study, SJC hosted three “Developer Working Group” meetings and SJC discussing program scoping, technical fee analysis, and preferred fee recommendation for the proposed crane fee program. The meetings were well attended by the development community and served as opportunities to ask questions and provide feedback to the study. Additional meetings were held with the Downtown Association, Silicon Valley Leadership Group, Air Carriers, and individual developers upon request.

COORDINATION

This memorandum has been coordinated with PBCE, Office of Economic Development and Cultural Affairs, the City Manager’s Budget Office, and the City Attorney’s Office.

COMMISSION RECOMMENDATION/INPUT

The Airport Commission was briefed on the Study in public meetings on May 10, 2021 and August 9, 2021 and given the opportunity to review the technical analysis, fee recommendation, and provide feedback.

FISCAL/POLICY ALIGNMENT

The recommendations in this memorandum are consistent with the Envision San Jose 2040 General Plan amended on 03/10/2020 to continue developing a world-class airport and build national and international connections by attracting new air service to it (Goal IE-4.2).

HONORABLE MAYOR AND CITY COUNCIL

September 13, 2021

Subject: Construction Crane Fee Program Study Findings and Recommendation

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CEQA

Not a Project, File No. PP17-008, General Procedure and Policy Making resulting in no physical changes to the environment.

/s/

JOHN AITKEN, A.A.E.

Director of Aviation

For questions, please contact Matthew Kazmierczak, Manager of Policy and Strategy, at 408-392-3640.

Chapter 25.18 - CONSTRUCTION CRANE FEE PROGRAM

Parts:

Part 1 - DEFINITIONS

Sections:

25.18.100 - Definitions.

The definitions contained in this part shall govern the application and interpretation of this chapter. The definitions set forth in Part 3 of Chapter 25.01 of this title shall govern the application and interpretation of the following terms as used in this chapter: "Airport," "Certificated Air Carrier," and "Director".

(Ord. 30674.)

28.18.105 - Actual Denied Boarding Costs.

"Actual Denied Boarding Costs" means the actual Denied Boarding Costs incurred by Airlines as a result of Construction Cranes operating above the Downtown Building Heights Limits in the Construction Crane Guidance Area when the Airport is operating in South Flow.

(Ord. 30674.)

28.18.110 - Administrative Program Fee.

"Administrative Program Fee" means the fee for City staff time to administer the Construction Crane Fee Program.

(Ord. 30674.)

28.18.115 - Airline.

"Airline" means a Certificated Air Carrier that has entered into an agreement or operating agreement with City for its use of the Airport's terminal facilities and/or the airfield.

(Ord. 30674.)

28.18.120 - Building Permit.

"Building Permit" means full structural building permits as well as partial permits such as foundation-only permits, or any other permit or approval issued by City of San José Building Division for a structure within the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.125 - Certificate of Occupancy (COO).

"Certificate of Occupancy" (COO) means the permit issued by the City of San José Building Division authorizing the use or occupancy of a building or structure or portion thereof within the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.130 - Construction Crane.

"Construction Crane" means any means and methods used to construct, develop, or improve a structure. Examples include but are not limited to: temporary construction cranes, hoisting devices, and helicopters.

(Ord. 30674.)

25.18.135 - Construction Crane Guidance Area.

"Construction Crane Guidance Area" means that area so designated on that certain map entitled "Construction Crane Guidance Area," on file with the clerk of the City of San José. Said map is incorporated in this section by this reference.

(Ord. 30674.)

25.18.140 - Construction Crane Height Guidance Study.

"Construction Crane Height Guidance Study" means the study performed by the City of San José to analyze the potential impacts of Construction Cranes on Airline procedures, as accepted by City Council on March 9, 2021.

(Ord. 30674.)

25.18.145 - Crane Fee.

"Crane Fee" means the Actual Denied Boarding Costs plus the Administrative Program Fee.

(Ord. 30674.)

25.18.150 - Denied Boarding Costs.

"Denied Boarding Costs" mean involuntarily denied passenger boarding costs incurred by Airlines as a result of Construction Cranes operating above the Downtown Building Heights Limits in the Construction Crane Guidance Area. Denied Boarding Costs may include, but not be limited to, ticket voucher values, compensation and per diem costs.

(Ord. 30674.)

25.18.155 - Developer.

"Developer" means the person, persons, or entity that applies for a Building Permit from the City of San José Building Division to build a structure within the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.160 - Downtown Airspace and Development Capacity Study (DADCS).

"Downtown Airspace and Development Capacity Study" (DADCS) means the study performed by the City of San José to use FAA TERPS surfaces as the Downtown Building Height Limits in the Construction Crane Guidance Area, as accepted by the City Council on March 12, 2019, as may be amended.

(Ord. 30674.)

25.18.165 - Downtown Building Height Limits.

"Downtown Building Height Limits" means the lowest FAA TERPS surfaces limits for building heights that are specific to an individual project site located within the Construction Crane Guidance Area, as set forth in the DADCS.

(Ord. 30674.)

25.18.170 - Estimated Crane Fee.

"Estimated Crane Fee" means the Estimated Denied Boarding Costs plus the Administrative Program Fee.

(Ord. 30674.)

28.18.175 - Estimated Denied Boarding Costs.

"Estimated Denied Boarding Costs" means the estimated Denied Boarding Costs incurred by Airlines as a result of Construction Cranes operating above the Downtown Building Heights Limits in the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.180 - Temporary Certificate of Occupancy (TCO).

"Temporary Certificate of Occupancy" (TCO) means the permit issued by the City of San José Building Division authorizing the temporary use or occupancy of a building or structure or portion thereof prior to its completion within the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.185 - TERPS surfaces.

"TERPS surfaces" means the United States Standard for Terminal Instrument Procedures used for airspace obstruction evaluation determination, as promulgated by order of the United States Federal Aviation Administration, as may be amended.

(Ord. 30674.)

Part 2 - BUILDING PERMIT ISSUANCE CONDITIONS

Sections:

25.18.205 - Estimated Crane Fee Deposit required prior to Building Permit.

- A. Prior to the City issuing a Building Permit for a project involving Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area, Developers shall be required to place with the City an Estimated Crane Fee Deposit.
- B. The Director shall have the authority to set the amount of the Estimated Crane Fee Deposit in subsection A at up to fifty percent of the Estimated Crane Fee.

(Ord. 30674.)

25.18.210 - Request for determination of Estimated Crane Fee Deposit.

Prior to the City issuing a Building Permit for a project involving Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area, Developers shall provide the City with the following information: schedule (months) of estimated construction activities above the Downtown Building Height Limits at a Developer's project site, billing information, and any other information Airport may require for Airport to determine the Estimated Crane Fee Deposit.

(Ord. 30674.)

25.18.215 - Limit on costs for initial six month period.

The Director may establish a limit on the amount of the obligation for the initial six month period that a Developer operates Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area.

(Ord. 30674.)

25.18.220 - Execution of agreement required prior to Building Permit.

A. Prior to the City issuing a Building Permit for a project involving Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area, Developers shall enter into an agreement with City that are consistent with the requirements of this Chapter.

B. The Director is authorized to execute agreements identified in this section.

(Ord. 30674.)

25.18.225 - Obligations arising from use of Construction Cranes above Downtown Building Height Limits.

Any person operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area shall indemnify the City, defend and hold harmless the City for the use of the Construction Cranes and shall be responsible for all costs or losses arising from Developer's use of the Construction Cranes.

(Ord. 30674.)

Part 3 - CONSTRUCTION CRANES STATUS

Sections:

25.18.305 - Notices regarding status of Construction Cranes.

Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area shall provide notice to the City any time a Construction Crane is erected, changes heights, or is taken down for removal. Notice will be accomplished through the City of San José Construction Crane Notification Form, available on the Airport's website www.flysanjose.com/downtownheightlimits and shall include the following information required by the Airport (as applicable), including but not limited to: Developer's name, email address, phone number and alternate phone number; Project Name, Project Building Permit Number; FAA's Obstruction Evaluation /

Airport Airspace Analysis (OE/AAA) Construction Crane Case Number; Project Foreman's name, email address, phone number, and alternate phone number, Contractor's name, email address, phone number and alternate phone number; type of Construction Crane operation; schedule (months) with start and end date for Construction Crane operation; schedule (months) with start and height of Construction Crane above ground level and above mean sea level for highest point and jib; and any other information Director may require.

(Ord. 30674.)

Part 4 - TCO/COO ISSUANCE CONDITIONS

Sections:

25.18.405 - Reconciliation required.

- A. When a Developer notifies City consistent with this Chapter that the Construction Crane is or will be taken down for removal from the Construction Crane Guidance Area or will no longer operate above the Downtown Building Heights Limits in the Construction Crane Guidance Area, then a reconciliation will be made with respect to any overpayment or underpayment of the Crane Fee. The reconciliation will be based on the Crane Fees arising from the Developer's use of the Construction Crane.
- B. City will prepare a reconciliation invoice for the Developer's project and either refund the remaining Estimated Crane Fee Deposit or request additional funds from the Developer to be paid prior to issuance of a Certificate of Occupancy of Temporary Certificate of Occupancy, whichever comes first.

(Ord. 30674.)

25.18.410 - Crane Fee required before TCO/COO.

Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area shall be required to pay the Crane Fee prior to the City issuing a TCO or COO for the structure, whichever comes first.

(Ord. 30674.)

Part 5 - PIPELINE PROJECTS

Sections:

25.18.505 - Crane Fee limitation for pipeline projects.

- A. Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area who have submitted a Building Permit application on or before September 29, 2021 and undertake work that conforms with the Building Permit within six months of Building Permit issuance, shall pay no Crane Fees for the first six months of the operation of the Construction Crane, but will be responsible for Crane Fees arising from the operation of the Construction Crane beyond six months.
- B. Developers operating Construction Cranes above the Downtown Building Height Limits in the Construction Crane Guidance Area who receive a Building Permit and undertake work that conforms with the Building Permit by September 30, 2022, shall pay no Crane Fees for the first six months of the operation of the Construction Crane, but will be responsible for Crane Fees arising from the operation of the Construction Crane beyond six months.
- C. For purposes of this section, undertaking work that conforms with the Building Permit shall not include grading, demolition, or utility relocation.

(Ord. 30674.)

Appendix E: City of San José Developer Questions & Answer Documentation

LI #	Date	Name	Representing	Question/Comment	Date of Response	Respondee	Response	References: (if applicable)
01	04/21/21	Andres 'Drew' Niemeyer	Airport	Who is responsible for approving building and construction crane heights and modifying airport approach/departure procedures?	07/14/21	Ryan Sheelen	The FAA is responsible for approving all building and crane heights through the FAA Part 77 airspace obstruction review process (i.e. 7460's). The FAA evaluates heights based on the impacts to airport approach/departure procedures (TERPS).	
02	04/21/21	Andres 'Drew' Niemeyer	Airport	Will the Crane Fee apply to developments / projects where temporary obstructions such as cranes are below City's Building Height limit?	06/25/21	Ryan Sheelen	No, there will only be a fee for the time a developer exceeds the downtown building height limits with their respective construction cranes.	
03	04/21/21	Andres 'Drew' Niemeyer	Airport	Will all developments/projects need to submit "City of San Jose Crane Notification Form"?	06/25/21	Ryan Sheelen	Yes, all development projects within the "Construction Crane Guidance Area" will be required to complete and submit the "City of San Jose Crane Notification Form" to ensure the exact dates cranes are erected above the downtown height limit and lowered.	
04	04/21/21	Andres 'Drew' Niemeyer	Airport	Will Cargo impacts be part of the fee?	06/25/21	Ryan Sheelen	No, cargo impacts have been determined to not be a significant factor.	
05	04/21/21	Andres 'Drew' Niemeyer	Airport	When is the crane fee due? How much time do I have to pay?	06/25/21	Ryan Sheelen	The crane fee must be paid prior to issuance of building permit, unless notified otherwise. Each developer will supply an estimated crane schedule to the Airport detailing the anticipated duration with start and finish date where crane will exceed the downtown building height limits. The fee must be paid prior to receiving building permit.	
06	04/21/21	Andres 'Drew' Niemeyer	Airport	Will there be a reconciliation of costs each year?	06/25/21	Ryan Sheelen	Yes, reconciliation will occur at TCO or COO, whichever occurs first.	
07	04/21/21	Andres 'Drew' Niemeyer	Airport	Will the fee change over time?	06/25/21	Ryan Sheelen	Yes, this is a dynamic environment and the fee will need to be adjusted on an annual basis based on actual and forecasted conditions.	
08	06/14/21	Ryan Sheelen	Airport	Will there be a fee break for mobile cranes if they raise/lower it to avoid impacts?	06/25/21	Ryan Sheelen	At this time, there are no plans to have fee breaks for mobile crane operations.	
09	06/14/21	Ryan Sheelen	Airport	How will operators report crane(s) going above X height?	06/25/21	Ryan Sheelen	Anticipate using the crane notification form for each time a construction crane is raised or lowered in height.	
10	06/14/21	Ryan Sheelen	Airport	Does paying a fee exclude me from following the City of San Jose Construction Crane Guidance?	06/25/21	Ryan Sheelen	No. All projects in the Crane Guidance Area must comply with the Construction Crane Guidance Document to be attached to all City Development Permits upon completion of the Crane Fee Program.	
11	06/14/21	Ryan Sheelen	Airport	Does paying a fee allow me to have higher crane heights?	06/25/21	Ryan Sheelen	No, crane height limits are determined by the FAA. The City will be administering the Crane Fee Program, which is based on duration, if exceeding the downtown building height limits.	
12	06/14/21	Ryan Sheelen	Airport	Is there a cap on fees?	06/25/21	Ryan Sheelen	At this time, there is no cap on crane fees. This determination will be made by CMO and City Council.	
13	06/14/21	Ryan Sheelen	Airport	Do we need a crane permit to trigger the fee?	06/25/21	Ryan Sheelen	See LI #5.	
14	06/14/21	Ryan Sheelen	Airport	Will the fee be further broken down by day, ex. If my crane is up 5 months and 3 days, do I have to pay a full month?	06/25/21	Ryan Sheelen	Yes, crane fees will be prorated at reconciliation. Note: Developer will be required to report to the Airport when the crane is erected has been lowered below the Downtown Building Height Limits. Formula: Fee Rate * # Calendar days crane(s) exceeding Downtown Building Height limits / # of projects with crane(s) exceeding Downtown Building Height Limits.	

15	06/30/21	Ryan Sheelen - Airport	Jay Paul Co	6/30/2021 Slide Deck - Slide 6 - Where did you obtain the voluntary/involuntary denied boarding percentages from and how they were calculated?	07/14/21	Ryan Sheelen	Voluntary and involuntary denied boarding percentages are discussed on Slides 3-5. This information came from the Bureau of Transportation statistics and Government Accountability Office (GAO). On Slide 6, the traffic mix for SJC origin and SJC designation flights came from DOT data sources.	https://www.transportation.gov/individuals/aviation-consumer-protection/bumping-oversales
								(scroll to bottom) https://www.gao.gov/assets/gao-20-191.pdf
16	06/30/21	Ryan Sheelen - Airport	Jay Paul Co	6/30/2021 Slide Deck - Slides 6, 8 - Does the analysis assume that flights are full all the time (100% - (Load Factor)? How did you come up with the load factor numbers?	07/14/21	Ryan Sheelen	No, the analysis did not assume 100% load factors all the time. What we did: First, we took the reported load factor (% of seats filled) by carrier, by route, by aircraft type and by month. We then assumed a rough bell-shaped curve (acceptable industry standard) for load factor distribution. Specifically, we assumed that 40% of flights would operate at average load factor, 15% of flights would operate at load factors 10% points less than average, 15% of flights would operate at load factors 20% points less than average, 15% would operate at load factors 10% above the average load factor, and another 15% of flights would operate at load factors 20% points above the average (maxing out at 100% load factors).	
17	06/30/21	Ryan Sheelen - Airport	Jay Paul Co	What is the \$200 vs \$500? Why are people that live here getting hotels?	07/14/21	Ryan Sheelen	See slides 3-5. The \$200 is per diem cost for both SJC originating and destination flights. It is given out for items such as meals, transportation, etc.. The \$500 includes \$300 for a hotel for SJC as destination flights and the same \$200 per diem cost. Passengers that are originating out of SJC (SJC origin) do not receive per diem for hotels, only SJC designation passengers.	
18	06/30/21	Ryan Sheelen - Airport	Jay Paul Co	Can you change the flight times and schedules? Doesn't the Airport control this?	07/14/21	Ryan Sheelen	The Airlines make the determination on when to operate their flights based on a variety of factors including: availability of aircraft, airline staffing, flight connections, historical & current weather conditions, gate availability at origin and destination airports, ground handling availability, availability of customs and border protection staff for international flights, etc...	
19	06/30/21	Ryan Sheelen - Airport	Build Group	How do we know airlines are reporting denied passengers related to construction cranes and not just due to overbooking?	07/14/21	Ryan Sheelen	Documentation will be required from the airlines to verify the reason for denied boarding. In addition, the Airport will verify that the flight operated, the Airport was in South flow conditions, and confirm construction crane(s) were operating above the Downtown Building Height Limits when the denied passenger incident occurred.	
20	06/30/21	Ryan Sheelen - Airport	Build Group	Will airport be able to discern the denied boarding cau:	07/14/21	Ryan Sheelen	See LI #19.	
21	06/30/21	Ryan Sheelen - Airport	Build Group	Do you have historical cost impacts associated with construction cranes and the airlines?	07/14/21	Ryan Sheelen	No, this is a brand new program to accommodate higher building heights in the City of San Jose and associated higher construction crane heights. SJC has never experienced this specific issue in the past and so there is no data regarding historical cost impacts.	
22	06/30/21	Ryan Sheelen - Airport	Boston Properties	Have you looked at the Pipeline of projects that will be operating simultaneously over the next few years?	07/14/21	Ryan Sheelen	The Airport is responsible for safe flight operations at SJC. The pipeline of downtown high-rise projects is a dynamic situation with schedules constantly changing over time. For more information on downtown projects, please contact PBCE Division Managers Tim Rood at Timothy.Rood@sanjoseca.gov or Sylvia Do at Sylvia.Do.@sanjoseca.gov.	

23	06/30/21	Ryan Sheelen - Airport	Westbank	Why wouldn't the airlines just involuntarily deny boarding to a passenger at the higher rate knowing that they will be reimbursed?	07/14/21	Ryan Sheelen	Airlines try to avoid involuntary denied boardings as much as possible for two reasons; 1) the numbers have to be reported to the DOT with other similar stats, such as on time performance and customer complaints, which can reflect poorly on a carrier relative to other carriers and 2) these generally cause customer ill will.
24	06/30/21	Ryan Sheelen - Airport	Westbank	What was the admin rate included in this analysis?	07/14/21	Ryan Sheelen	This analysis used 15% as the admin rate. This will cover review and receipt of airline denied boarding reports, auditing the airlines and developers, the end of season true-up process, PBCE building permit fee collection, administration of fee account, administration of landing fee reduction program and associated accounting.
25	06/30/21	Ryan Sheelen - Airport	Westbank	If airlines costs start to rise, will it impact the rates?	07/14/21	Ryan Sheelen	Yes, there is potential for the rates to increase, but we do not anticipate that being a major factor. The most likely factors that will influence the rates will include changes in SIC air service, with international flights most likely to impact the rates.
26	06/30/21	Ryan Sheelen - Airport	Westbank	Why are the airline arrival and departure procedures affected?	07/14/21	Ryan Sheelen	<p>The crane protection height limits over downtown San Jose were developed to protect for the most critical approach (landing Runways 30L/R) and departure (Runways 12L/R) at SJIC to ensure that existing procedure minimums were not raised due to presence of temporary construction cranes. The airline operators as SJIC were queried and asked to provide information about the published arrival and departure procedures that they currently utilize at SJIC. That information was compiled, and a list of the most critical procedures was generated which aided in developing obstacle clearance surface (OCS) height limits over downtown San Jose.</p> <p>The following critical arrival and departure procedures are expected to be protected by the FAA over downtown San Jose:</p> <p>Arrival:</p> <ul style="list-style-type: none"> • ILS Cat I – Runway 30L • LPV – Runway 30R • RNP 0.15 – Runway 30L • RNP 0.11 – Runway 30R
27	06/30/21	Ryan Sheelen - Airport	Westbank	Why are the airline arrival and departure procedures affected? (continued)	07/14/21	Ryan Sheelen	<p>Departure:</p> <ul style="list-style-type: none"> • SUNOL ONE Departure – 330' per NM to 4,500 ft. • BMRNG FOUR Departure (RNAV) – 470' per NM to 5,600 ft. • TECKY THREE Departure (RNAV) – 500' per NM to 570 ft. • ALMDN FOUR Departure (RNAV) – 500' per NM to 2,500 ft. <p>Other non-precision instrument procedures that are not listed above will be evaluated by the FAA and any proposed crane heights may require raising the minimums for these procedures. However, these procedures are considered as being secondary in nature and are less frequently utilized by airline operators at SJIC, therefore increasing procedure minimums is not as impactful for temporary construction activity.</p>

28	06/30/21	Ryan Sheelen - Airport	Westbank	Do the published arrival and departure procedures account for single engine operations?	07/14/21	Ryan Sheelen	<p>Individual arrival and departure procedures do not account for single engine operations, only all engines in operation.</p> <p>The FAA crane height limits are based upon protection of critical TERPS arrival and departure procedures that were identified as being used by air carrier operators at SJC. Specific OEI procedures or corridors are not protected for as part of the crane height limits. Airlines will evaluate proposed crane heights to assess individual air service impacts on departure flights from SJC to determine potential passenger and/or cargo impacts.</p>
29	06/30/21	Ryan Sheelen - Airport	Westbank	Is there a difference between two engines vs single engine in published procedures?	07/14/21	Ryan Sheelen	<p>TERPS procedures are published and enforced by the FAA while airlines are responsible for developing and maintaining OEI procedures at an airport. The FAA does not protect for or enforce OEI procedures at airports. TERPS procedures are designed assuming all engines are functioning on an aircraft while OEI assumes that an aircraft loses one engine on takeoff and must execute an emergency procedure to safely clear critical obstacles, level off and circle back to the airport to land. Each airline must submit their OEI procedures to the FAA Principal Operations Inspectors as part of the carrier's operations' specifications.</p>
30	06/30/21	Ryan Sheelen - Airport	Westbank	It would be helpful to review Standard Instrument Departure (SID), Obstacle Departure Procedures (ODP), TERPS, minimum OEI climb gradients, etc. Is the min climb rate affected and why?	07/14/21	Ryan Sheelen	<p>Published procedures in and out of SJC are available publicly here: https://www.airnav.com/airport/KSJC</p> <p>Information about airline specific OEI procedures is confidential in nature and cannot be shared publicly. However, airlines use published instrument departure procedures from the FAA at SJC. As part of the crane protection heights analysis, airlines at SJC were queried about the most critical departure procedures they utilize when departing Runways 12L/R at SJC and these procedures and their associated climb gradients are protected for.</p> <p>The published climb gradients for instrument departure procedures from Runways 12L/R at SJC are as follows:</p> <ul style="list-style-type: none"> •Obstacle Departure Procedure (ODP) – 261' per NM to 500 ft. (protected for as part of the building height limit restrictions over downtown San Jose) •SUNOL ONE Departure – 330' per NM to 4,500 ft. •BMRNG FOUR Departure (RNAV) – 470' per NM to 5,600 ft. •TECKY THREE Departure (RNAV) – 500' per NM to 570 ft. •ALMDN FOUR Departure (RNAV) – 500' per NM to 2,500 ft. <p>The crane protection heights over downtown San Jose will not impact any of the published instrument departure procedure climb rates for Runways 12L/12R at SJC.</p>
31	06/30/21	Ryan Sheelen - Airport	Westbank	How does temperature impact climb performance, explain basics of OEI (how can crane height impact airlines fuel loads)?	07/14/21	Ryan Sheelen	<p>Increased temperatures can degrade aircraft climb performance and is a factor in payload/range calculations along with aircraft performance, runway length, runway grade, obstacles, winds aloft, and other factors. Cranes are considered as obstacles and are evaluated by airlines performance engineers in determining air service capability and performance at airports. Temporary construction cranes tend to have a more severe effect on aircraft performance and service capability due to the heights of these objects. Cranes typically are significantly taller than the structures that they are used to construct. Additionally, not all cranes are mobile or can be lowered in a reasonable period of time (ex. lower to avoid impacts to a specific departure bank and then raise again).</p> <p>For your reference, listed below is a document to reference that will provide insights into the basics of OEI. In the ACRP report, please select CTRL and search for "OEI" to find references to OEI throughout the document.</p> <p>ACRP Report 38 - Understanding Airspace Objects and Their Effects on Airports - acrp_rpt_038.pdf</p>

32	08/31/21	Ryan Sheelen - Airport	Westbank	The most critical part of this conversation is the engine-out procedures developed by individual air carrier operators. Why are these procedures considered confidential? This should be the primary conversation if a standard engine out criteria can be implemented that limits or negates loading impacts from the crane heights.	09/21/21	Ryan Sheelen	<p>OEI impacts air service for airlines, which as we know has financial impacts on flights operating at the airport. The OEI procedures are confidential because airlines don't want to give their competitors any advantages by disclosing critical aircraft performance data and impacts. If an airline can develop OEI procedures that can mitigate obstacle impacts for their individual airline, then they may gain a competitive advantage over other carriers.</p> <p>Each airline has its own set of operating specifications and requirements that comply with their own safety risk guidelines and meet FAA requirements. These operating specifications and requirements may differ between airlines.</p> <p>Not all airlines can approve the same aircraft OEI maneuvering based upon differences in the equipage/fleet they operate at different airports. For example in an OEI emergency, some carriers require the aircraft to go straight out until the aircraft is at 400 feet AGL before making a maneuver, while others may be able to make an immediate course correction at the end of the runway.</p>
33	08/31/21	Ryan Sheelen - Airport	Westbank	The most critical part of this conversation is the engine-out procedures developed by individual air carrier operators. Why are these procedures considered confidential? This should be the primary conversation if a standard engine out criteria can be implemented that limits or negates loading impacts from the crane heights.	09/21/21	Ryan Sheelen	<p>Contd: Airlines use different obstacle accountability area (OAA) splays. Domestic carriers typically use the FAA AC120-91 splay while international/cargo operators typically use the ICAO Annex 6 OEI splay (which is laterally wider than the FAA splay). Given the lateral differences and angle/orientation of the OAA splays, each airline may evaluate completely different critical obstacles when assessing OEI impacts on their operations.</p>
34	08/31/21	Ryan Sheelen - Airport	Westbank	Were cargo reductions instead of denied boardings considered? What would the fee for reduced cargo look like compared to per-diem reimbursements?	09/21/21	Ryan Sheelen	<p>The study determined that Air Carrier belly cargo operations would mitigate any loss at SJC by ground shipping to another airport or putting belly cargo on another flight. Freight cargo operators would mitigate any losses by utilizing their ground networks, moving cargo to SFO or OAK to be shipped. Therefore, the analysis of denied boardings assumed no cargo is on the flights.</p>
35	08/31/21	Ryan Sheelen - Airport	Westbank	Why isn't the per diem based on the GSA published rates? If the airlines want to offer higher incentives, they should be on the hook for those premiums. Lodging = \$245/day (excl taxes) Meals & Incidentals = \$49.50 first and last day of travel or \$66/day in-between	09/21/21	Ryan Sheelen	<p>The study did not base per diem rates on GSA rates because airlines don't get government rates, but rather corporate rates. The rates being used are reasonable for the SJC area especially when the demand could be at the last minute. Also, the hotel/per diem isn't being offered as an incentive in the way that a denied boarding compensation (voucher) is i.e.: in order to get someone to voluntarily give up their seat. The hotel/per diem is being offered because it is an accepted industry practice except in the case of weather (and would be a significant PR issue, if airlines did not).</p>
36	08/31/21	Ryan Sheelen - Airport	Westbank	Will the proposed fees be assessed only on the impact of the crane height? For example, if loading is reduced by 10%, with 5% caused by the crane's height over an existing obstruction, will the fee be assessed on the 5% impact? I'm assuming load reductions are happening now due to items other than cranes, and the costs attributable to those items shouldn't be passed through to developers.	09/21/21	Ryan Sheelen	<p>The estimated crane fees only apply for construction cranes <u>or other means and methods</u> exceeding the Downtown Building Height Limits (TERPS surfaces). They will be reconciled at temporary certificate of occupancy (TCO) based on actual airline denied boarding impacts. The program is only based on denied boardings associated with construction cranes, not any other reason.</p>

37 08/31/21 Ryan Sheelen - Airport

Westbank

Have the increased revenue to the airlines resulting from these developments been considered? It seems like they are proposed to receive a fee for our projects' inconvenience, then a bunch of money when the buildings fill up and business/personal travel increases at the airport.

09/21/21

Ryan Sheelen

No, it was not considered as there is no increased revenue. The Airlines will incur adverse costs due directly to development exceeding the Building Height Limit. The adverse cost impacts to the Air Carriers are only proposed to offset a percentatge of the impacts. However, a full economic analysis was conducted during the Downtown Airspace and Development Capacity Study (DADCS). The study can be referenced here:
www.flysanjose.com/downtownheightlimits.