

EXHIBIT

1

November 24, 2020

Via E-Mail and U.S. Mail

Los Angeles World Airports
1 World Way
Los Angeles, CA 90045

Re: Public Records Act Request

To Whom It May Concern:

Pursuant to the California Public Records Act, Gov't Code § 6250 et seq., and Article 1, Section 3 of the California Constitution (collectively "PRA"), I hereby request on behalf of the City of El Segundo ("El Segundo") that your office provide copies of, or make available for copying, all documents held by Los Angeles World Airports ("LAWA") containing any of the following:

1. The Draft Environmental Impact Report for the Los Angeles International Airport ("LAX") Airfield & Terminal Modernization Project ("ATMP DEIR") states that the ATMP (the "Project") "would help LAX to prepare early for the continued aviation growth that is projected by LAWA, SCAG, and the FAA to occur at LAX over the next several decades," and is "integral to Los Angeles' plans to host the 2028 Olympic and Paralympic Games." Please provide:
 - a. Written communications between airline operators and LAWA, from January 1, 2019 or after, regarding the need for passenger gates at "Concourse 0" described in the ATMP DEIR, including but not limited to for the purpose of serving demand related to the 2028 Olympics.
 - b. Written communications between airline operators and LAWA, from January 1, 2019 or after, regarding the need for passenger gates at "Terminal 9" described in the ATMP DEIR, including but not limited to for the purpose of serving demand related to the 2028 Olympics.
2. Documentation supporting the statements in the ATMP DEIR that "demand for air travel and airline activity is expected to grow consistent with the parameters used in developing the aviation forecasts for the proposed [ATMP] Project," and that these forecasts "are still valid and relevant for the long-term planning

purposes of the [ATMP DEIR]” (*see* “Preamble”, ATMP DEIR), despite the fact that these forecasts were completed prior to the COVID-19 pandemic.

3. The ATMP DEIR states that without the ATMP, the existing facilities at LAX (including projects fully approved and entitled, but not yet built) could accommodate up to 127.9 million annual passengers (“MAP”) by 2045. Please provide all documents supporting the statement that existing facilities could accommodate 127.9 MAP, including, but not limited, to evidence for the statement on p. 4-6 of Appendix B.1 to the DEIR that “existing and planned terminal facilities would provide adequate processing facilities for all existing and planned passenger gates in FY 2028 and FY 2033.”
4. The ATMP DEIR states that, without the Project, the airfield at LAX will experience approximately 15 minutes of annualized average all-weather delay in or around 2031 (*see, e.g.*, p. 4-4 of Appendix B.1 to the DEIR), and approximately 18 minutes of annualized average all-weather delay in or around 2045 (*see, e.g.*, p. 4-9 of Appendix B.1 to the DEIR). Please provide all documents showing that construction of the ATMP, including the proposed improvements to the airfield, would not have the effect of causing this operational delay to occur later than if the Project were not built.
5. Documentation regarding any policies, guidelines or regulations currently in effect and applicable to the use of the West Remote Gates at LAX.
6. Documentation from January 1, 2010, or after, regarding proposed design and/or construction of the length of taxiway described in the ATMP DEIR as the “Taxiway C extension.”
7. Communications between LAWA and the California Air Resources Board, and/or Southern California Air Quality Management District, in connection with the ATMP, as referenced at p. 4.1.1-5 of the DEIR.

For the purposes of this request, the terms “document” or “documentation” include, but are not limited to, any written material (including material on the internet), facsimile, e-mail, photograph, map, data, report, videotape, audiotape, note of telephone call or meeting, factual or legal analysis, and any and all correspondence and memoranda in any written form, or other information that would be an agency record subject to the requirements of the PRA when maintained by an agency in any format, including an electronic format. All references in this PRA request to LAWA include, but are not limited to, LAWA’s consultants, employees, officers, and attorneys and any other person or entity contracted to do business on their behalf.

November 24, 2020

Page 3

Pursuant to Government Code section 6253(c), please make a determination on and respond to this request within 10 days of your receipt of it. If you determine that any of the information is exempt from disclosure under the Public Records Act, we ask that you ensure that your determination is consistent with Proposition 59, enacted on November 3, 2004. Proposition 59 amended the state Constitution to require that all exemptions from disclosure of public records be “narrowly construed.” Cal. Const. art. I, § 3(b)(2).

If you nonetheless determine that the requested records are subject to an exemption that remains valid after enactment of Proposition 59, we further request that: (1) you exercise your discretion to disclose some or all of the records notwithstanding the exemption; and (2) pursuant to Government Code section 6257, with respect to records containing both exempt and non-exempt content, you redact the exempt content and disclose the rest.

Finally, should you deny part or all of this request, you are required, pursuant to Government Code section 6255, to provide a written response describing the legal authority or authorities on which you rely. If such a response is necessary, please also address how your claim of exemption is consistent with Proposition 59.

If I can provide any other clarification that will help expedite your attention to this request, please contact me at (415) 552-7272 or petta@smwlaw.com. See Gov’t Code § 6253.1 (requiring public agency to contact and provide assistance to members of the public making a request that may be denied). Please do not perform any duplication before notifying me, so that our client may decide which records should be copied. If you maintain any of these documents in an electronic format (e.g., e-mails, PDFs, excel spreadsheets), please notify me so we can discuss how to best provide these documents to my client.

Thank you for your attention to this request.

Very truly yours,
SHUTE, MIHALY & WEINBERGER LLP



Joseph “Seph” Petta

cc: Scott Mitnick, City of El Segundo

SHUTE MIHALY
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JOSEPH D. PETTA
Attorney
Petta@smwlaw.com

December 22, 2020

Via E-Mail

Los Angeles World Airports
1 World Way
Los Angeles, CA 90045

Re: November 24, 2020 Public Records Act Request re: LAX Airfield & Terminal Modernization Project Draft Environmental Impact Report

To Whom It May Concern:

We received Los Angeles World Airports' ("LAWA") December 18, 2020 response to our November 24, 2020 request under the California Public Records Act ("PRA") on behalf of the City of El Segundo. As of today's date, LAWA has responded to just one of the records requests in our November 24 letter, providing just two documents. On December 18, LAWA requested a second 14-day extension of the statutory deadline to disclose the requested records. If LAWA needs clarification regarding the scope of our November 24 request, please let us know immediately. Otherwise, we expect a complete response to our request no later than January 1, 2021.

In addition, please note that our November 24 request for "Documentation from January 1, 2010, or after, regarding proposed design and/or construction of the length of taxiway described in the ATMP DEIR as the 'Taxiway C extension'" includes, but is not limited to, the *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011, prepared by HNTB and listed in chapter "8.0: References" of the Revised Draft Environmental Impact Report for the LAX Runway 7L/24R RSA and Associated Improvements Project. This public record is clearly identified and within LAWA's possession. Thus, pursuant to the PRA, please provide this document without further delay. Please note that we are requesting that document and others included in our November 24, 2020 request to prepare our comments on LAWA's Draft EIR for the LAX Airfield and Terminal Modernization Project ("ATMP DEIR"). That comment period currently expires on February 12, 2021. If LAWA does not provide a complete and timely response to our November 24, 2020 request, we will need additional time to prepare our comments on the ATMP DEIR.

Very truly yours,
SHUTE, MIHALY & WEINBERGER LLP



Joseph "Seph" Petta

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JOSEPH D. PETTA
Attorney
Petta@smwlaw.com

February 1, 2021

Via E-Mail

Los Angeles World Airports
1 World Way
Los Angeles, CA 90045
Email: publicrecordsrequest@lawa.org

Re: Public Records Act Request re: LAX Airfield & Terminal Modernization Project Draft Environmental Impact Report

To Whom It May Concern:

Pursuant to the California Public Records Act, Gov't Code § 6250 et seq., and Article 1, Section 3 of the California Constitution (collectively "PRA"), I hereby request on behalf of the City of El Segundo ("El Segundo") that your office provide copies of, or make available for copying, all documents held by Los Angeles World Airports ("LAWA") as described below. Please note that we are requesting the documents described below, and others included in our November 24, 2020 and December 22, 2020 requests (collectively CPRA request), to prepare our comments on LAWA's Draft EIR for the LAX Airfield and Terminal Modernization Project ("ATMP DEIR").

1. LAWA previously produced a document titled/dated "Southwest Airlines Terminal 1 East, CDO & TDIP DED Briefing, January 15, 2020" ("January 15, 2020 SWA PPT") in response to our CPRA request. Please provide any other documents related to that January 15, 2020 meeting and any other communications LAWA has had with Southwest Airlines regarding the topics described in the January 15, 2020 SWA PPT.
2. The January 15, 2020 SWA PPT includes the following statement on page 5: "Image is from June 2019 Network Planning Briefing to LAWA." Please produce that referenced 2019 Network Planning Briefing in its entirety.
3. The January 15, 2020 SWA PPT includes, on pages 5 and 6, images from a January 2017 Long Term Development Strategy Briefing to LAWA. Please produce that January 2017 briefing in its entirety.

4. The January 15, 2020 SWA PPT includes an image on page 14 titled: “LAX Concourse 0 Project Definition Book (October 31, 2016).” Please produce that document in its entirety.
5. The January 15, 2020 SWA PPT includes images on page 17 titled: “Studied Number of Airfield Layouts.” Please produce those images and all associated study documents in their entirety.
6. LAWA previously produced a document titled/dated “Southwest Airlines Terminal 1 East Program Schedule Briefing (February 27, 2020)” (“February 27, 2020 SWA PPT”) in response to our CPRA request. Please provide any other documents related to that February 27, 2020 meeting and any subsequent communications LAWA has had with Southwest Airlines regarding the project schedule and/or other issues described in the February 27, 2020 SWA PPT.
7. LAWA previously produced emails referencing an October 20, 2020 meeting between LAWA and AvAirPros and/or Southwest Airlines regarding the ATMP DEIR. Please provide all documents related to that meeting.
8. LAWA previously produced a document titled/dated “United Airlines Briefing (October 8, 2020)” (“October 8, 2020 United PPT”) in response to our CPRA request. Please provide any other documents related to that October 8, 2020 meeting and any other communications LAWA has had with United regarding the topics described in the October 8, 2020 United PPT.
9. LAWA previously produced a document titled/dated “LAX Terminal 9 NASIP Update (June 14, 2018)” (“June 14, 2018 United PPT”) in response to our CPRA request. Please provide any other documents related to that June 14, 2018 meeting and any other communications LAWA has had with United regarding the topics described in the June 14, 2018 United PPT.
10. The June 14, 2018 United PPT includes a reference on page 4 to a “Program Definition Book” issued to LAWA on May 7. Please produce that document in its entirety.
11. The June 14, 2018 United PPT includes a reference on page 4 to LAWA workshops to review the “Program Definition Book.” Please produce all documents related to those workshops.
12. The staff report for item #12 on the agenda for the January 7, 2021 meeting of the Board of Airport Commissioners (“BOAC”) states that pursuant to the proposed action, once the 80,700-square-foot parcel (“Parcel A1” on Location Map 2 attached to the January 7, 2021 meeting agenda) is removed from the FedEx lease at 7401 World Way West at LAX, LAWA will use this parcel for “critical aircraft parking demands, including the potential lease to airlines in need of such parking.” Please provide all documents

describing the referenced “critical aircraft parking demands,” including but not limited to communications from airlines referencing their need for aircraft parking at LAX.

13. Our December 22, 2020 request asked LAWA to provide the *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer’s Report*, 2011, prepared by HNTB and listed in chapter “8.0: References” of the Revised Draft Environmental Impact Report for the LAX Runway 7L/24R RSA and Associated Improvements Project. We still do not see this public record among LAWA responses to the CPRA request. This public record is clearly identified and within LAWA’s possession. Thus, pursuant to the PRA, please provide this document without further delay, or provide a justification for withholding this record.
14. LAWA previously produced a document titled/dated “LAWA North Airfield Safety Improvement Project (NASIP) – Operational Assessment – Planning Level Review – Participants’ Guidance, October 25, 2018” (“October 25, 2018 Participants’ Guidance”) in response to our CPRA request. Please provide any other documents related to that October 25, 2018 meeting, including any reports, in draft and/or final form, created in connection with the meeting and any other communications LAWA has had with the meeting participants regarding the topics described in the October 25, 2018 Participants’ Guidance.

For the purposes of this request, the terms “document” or “documentation” include, but are not limited to, any written material (including material on the internet), facsimile, e-mail, photograph, map, data, report, videotape, audiotape, note of telephone call or meeting, factual or legal analysis, and any and all correspondence and memoranda in any written form, or other information that would be an agency record subject to the requirements of the PRA when maintained by an agency in any format, including an electronic format. All references in this PRA request to LAWA include, but are not limited to, LAWA’s consultants, employees, officers, and attorneys and any other person or entity contracted to do business on their behalf.

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February 1, 2021
Page 4

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If I can provide any other clarification that will help expedite your attention to this request, please contact me at (415) 552-7272 or petta@smwlaw.com. See Gov't Code § 6253.1 (requiring public agency to contact and provide assistance to members of the public making a request that may be denied). Please do not perform any duplication before notifying me, so that our client may decide which records should be copied. If you maintain any of these documents in an electronic format (e.g., e-mails, PDFs, excel spreadsheets), please notify me so we can discuss how to best provide these documents to my client.

Thank you for your attention to this request.

Very truly yours,
SHUTE, MIHALY & WEINBERGER LLP



Joseph "Seph" Petta

cc: gstreeter@lawa.org

1327244.5

EXHIBIT

2



Los Angeles World Airports

REPORT TO THE

BOARD OF AIRPORT COMMISSIONERS

Item Number
14
here

Robert Falcon

Approved by: Robert Falcon, Deputy Executive Director

B. Gogna

Reviewed by: Bernardo Gogna, Chief Development Officer

D. Dy

City Attorney

J. Erbacci

Justin Erbacci – Chief Executive Officer

Meeting Date:

12/10/2020

CAO Review:

- Completed
- Pending
- N/A

Reviewed for	Date	Approval Status	By
Finance	12/3/2020	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	CI
CEQA	12/2/2020	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	VW
Procurement	12/2/2020	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Cond	QM
Guest Experience	12/2/2020	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	TB
Strategic Planning	12/2/2020	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	KC

SUBJECT: Award of Principal Architect and Principal Engineer Contract to HOK+Arup for On-Call Planning and Design Services for an amount not-to-exceed \$50,000,000.

Award of a three-year contract, with two (2) one-year options, to HOK+Arup for On-Call Planning and Design Services in the not-to-exceed amount of \$50,000,000.

RECOMMENDATIONS:

Management RECOMMENDS that the Board of Airport Commissioners:

1. ADOPT the Staff Report.
2. DETERMINE that this action is exempt from the California Environmental Quality Act (CEQA) pursuant to Article II, Section 2.f. of the Los Angeles City CEQA Guidelines and is not considered a Project under State CEQA Guidelines Section 15378(b)(2).
3. FIND that the work can be performed more economically or feasibly by an independent contractor than by City employees.
4. APPROVE the award of contract in the not-to-exceed amount of \$50,000,000 to HOK+Arup for on-call planning and design services.
5. APPROPRIATE funds in the amount of \$25,000,000 for the first round of planning and design efforts.

6. AUTHORIZE the Chief Executive Officer to execute the contract with HOK+Arup upon approval as to form by the City Attorney and approval by the Los Angeles City Council.

DISCUSSION:

1. Purpose

The purpose of this Principal Architect and Principal Engineer contract is to support Los Angeles World Airports (LAWA) in advancing the planning and design of potential capital investment projects being initiated in the next 3-5 years.

Known areas of interest include, but are not limited to, potential cargo improvements, potential airfield improvements, potential terminal modernizations and a series of other potential capital improvements (airside, landside, terminals, utilities, etc.).

2. Prior Related Actions

- **July 30, 2020 – Board Resolution No. 27080 (DA-5201, DA-5202, DA-5203, DA-5204, DA-5205)**

The Board considered and approved the staff recommendation to extend the term of five (5) existing on-call architectural contracts by twelve months, to allow for the parallel procurement and onboarding of a new Principal Architect and Principal Engineer.

3. Current Action

Background

From 2009-2019, annual passenger activity at Los Angeles International Airport (LAX) grew from 57 million to over 88 million. Amidst this growth in air-service demand, LAWA embarked on a multi-billion-dollar Capital Improvement Program to deliver “Gold Standard” facilities and provide a world class guest experience.

LAWA already has begun executing over \$10 Billion in construction projects at LAX. This includes the Landside Access Modernization Program, the Midfield Satellite Concourse Program, the Runway Safety Area Improvement Program, the Terminal Development and Improvement Program, and several other large modernization programs.

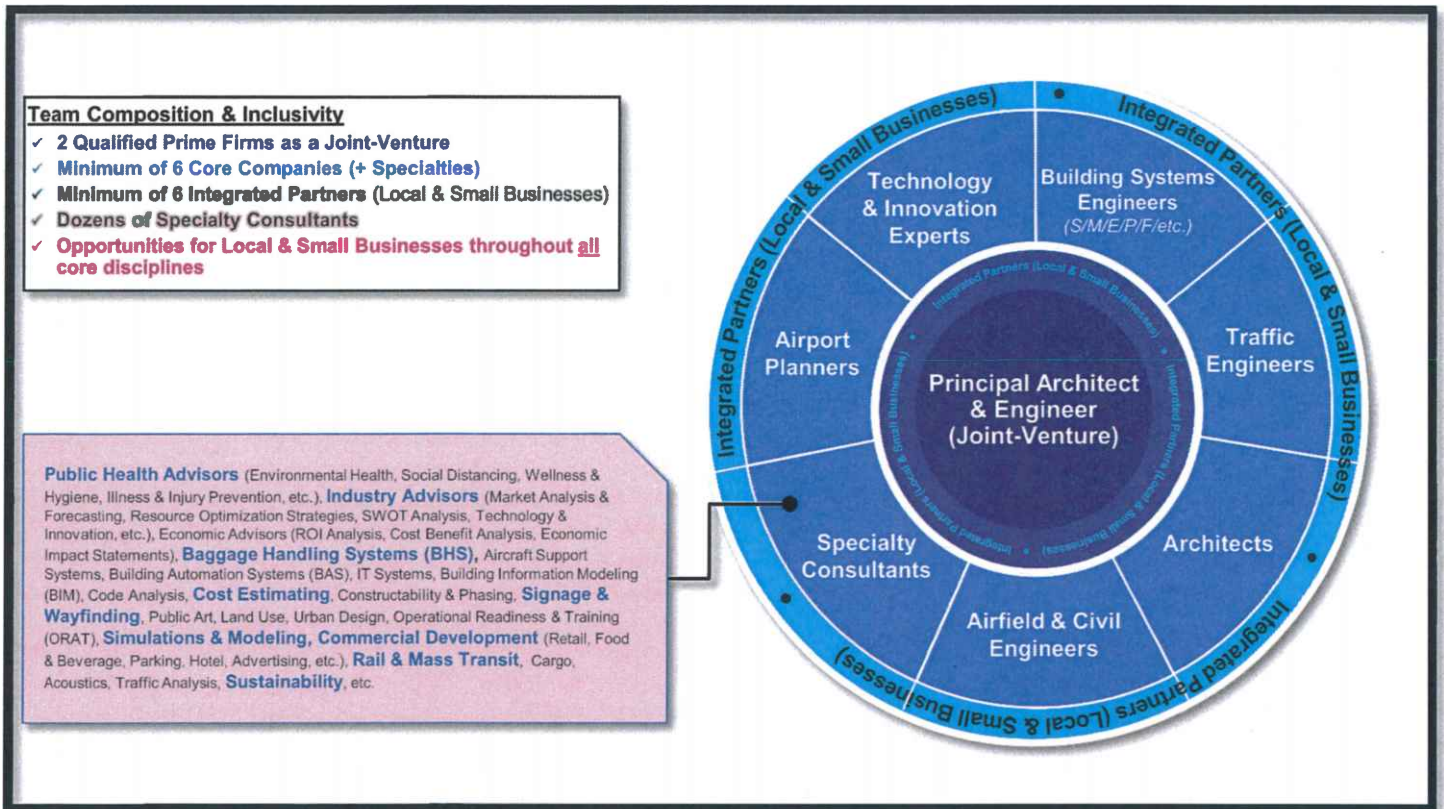
However, in 2020, the COVID-19 pandemic dramatically impacted the global aviation industry. By March 31, daily commercial air service enplanements in the United States were down by over 90% from the prior year, and much of LAWA’s workforce had transitioned to telecommuting. This unique challenge has required LAWA to re-invent our processes, priorities, and the methodical allocation of our limited resources.

With this challenge in mind, the proposed contract offers to assist LAWA with complex airport planning decisions as we navigate through this transitional period. These critical planning and design efforts will assist LAWA with redefining our Capital Improvement Program as we prepare for the City of Los Angeles to host the 2028 Summer Olympic Games.

Contracting Strategy

This contracting opportunity was specifically crafted to ensure that our Principal Architect and Engineer – and the work they produce – is reflective of the **diversity and inclusion** of our city, our airport, and the passengers that we serve.

To that end, LAWA required that each Proposer Team be led by a Joint-Venture between an Architecture Firm and an Engineering Firm, supported by a minimum of 6 “Key Discipline” Firms, with a minimum of 6 additional “Integrated Partner” Firms as shown below.



As a result, over 600 people attended our first outreach event, and industry-engagement continued to grow from there. Ultimately, the eight final proposals we received were comprised of over 100 companies, including some of the most qualified and talented personnel from the global aviation industry.

The successful Proposer Team, led by HOK+ARUP, includes over 30 companies with a wide range of unique credentials and experience. The Team may also onboard additional firms throughout the duration of the contract as new needs and opportunities arise.

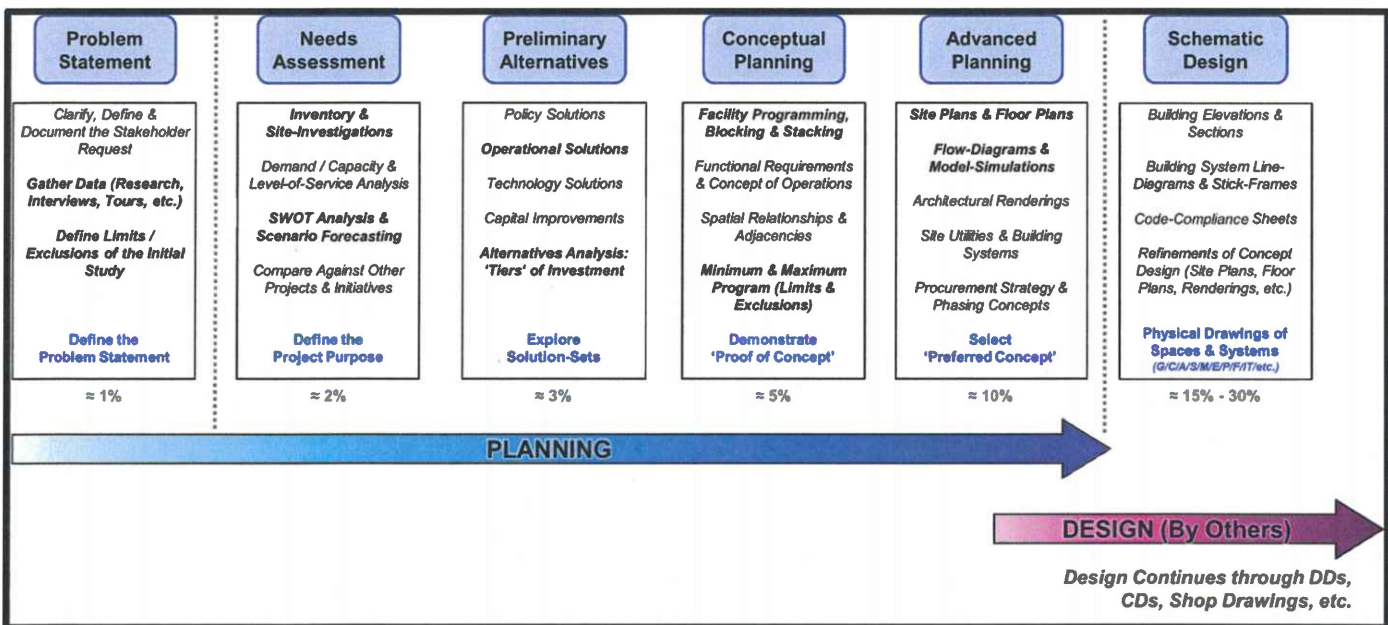
With this contract, the HOK+Arup Team will support LAWA by providing a holistic architectural and engineering viewpoint and by integrating capital improvement projects throughout the LAX campus to ensure they are aligned with our overall vision. The HOK+Arup Team will help LAWA to ensure that we deliver a cohesive capital improvement program, where each project contributes to our overarching goals. However, this is not an exclusive contract for comprehensive design services for our entire Capital Program. Many of the deliverables produced by the HOK+Arup Team will assist LAWA in obtaining competitive price-proposals from design-builders, developers, and/or other designers, depending on the scope, scale, complexity, urgency and importance of each project.

Scope of Services

Through this contract, HOK+Arup will provide LAWA a wide variety of planning and design services on an as-needed basis. This may include, but not be limited to, potential cargo improvements, airfield improvements, terminal modernizations, and a wide variety of other potential projects that may contribute to LAWA's goals regarding safety, sustainability, resiliency, efficiency, flexibility, innovation, community, and/or guest experience.

Services on this contract will be provided on a Task Order basis. LAWA will issue discrete requests for Task Order proposals on an as needed basis. Each Task Order proposal will include a detailed description of the specific services and deliverables required, a work plan and schedule for completing each task, and a "schedule of values" for the proposed costs associated with each task and deliverable.

Through this contract, HOK+Arup may assist LAWA with validating the feasibility, constraints, costs, and benefits of each potential project as shown in the flowchart below. If and when further planning and design is needed for a proposed capital investment, HOK+Arup may further assist LAWA with developing preliminary alternatives, establishing a 'proof of concept', and preparing a conceptual design package for each proposed project. LAWA's executive team will receive monthly progress reports on each task to ensure ample engagement and oversight.



How this action advances a specific strategic plan goal and objective

This action advances this strategic goal and objective: Deliver Facilities & Guest Experiences that are Exceptional: Plan collaboratively to improve guest services while delivering capital improvements. The proposed contract will provide LAWA with unique expertise from multiple industries to ensure that our Capital Improvement Program will meet needs of our passengers, airlines, and industry partners, as our needs and priorities evolve over time, to adapt to our changing operating environment.

Procurement Process

In order to increase interest and participation on this procurement, staff held a series of outreach events with the industry to discuss the procurement, and LAWA’s new approach to on-call design. Virtual events were held on September 22, September 29, and October 6. Attendance at these events were significant, with around 400 average log-ins for the September 29 and October 6 events. The events presented LAWA’s approach and answered questions from the industry. On September 29, 2020, staff released a draft Request for Proposals on Los Angeles Business Assistance Virtual Network for event attendees to review. Following feedback and adjustments, staff uploaded the final Request for Proposal to Los Angeles Business Assistance Virtual Network on October 6, 2020. On October 8, 2020, staff held a pre-proposal conference for the project, and approximately 150 guests logged into the virtual conference. Following LAWA’s outreach efforts, eight (8) proposals were received by the due date of October 28, 2020, from a strong listing of firms:

1. Fentress Architects | T.Y. Lin International
2. Foster + Partners | Stantec
3. HOK+Arup
4. LANEXT (AECOM-Gensler-JGM)
5. Morphosis Architects
6. Mott MacDonald / Grimshaw Architects (MMGA JV)
7. SOM+HNTB
8. WSP USA and KPF Joint Venture

All proposers passed the Administrative Requirements review conducted by the Procurement Services Division. The proposals were evaluated in accordance with the following criteria established in the Request for Proposals:

PARTS	CRITERIA DESCRIPTION	Criteria Score / Weight			
A	ADMINISTRATIVE REQUIREMENTS				
	Administrative Submittal	Pass/Fail			
B	TECHNICAL CRITERIA	Max Review Score	Weight	Max Weighted Points	Minimum Qualifying Weighted Score*
B1	B. Minimum Qualifications	Pass/Fail			
B2	C. Firm Experience	10	20	200	
	D. Key Personnel	10	15	150	
	E. Inclusivity and Outreach Plan	10	10	100	
	F. Team Structure	10	10	100	
	SUB-TOTAL POINTS			550	440
	INTERVIEW	10	20	200	160
	TOTAL WEIGHTED TECHNICAL POINTS			750	600
C	COST PROPOSAL				
	Proposed Multipliers	250			

*LAWA may elect to modify, or forego, a minimum qualifying score based on the number of proposals and/or other operational considerations in the best interest of LAWA.

Written Proposal Results

Written Technical Proposals were first evaluated by the selected Evaluation Committee. The Evaluation Committee was comprised of the following panel members of City of Los Angeles staff and Los Angeles County Metropolitan Transportation Authority (Metro) staff:

- Chief Development Officer
- Chief Environmental and Sustainability Officer
- Deputy Executive Director, Development
- Chief Airport Planner II
- Senior Executive Officer, Los Angeles Metro

The Committee reviewed the proposals for their response to the criteria outlined above. At the end of this review, the Evaluation Committee provided the following scores for the proposing firms:

	Technical Proposal Score (550 Points)	
Rank	Proposer Name	Score
1	HOK+Arup	515.5
2	MMGA JV	507.5
3	LANEXT	482
4	SOM+HNTB	462.5
5	Foster + Partners Stantec	423
6	WSP USA and KPF JV	410.5
7	Fentress Architects T.Y. Lin	406
8	Morphosis Architects	312

Interview Proposal Results

Following review of the written technical scores and discussions with the Evaluation Committee, it was agreed that LAWA would invite the top four (4) firms to interview. Interviews were held on November 18, 2020, and November 19, 2020, via WebEx. Following the interviews, the Evaluation Committee scored the firms as described below:

	Interview Proposal Score (200 Points)	
Rank	Proposer Name	Score
1	HOK+Arup	191.3
2	MMGA JV	185.1
3	SOM+HNTB	155.8
4	LANEXT	151.4

Cost Proposal Results

In the Request for Proposals, LAWA reserved the right to further shortlist the teams following the interviews. After review of the scores and discussions with the Evaluation Committee, it was determined that LAWA would exercise this option and only invite the top two (2) teams that achieved the 160-point threshold established in the Request for Proposals to submit pricing. The invited teams both cleared this minimum 160-point

threshold.. Staff received cost proposal submissions from HOK+Arup and MMGA JV on November 24, 2020. Cost proposals were weighted in accordance with the following:

Role on the Team	Points
Principal Architect	75
Principal Engineer	75
Key Discipline Leads (Avg.)	75
Integrated Partners (Avg.)	25
Total	250

Following calculations of the cost proposals, the points were allocated as follows:

Cost Proposal Score (250 Points)		
Multiplier Level	HOK+Arup	MMGA JV
Principal Architect	75	73.06
Principal Engineer	65.28	75
Key Discipline (Avg.)	75	58.63
Integrated Partner (Avg.)	24.99	25
Total Cost Proposal Score	240.27	231.69

Final Ranking

After the completion of all phases of the procurement process, staff calculated the final points and arrived at the following:

Final Ranking (1,000 Points)		
Rank	Proposer Name	Score
1	HOK+Arup	947.07
2	MMGA JV	924.29

LAWA's Procurement Services Division established inclusivity goals of 25% (SBE), 7% (LBE), 5% (LSBE), and 3% (DVBE). The HOK+Arup team pledged 25% (SBE), 7% (LBE), 5% (LSBE), and 3% DVBE. The HOK+Arup team also listed several additional commitments to inclusion in their proposal, including but not limited to, mentorships, scholarships, and knowledge transfer programs, that will become part of their contract with LAWA. Both HOK and Arup are Local Business Enterprises certified by the City of Los Angeles. HOK has been operating its local Los Angeles office for nearly 40 years, while Arup has been serving Los Angeles for over a decade. Together, HOK and Arup employ over 350 people in their Los Angeles offices, including 18 professionally licensed architects and 69 professionally licensed engineers in Los Angeles County. Further to their commitments to diversity and inclusion, HOK+Arup has put together a team that is well represented in all disciplines by local, local small, disadvantaged, and other business enterprises that serve the greater Los Angeles Area. This can be seen with the makeup of the HOK+Arup team:

Airside and Civil Engineering

Atkins*
 IDS (SBE)
 EW Moon (LSBE)
 VCA (LSBE/DBE/MBE)

Traffic Engineering

Arup (LBE)*
 FPL & Associates (SBE/DBE)
 MA Engineering (LSBE/DBE/DVBE)
 Psomas (LBE)
 CHS Consulting (SBE/DBE)

Innovation and Technology

Faith Group (DBE/WBE)*
 Creelman, Inc. (LSBE/DBE)
 UNStudio
 UNSense

Architecture

HOK (LBE)*
 Rivers & Christian (LSBE)
 Iron Horse (SBE/DBE/WBE)
 Paul Murdoch Architects (LSBE)
 Anderson-Barker (SBE/MBE)

Planning

Ricondo and Associates*
 Connico (SBE/DBE/WBE)
 UPLA (LSBE/DBE/WBE)

*Key Discipline Lead

Building Systems (MEP/S)

Syska Hennessy (LBE)*
 PBS (LSBE/MBE/DBE)
 Walter P. Moore
 Labib+Funk
 Triunity (SBE/DBE/MBE)
 Schwab Associates (LSBE/DVBE)

Emerging Issues

Polytechnique (SBE/DBE)*
 UCLA
 Skylark
 IMD (DBE)

Business Case

Frasca (SBE)*
 Leyland Saylor (DVBE)
 Faithful + Gould

LA28

The Todd Group* (MBE)
 Premis Communications (LSBE/WBE/MBE)
 HR&A

Other Specialties

Studio-MLA (LSBE/DBE)* *Landscape Arch*
 Michelle Isenberg *Public Art*
 GCC & Associates (DVBE/SBE/MBE)
Constructability and Phasing
 C&S Companies *Environmental*

As the Principal Architect and Principal Engineer, HOK+Arup will guide and coordinate the design principles of LAWA. However as seen in the organization of their team, the joint venture will have to rely heavily on their integrated partners to complete tasks under this contract, and to meet the increased inclusivity requirements established on this contract. With over twenty-five (25) certified firms on its team, eleven (11) of which are certified LSBEs, and the opportunity to add more as specialty tasks are assigned, the HOK+Arup team is positioned to provide real opportunities for SBE, LBE, LSBE, and DVBE firms in Los Angeles.

The Evaluation Committee believed HOK+Arup provided the best team after reviewing their written proposal and interviewing the firms. HOK+Arup's price was the most competitive of the firms qualified to submit a cost proposal. In a pool of highly talented teams, the HOK+Arup team was able to showcase their expertise and a strong team that displayed a firm understanding of LAWA's goals, strong previous experience with similar projects to those contemplated under this contract, and a compilation of highly skilled personnel that bring global as well as extensive local knowledge. Based on these evaluations, staff recommends awarding a contract for Principal Architect/Engineer services to HOK+Arup.

Action Requested

Staff requests the Board approve the award of contract to HOK+Arup for an amount not-to-exceed \$50,000,000, for on-call planning and design services, and appropriate funds in the amount of \$25,000,000 for the first round of planning and design efforts.

Fiscal Impact

LAWA may use a combination of operating and capital funds for this contract. LAWA's 10-Year Capital Improvement Plan (CIP) already includes programming budget to perform studies for potential upcoming capital projects. A portion of that existing budget will be used for tasks issued under this contract, along with additional capital budget that may be programmed in the future for new studies authorized under LAWA's study and project approval process.

Upon the completion of the studies, planning and designing services performed under this contract, the cost of such services for projects that result in a follow up phase, including but not limited to, developing preliminary alternatives, establishing a 'proof of concept', or preparing a Conceptual Design Package for each proposed project, will be capitalized as part of the respective capital project. On the other hand, the cost of such studies, planning and designing services for projects that do not materialize will be expensed and paid out of LAWA's Operating Budget.

4. Alternatives Considered

- ***Take No Action***

If LAWA takes no action, then the planning and design of several large capital projects effectively would be delayed or placed on hold, and those projects may not be delivered prior to the 2028 Olympics.

- ***Procure Separate Services for Each Individual Project***

LAWA would not get the benefits of having an aligned, consistent and integrated approach to the design and engineering of capital improvement projects, which likely is to result in unaligned, ad-hoc projects, the integration of which likely would be very complex and costly – if even achievable. The alternative approach also would require 10+ separate procurement efforts for individual planning and design efforts ranging from \$50K - \$5 Million. This would further require 10+ times the contract administration resources, and an additional layer of program management to coordinate efforts between multiple separate contracts.

APPROPRIATIONS:

Funds for FY2020-21 are already available as part of the Capital Improvement Program through the Capital Governance Process.

Staff will return in subsequent years for an accounting of funds expensed-to-date, and a request for future appropriations, as needed.

STANDARD PROVISIONS:

1. This action, as a continuing administrative activity, is exempt from California Environmental Quality Act (CEQA) requirements pursuant to Article II, Section 2.f. of the Los Angeles City CEQA Guidelines and is not considered a Project under State CEQA Guidelines Section 15378(b)(2).
2. This proposed document(s) is/are subject to approval as to form by the City Attorney.
3. Actions taken on this item by the Board of Airport Commissioners will become final pursuant to the provisions of Los Angeles City Charter Section 373.
4. HOK+Arup will comply with the provisions of the Living Wage Ordinance.
5. Procurement Services has reviewed this action (File No. 9602) and established a mandatory 25% Small Business Enterprise (SBE), 7% Local Business Enterprise (LBE) goal, 5% Local Small Business Enterprise (LSBE) goal, and a 3% Disabled Veterans Business Enterprise (DVBE) goal for this project. HOK+Arup has committed to 25% SBE, 7% LBE, 5% LSBE, 3% DVBE.
6. HOK+Arup will comply with the provisions of the Affirmative Action Program.
7. HOK+Arup has been assigned Business Tax Registration Certificate No. 0000775356-0001-8 and 0000086678-0001-4 respectively.
8. HOK+Arup will comply with the provisions of the Child Support Obligations Ordinance.
9. HOK+Arup must have approved insurance documents, in the terms and amounts required, on file with the Los Angeles World Airports prior to the issuance of a Notice to Proceed.
10. Pursuant to Charter Section 1022, staff determined the work specified on this contract can be performed more feasibly and economically by Independent Contractors than by City employees.
11. HOK+Arup has submitted the Contractor Responsibility Program Questionnaire and Pledge of Compliance and will comply with the provisions of the Contractor Responsibility Program.
12. HOK+Arup must be determined by Public Works, Office of Contract Compliance, to be in compliance with the provisions of the Equal Benefits Ordinance prior to execution of contract.
13. HOK+Arup will be required to comply with the provisions of the First Source Hiring Program for all non-trade LAX Airport jobs.
14. HOK+Arup has submitted the Bidder Contributions CEC Form 55 and Municipal Lobbying Ordinance CEC Form 50 and will comply with the provisions.
15. HOK+Arup has submitted the Iran Contracting Act of 2010 and will comply the with provisions.

EXHIBIT

3

ATTORNEY-CLIENT PRIVILEGE

TO: El Segundo staff

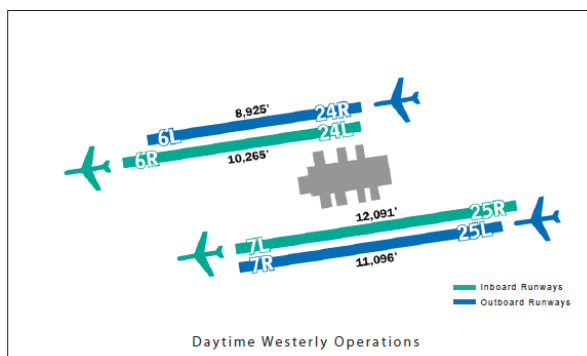
FROM: Benjamin Gonzalez
Osa L. Wolff

DATE: October 15, 2019

RE: Analysis of LAX Runway Usage Data for First and Second Quarter 2019

Balance between the north and south runway complexes at LAX has historically been an important issue to El Segundo. El Segundo has wondered whether aircraft operations on the north and south runway complexes have been imbalanced in a manner that produces less noise for communities north of the north runway complex and more noise for El Segundo south of the south runway complex. As described in this memo, we recently looked to new data released by LAWA to shed light on this question.

The north complex at LAX consists of runways 06L, 06R, 24L, and 24R and the south complex consists of runways 07L, 07R, 25L, and 25R.



Communities north of the north runway complex are within the City of Los Angeles, which owns and operates LAX through LAWA. El Segundo and other communities around LAX, by contrast, have no elected representatives in the City of LA.

In its first and second quarterly noise reports for 2019, LAWA included, for the first time, data on LAX average daily runway use by aircraft type. This data was required by the terms of the 2011 variance issued by Caltrans. The data was presented as two

large tables, one for arrivals and one for departures (click [here](#) to access reports; tables begin on p. 17 of PDFs).

In order to analyze this data in terms of runway balance, we divided the aircraft into four categories: narrow-body, wide-body, regional, and general aviation.¹ We then determined the total operations (arrivals and departures) by runway complex for each aircraft category. Beginning with Q1, our findings show that overall (arrivals and departures) the north complex hosts approximately 874 daily operations, whereas the south complex hosts approximately 962 daily operations. Thus, about 88 more operations occur on the south runway complex each day (approximately 5% more). Larger disparities appear when analyzing the data on wide-body aircraft.²

Overall (arrivals and departures) there were approximately 29 more wide-body operations daily on the south complex than the north (approximately 10% more). Additionally, there were approximately 45 more wide-body departures (approximately 30% more) on the south complex daily.³ The fact that wide-body aircraft tended to use the south complex more than the north, overall and for departures, is important because wide-body aircraft tend to be noisier than smaller aircraft and, for El Segundo, departures are noisier than arrivals.⁴

¹ The general aviation category includes all smaller aircraft that can carry 50 people or fewer. Regional airplanes are those that can carry from 50-100 passengers and are generally named as “regional jets.” Narrow-body aircraft were distinguished from wide-body aircraft based on the dimensions of the chassis of the plane (wide-body aircraft typically have two aisles, whereas narrow-body aircraft generally only have one). Wide-body aircraft can typically hold more passengers as well. Some aircraft were not included in this analysis because their ICAO code did not readily appear on any online database and determining the aircraft category was not possible.

² The south complex hosted approximately 35 more narrow-body aircraft, 30 more wide-body aircraft, and 50 more general aviation aircraft on a daily basis compared to the north complex. Only regional aircraft used the north complex more often, with approximately 28 more regional aircraft operations occurring daily.

³ Overall, wide-body aircraft used the north complex more for arrivals, with approximately 16 more operations daily on the north complex than the south (approximately 11% more).

⁴ We ran the same type of analysis for the Second Quarter 2019 Quarterly Noise Report, which produced very similar results with only slightly more balance between the complexes. Overall (arrivals and departures), approximately four percent more aircraft used the south complex. Overall for wide-body aircraft, approximately 10 percent more used the south complex. For departures, approximately 25 percent more wide-body aircraft use the south complex.

LAWA’s first and second quarterly 2019 noise reports also provided data on the average runway use for both the north and south runway complexes as an overall percentage of usage. The data is separated between arrivals and departures, and is further broken down by time of day. LAWA also provided a breakdown for the percentage of daily operations using each specific runway. This is a screenshot the 2019 Q1 Report (p. 15 of PDFs).



Runway Utilization Report
 Summary of Runway Use (Average)
 Los Angeles International Airport

Period : 01/01/2019 to 03/31/2019
 Airline : ALL
 Aircraft : ALL

Time Period	Percent Daily Operations Per Runway								Average Operations	Runway Complex		Runway Flow		In Board	Out Board	
	06L	06R	07L	07R	24L	24R	25L	25R		South	North	West	East			
Departures																
Total Hours																
24 Hours	<1%	3%	5%	<1%	42%	<1%	2%	47%	920	55%	45%	92%	8%	98%	2%	
CNEL Hours																
0700 - 1900	<1%	4%	5%	<1%	46%	<1%	2%	43%	619	50%	50%	92%	8%	98%	2%	
1900 - 2200	0%	3%	4%	<1%	45%	<1%	2%	46%	123	52%	48%	94%	6%	97%	3%	
2200 - 0700	0%	2%	7%	<1%	26%	<1%	2%	62%	178	71%	29%	91%	9%	97%	3%	
Contra Hours																
Midnight - 0630	0%	2%	8%	<1%	13%	<1%	3%	74%	86	84%	16%	90%	10%	97%	3%	
0630 - Midnight	<1%	3%	5%	<1%	45%	<1%	2%	45%	834	51%	49%	92%	8%	98%	2%	
Arrivals																
Total Hours																
24 Hours	4%	3%	<1%	4%	<1%	43%	45%	1%	917	50%	50%	89%	11%	5%	95%	
CNEL Hours																
0700 - 1900	4%	<1%	<1%	4%	<1%	45%	45%	1%	620	51%	49%	92%	8%	2%	98%	
1900 - 2200	3%	<1%	<1%	3%	<1%	46%	45%	1%	161	50%	50%	93%	7%	2%	98%	
2200 - 0700	4%	18%	<1%	6%	<1%	28%	40%	2%	136	49%	51%	71%	29%	22%	78%	
Contra Hours																
Midnight - 0630	4%	48%	1%	9%	2%	9%	23%	4%	52	38%	62%	38%	62%	54%	46%	
0630 - Midnight	4%	<1%	<1%	4%	<1%	45%	46%	1%	865	51%	49%	92%	8%	2%	98%	

All values are rounded to the nearest whole number.

Focusing on the Runway Complex south and north columns, we can see that averaged over a 24-hour period, LAX might be said to experience a slight imbalance between use of the north and south runway complexes. For departures, there is a 55/45 percent split between south and north. For arrivals, the split is 50/50. Looking further down those columns (see highlighted entries), the disparity is much larger:

71% of departures used the south complex during CNEL Hours 2200-0700; and 84% of departures used the south complex during Contra Hours Midnight-0630.⁵

⁵ For Q2, 69% of departures used the south complex during CNEL Hours 2200-0700 and 79% of departures used the south complex during Contra Hours Midnight-0630.

This is important for El Segundo because late night and early morning imbalance and noise is likely to be more problematic than imbalance and noise during the remainder of the day.⁶

LAWA also provided data on LAX's Average Daily Runway Use By Aircraft Type- Night-time (10pm-7am) (starting on p.21 of the reports). Analyzing this data for the Q1 2019 report, the imbalanced runway use during CNEL Hours 2200-0700 is brought to light. For departures, where the greatest imbalance is seen, there were approximately 178 operations during these hours. From those, approximately 127 used the south complex, as opposed to only 51 for the north complex. Particularly troublesome is that of the 59 wide-body daily departures during this time, approximately 44 used the south complex (only 15 used the north complex). This means that approximately 75% of departing wide-body aircraft during CNEL hours 2200-0700 used the south complex.⁷

As outlined above, our analysis of LAWA's recent data shows an imbalanced use of runways at LAX that may favor communities to the north of LAX over El Segundo. That imbalance may be occurring for multiple reasons. To the extent you are able to arrange a meeting with the FAA/Air Traffic Control, we would suggest bringing up this imbalance and requesting that the FAA/ATC implement procedures to better balance runway use, especially in the late night/early morning and by aircraft type.

1171688.1

⁶ It is important to note that more operations occur at LAX during the day than at night. For Q1, 178 operations occurred during CNEL Hours 2200-0700, out of a total of 920 operations (approximately 19% of total operations). Similarly, 86 operations occurred during Contra Hours Midnight-0630 (approximately 10% of total operations). Although the data shows a substantial north/south imbalance in late night operations, that imbalance is not apparent in the total hours data because the number of late-night operations is relatively small.

⁷ Of the approximately 101 total narrow-body operations departing during CNEL hours 2200-0700, about 70 occurred on the south complex compared to only 31 on the north. This means that approximately 77% of departing narrow-body aircraft used the south complex compared to the north during this time.

EXHIBIT

4

December 23, 2019

Via E-Mail and U.S. Mail

Evelyn Quintanilla
Chief of Airport Planning II
Los Angeles World Airports
P.O. Box 92216
Los Angeles, CA 90009-2216
E-Mail: equintanilla@lawa.org

Re: CEQA Analysis for Midfield Satellite Concourse and ATMP

Dear Ms. Quintanilla:

On behalf of El Segundo, we have carefully reviewed LAWA's existing environmental analysis for the Midfield Satellite Concourse – South Project (“MSC South”), the next proposed phase of the Midfield Satellite Concourse (“MSC”) Project, as well as the Notice of Preparation (“NOP”) for the LAX Airfield & Terminal Modernization Project (“ATMP”). On May 6, 2019, Shute, Mihaly & Weinberger submitted comments in response to LAWA's release of the ATMP NOP. This letter supplements the comments made in the May 6, 2019 letter and discusses additional information presented within LAWA's latest environmental document for MSC South, a memo from Ricondo & Associates (“Ricondo Memo”).¹ This letter should be added to the administrative record for both the ATMP and MSC South. Ultimately, we believe that the Ricondo Memo is legally insufficient in analyzing the environmental impacts of MSC South, particularly in conjunction with the now-foreseeable ATMP.

A. LAWA Has Improperly Concluded MSC South May Proceed Without Further Formal Environmental Analysis.

Further CEQA analysis would be needed before LAWA could proceed with approval/construction of MSC South. MSC South, as currently envisioned by LAWA, is

¹ We learned of the Ricondo Memo by monitoring LAWA's Board of Airport Commissioners (“BOAC”) agendas and then requested it from LAWA's staff. The memo does not appear to have been made publicly available through LAWA's website.

an entirely different project from that previously evaluated. For example, according to the BOAC August 1, 2019 Agenda staff report:

“The MSC South Project was originally envisioned to be an extension of the MSC North, with similar architecture, function, and scale. To build to this concept would require significant delivery time and investment, as well as necessitate the demolition of the American Airlines (AA) SuperBay Hangar, for which we have no adequate replacement in the near future. However, due to recent growth in passenger activity - as well as ongoing renovation efforts throughout LAX that requires the closure of other gates - there is an urgency to deliver more domestic gates in the near term. Moreover, *with the planned development of Terminal 9 and Concourse 0, there is no longer the same need to use MSC South as a fully functioning international terminal as was originally envisioned.*”

BOAC August 1, 2019 Agenda Staff Report for Item 15 at 3 (emphasis added).

Thus, the MSC South project LAWA now wants to construct differs substantially from what LAWA previously evaluated. Moreover, MSC South is now inextricably linked to the ATMP and its environmental impacts must be evaluated together with that project.

Furthermore, the 2014 Midfield Satellite Concourse Draft EIR (“2014 MSC DEIR”) contains (at least) two references to future environmental review, particularly that construction emissions will be discussed under a project-level environmental review at such time that LAWA determines the timing of any future phase(s) of the MSC and that impacts of future projects will be analyzed on a project-level review once “LAWA determines the timing of such improvements.” 2014 MSC DEIR at 2-51, 4-11, 4-19. LAWA must now follow through on its prior commitments to conduct project-level environmental review for MSC South.

We object to the Ricondo Memo because it is not the kind of document contemplated by the 2014 MSC DEIR and, as discussed in detail below, it inadequately analyzes the project-level impacts of MSC South (see Section C below). The 2014 MSC DEIR indicated that LAWA would prepare and publicly release a formal CEQA document once the timing of the MSC South project was determined. Instead, LAWA has commissioned the Ricondo Memo. The memo was not circulated to the public for review as LAWA’s CEQA documents normally are. And to our knowledge, it has not even been

posted by LAWA on its website. Rather, we discovered the existence of the memo only by examining BOAC agendas. Simply stated, the Ricondo Memo does not provide the kind of formal and transparent project-level environmental analysis contemplated in the 2014 MSC DEIR for the future phases of the MSC Project.

The Ricondo Memo argues that no further CEQA review need be done. Their conclusion, however, is incorrect. Not only has LAWA already clearly committed to conducting further project-level environmental review for MSC, but LAWA's plans for MSC now differ substantially from what was analyzed in the programmatic 2014 MSC DEIR. Further CEQA review is triggered by those proposed changes to MSC South.

Finally, the Ricondo Memo does not acknowledge or evaluate the full extent of operations that would occur at MSC South as recently re-envisioned by LAWA. There would, for example, apparently be a greater concentration of operations at the eight proposed MSC South gates. Additionally, the 2014 MSC DEIR did not mention or recognize the ATMP as a future foreseeable project within its cumulative impact analysis. *See* 2014 MSC DEIR at 4-56 (table showing cumulative construction projects peak daily emissions estimates); *see also id.* at 3-5 to 3-7 (table listing on-going and future projects at LAX). LAWA must analyze the impacts of MSC South in light of any foreseeable impacts and projects, particularly the ATMP. This is critically important because the ATMP would increase the capacity of LAX well beyond that envisioned under the 2004 LAX Master Plan.

B. In the Context of the ATMP, LAWA Is Improperly Double Counting Removal of the WRGs, Which Must Already be Decommissioned as Part of the MSC Project.

As stated in the ATMP NOP, LAWA is considering “replacing” nine West Remote Gates (“WRGs”), which it indicates will need to be removed for extension of Taxiway D. LAWA's ATMP proposal calls for that replacement to occur with new gates within Terminal 9 and/or Concourse 0. In the ATMP context, LAWA takes “credit” for removing WRGs, arguing that their removal will offset new gates proposed at Terminal 9 and Concourse 0. The problem with LAWA's logic here is that those are the same WRGs that LAWA already promised it would remove as part of the MSC project. This is improper double counting.

The 2014 MSC DEIR explicitly states that the WRGs will be decommissioned upon completion of the MSC project. Specifically, in Section 2.2 of the 2014 DEIR, LAWA quotes from the LAX Master Plan that the MSC “would replace the remote gate pads now located on the west pad facility (Final LAX Master Plan page 2-85).”

2014 MSC DEIR at 2-5. In Section 4.1.2.1 of the 2014 MSC DEIR, LAWA states that “[o]nce the future phase(s) of the MSC Program is completed, the West Remote Gates/Pads would be eliminated.” *Id.* at 4-16, fn.10. Additionally, in response to comments in the MSC Final EIR (“FEIR”), LAWA confirms that they “will decommission the West Remote Gates/Pads once the future phase(s) of the MSC Program is completed, consistent with the approved 2004 LAX Master Plan.” MSC FEIR at 2-20, 2-31.

LAWA’s ATMP NOP ignores LAWA’s prior commitment, as part of the MSC project, to remove the WRGs. As described in the ATMP NOP, LAWA proposes to add a total of 27 new gates. LAWA indicates the new ATMP gates will be replacing ten gates from the American Eagle Commuter Gates (removed to make way for Terminal 9, with those operations moved to MSC South) and 9 WRGs (removed to make way for the extension of Taxiway D). LAWA cannot, however, take credit for removal and replacement of nine WRGs as part of the ATMP, when those WRGs must already be decommissioned as a result of the MSC Project. LAWA appears to be double counting the WRGs to downplay the substantial increase in gates proposed at LAX. LAWA must instead fully acknowledge its proposal to increase the number of gates at LAX well beyond what was evaluated in the operative 2004 LAX Master Plan. LAWA’s CEQA analysis must also acknowledge that there is a substantial functional difference between remote gates (like the WRGs and the American Eagle Commuter Gates) and contact gates like those proposed for MSC South, Terminal 9 and Concourse 0. Because remote gates require bussing, they are far less efficient and support fewer operations.

Since the 2014 MSC EIR and LAX Master Plan commit LAWA to eliminating the WRGs upon completion of the MSC project, LAWA cannot also rely on removal of the WRGs to offset any potential gate increases from the ATMP. LAWA must instead evaluate the full environmental impacts of the 27 gates that will be added as part of the ATMP.

C. LAWA’s Environmental Analysis Improperly Ignores the Connection Between the ATMP and MSC Project.

Although LAWA readily acknowledges that MSC South and the ATMP are coordinated and interdependent projects, its environmental analysis does not reflect that reality. LAWA’s current plan for MSC South calls for the eight new MSC South gates to serve as “empty chairs” during other airport modernization efforts (i.e., the ATMP). As such, CEQA mandates that the two projects must be evaluated in a unified and coordinated fashion, but LAWA does not appear to be taking that approach.

The Ricondo Memo fails to comply with CEQA because it fails to acknowledge that the ATMP is part of the MSC South project (or vice-versa), and therefore fails to disclose the environmental impacts of the “whole of [the] action.” *See* Guidelines § 15378(a). LAWA has improperly piecemealed MSC South from the ATMP, despite acknowledging that due to “the planned development of Terminal 9 and Concourse 0, there is no longer the same need to use MSC South as a fully functioning international terminal as was originally envisioned.” *See* BOAC August 1, 2019 Agenda Staff Report for Item 15 at 3. This clearly illustrates that MSC South and the ATMP are “part of a single, coordinated endeavor.” *Assn. for a Cleaner Environment v. Yosemite Community College Dist.* (2004) 116 Cal.App.4th 629, 639.

CEQA prohibits “segmentation” of a project—the “chopping up [of] proposed projects into bite-size pieces which, when taken individually, may have no significant adverse effect on the environment.” *Tuolumne County Citizens for Responsible Growth, Inc. v. City of Sonora* (2007) 155 Cal.App.4th 1214, 1223-24 (“*Tuolumne*”) (quoting *Plan for Arcadia, Inc. v. City Council of Arcadia* (1974) 42 Cal.App.3d 712, 726); *see also Tuolumne*, 155 Cal.App.4th at 1229 (“when one activity is an integral part of another activity, the combined activities are within the scope of the same CEQA project” and must be analyzed together). CEQA instructs that “[w]here an individual project is a necessary precedent for action on a larger project . . . an EIR must address itself to the scope of the larger project.” Guidelines § 15165. LAWA mentions that the MSC Project will function as an “empty chair” during ongoing renovation efforts throughout LAX that will require closure of other gates. Thus, the MSC is essentially an enabling project for the ATMP, such that MSC South is a foreseeable consequence of the ATMP’s displacement of the American Eagle commuter gates, which LAWA has stated will be relocated to MSC South. Additionally, LAWA recently redesigned MSC South to serve more domestic flights partly due to the ATMP handling more international operations.

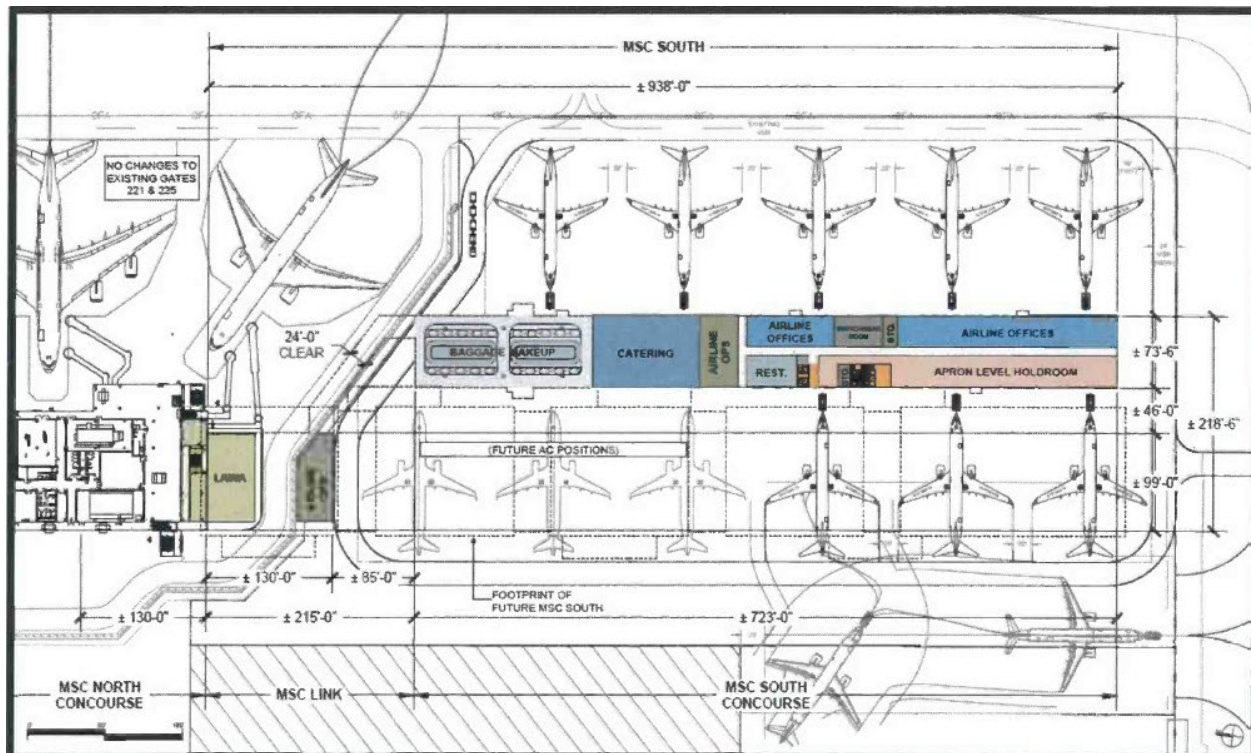
Even if MSC South and the ATMP are not evaluated as a single project, MSC South must be analyzed in light of the increase in passenger operations associated with the ATMP, which includes a combination of runway and terminal expansions. Thus, the ATMP will change operations airport-wide, including at MSC South. LAWA must study MSC South’s environmental impacts within this new context.

The ATMP proposal also includes new information which was not known and could not have been known at the time the 2014 MSC EIR was certified. That new information indicates that the significant MSC effects previously examined will be substantially more severe than previously acknowledged. Public Resources Code § 21166(c); CEQA Guidelines, Cal. Code Regs., tit. 14 (“Guidelines”), § 15162(a)(3)(B). Moreover, the ATMP proposal represents a substantial change with respect to the

circumstances under which the MSC South project would be undertaken, which triggers revisions to the analysis in the 2014 MSC EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Public Resources Code § 21166(b); Guidelines § 15162(a)(2).

D. The Ricondo Memo Fails to Analyze LAWA’s Plans for the Future Expansion of MSC South.

The Ricondo Memo also fails to analyze foreseeable future expansion of MSC South. As illustrated in the diagram below, LAWA envisions that there will be 3 additional “Future AC Positions” on the west side of MSC South. *See* BOAC August 1, 2019 Agenda Staff Report for Item 15 at 5. These future positions are likely to be new gates that will be opened once the American Airlines SuperBay Hangar is demolished and replaced (as contemplated by the 2014 MSC DEIR). LAWA has stated that there is no adequate replacement for the hangar in the near future, but demolition of the hangar and installation of additional gates is clearly part of LAWA’s eventual plan for MSC South. To comply with CEQA, LAWA must analyze the entirety of its plan for MSC South.

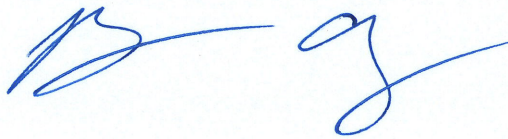


Evelyn Quintanilla
December 23, 2019
Page 7

Thank you for your attention to these issues and we look forward to working through this with LAWA.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP



Benjamin Gonzalez


1187424.3

EXHIBIT

5

REPORT TO THE BOARD OF AIRPORT COMMISSIONERS


Approved by: Greg S. Campbell, Chief Airports Engineer II


Reviewed by: Robert L. Gilbert, Chief Development Officer


City Attorney 


For Deborah Flint, Chief Executive Officer

Meeting Date:

8/1/2019

CAO Review:

- Completed
 Pending
 N/A

Reviewed for	Date	Approval Status	By
Finance	7/23/2019	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	RW
CEQA	7/11/2019	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	PI
Procurement	7/17/2019	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Cond	MJ
Guest Experience	7/17/2019	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	BY
Strategic Planning	7/23/2019	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	KV

SUBJECT: Approve Change Order No. 241 to Contract No. DA-4971 with Turner PCL, A Joint Venture, for the Midfield Satellite Concourse project.

Approve Change Order No. 241 to Contract No. DA-4971 in the amount of \$4,200,075, and an additional \$700,000 for the procurement and installation of Transportation Security Administration screening equipment. Change Order No. 241 authorizes the construction of modifications for Transportation Security Administration Security Screening Check Point operations for in-transit passengers at the Midfield Satellite Concourse.

RECOMMENDATIONS:

Management RECOMMENDS that the Board of Airport Commissioners:

- ADOPT the Staff Report.
- DETERMINE that this action is exempt from the California Environmental Quality Act (CEQA) pursuant to Article II, Section 2.i of the Los Angeles City CEQA Guidelines.
- APPROVE Change Order No. 241, for Contract No. DA-4971, in the not to exceed amount of \$4,200,075.
- FURTHER APPROVE \$700,000 for the procurement and installation of Transportation Security Administration screening equipment.

5. APPROPRIATE capital funds in the amount of \$4,900,075 which includes construction costs.
6. AUTHORIZE the Chief Executive Officer to execute Change Order No. 241 with Turner PCL, a Joint Venture, upon approval as to form by the City Attorney.

DISCUSSION:

1. Purpose

This change order authorizes modifying the south basement level of the Midfield Satellite Concourse (MSC) to incorporate Transportation Security Administration (TSA) Security Screening Check Point (SSCP) operations with United States Customs and Border Patrol (CBP) primary operations for in-transit passengers on opening day.

2. Prior Related Actions

- **December 18, 2014 – Resolution No. 25595 (DA-4971)**
The Board of Airport Commissioners (Board) awarded a Two-Phase Design-Build Contract to TPJV for MSC North project at Los Angeles International Airport (LAX), for the cost of \$961,270,169; and appropriation of \$174,889,794.
- **February 18, 2016 – Resolution No. 25898 (DA-4971)**
The Board approved an Administrative Change Order to Contract with TPJV to reallocate design funds of \$27,481,340 covering the MSC North project at LAX; and include certain administrative changes.
- **August 18, 2016 – Resolution No. 26059 (DA-4971)**
The Board approved an additional appropriation of capital funds in the amount of \$59,077,469 for CGMP Early Work Package Scope Elements of the MSC North project at LAX.
- **November 17, 2016 – Resolution No. 26112 (DA-4971)**
The Board approved a Guaranteed Maximum Price Change Order No. 6 in the amount of \$355,337,070 and the appropriation of capital funds in the total amount of \$1,317,235,766 to TPJV for the Design and Construction costs of the MSC North.
- **February 21, 2019 - Resolution No. 26709 (DA-4971)**
The Board approved Change Order No. 164 to grant an excusable time extension of 70 calendar days and impacts costs resulting from contaminated soils encountered at the MSC Passenger (PAX) West Tunnel.
- **July 18, 2019 – Resolution No. 26816 (DA-4971)**
The Board approved Change Order No. 229 to Contract No. DA-4971 to grant an excusable, compensable 53 calendar-day time extension; excusable, non-compensable five calendar-day time extension; and impact costs not to exceed \$24,441,561, as a result of unforeseen utilities, differing site conditions, and contaminated soils impacts at the Midfield Satellite Concourse, East Passenger Tunnel.

- **July 18, 2019 – Resolution No. 26817 (DA-4971)**

The Board approved Change Order No. 230 to Contract No. DA-4971 in the not to exceed amount of \$32,648,983, to incorporate three additional Group III aircraft gates to the Midfield Satellite Concourse North, and appropriated funds in the same amount.

3. Current Action

When the MSC GMP was established in late 2016, the program included the design and construction of the MSC basement as CBP overflow space to supplement TBIT primary operations. In 2018, as a result of further conversations with Airport Operations and airlines, staff identified that the incorporation of In-Transit Operations at the MSC would significantly benefit the guest experience.

Currently Los Angeles World Airports (LAWA) has three in-transit flights at Tom Bradley International Terminal (TBIT). To accommodate growth of in-transit operations and improve guest experience at the MSC, TSA screening operations and CBP primary inspection will be incorporated into the operations at the MSC with this change order. This will provide passengers and LAWA the benefit of in-transit services without having to traverse to TBIT for processing and then return to the MSC. This program change necessitated the reconfiguration of the CBP processing space and introduced TSA Security Screening Operations in the space adjacent to the CBP basement operations.

Staff negotiated the proposed Change Order in the value of \$4,200,075 to provide specific design and construction modifications, which include:

- TSA Passenger Queuing Space
- Two TSA Baggage Check Lanes with Baggage X-ray Machines
- One TSA Advanced Imaging Technology (AIT) Body Scan
- Two TSA Walk-thru Metal Detectors
- One TSA Private Screening Room
- One TSA Supervisor Podium
- TSA Information Technology (IT) and Storage Room
- Joint breakroom for TSA and CBP
- One CBP Operational Office

In addition to the change order, a budget of \$700,000 for the procurement and installation of TSA screening equipment is requested. Specific screening equipment includes:

- Baggage Screening X-Ray machines
- Walk Through Metal Detector
- Body Imaging Scanner
- Alternate Viewing Stations, with Bottle Liquid Scanner & Explosive Trace Detection
- Hard Barriers, Stanchions, Podiums

How this action advances a specific strategic plan goal and objective

- This action advances this strategic goal and objective: *Deliver Facilities & Guest Experiences that are Exceptional: Develop, maintain and operate first class facilities.* Approving this Change Order allows the MSC project team to address the in-transit needs of the airline community. Other benefits includes improving the overall

screening operations at MSC/TBIT, and improving the guest experience for MSC passengers.

Action Requested

Staff requests the Board approve Change Order No. 241 to Contract No. DA-4971 with TPJV in the total amount of \$4,200,075 to complete the design and construction modifications at the MSC.

Fiscal Impact

The MSC is an approved capital project. Costs incurred under this contract will be capitalized and when projects are put in service, those costs will be recovered through terminal rates and charges, as well as through non-aeronautical revenues.

The breakdown of costs related Change Order No. 241 are as follows:

Sub-Contractor Cost of Work	\$	3,254,468
Design and Contractor Overhead	\$	467,622
Contractor Contingency	\$	130,179
Markups (Insurance/Fee/Subguard)	\$	347,806
Change Order No. 241 Total	\$	4,200,075

In addition, because the introduction of TSA Security Screening Operations was not anticipated at GMP, staff is requesting that the project budget be increased and an appropriation be provided for the cost of the change order and the TSA Screening Equipment.

MSC Appropriation Request		
Change Order No. 241 Total	\$	4,200,075
TSA Screening Equipment	\$	700,000
Total Requested Appropriation	\$	4,900,075

The budgeted MSC Owner Contingency is unchanged as this additional scope is requested to be funded with new money. The total contract value is revised as shown:

MSC Contract Value Summary		
Current Revised Contract Value	\$	1,410,058,886
Proposed Change Order No. 241		4,200,075
Revised Contract Value Payable to TPJV	\$	1,414,258,961

4. Alternatives Considered

• **Take No Action**

If no action is taken, the Design-Build team will continue with only providing CBP primary inspection operation area in the basement level of MSC. Any in-transit flight gated at MSC will force in-transit passengers to be re-screened by TSA at TBIT SSCP and return

back to the MSC through the tunnel. Staff's preferred option is to make the modifications before the completion of construction.

- ***Make the Modifications at a later date***

To make the above mentioned modifications later is possible, but there would be a significant impact to operations at additional cost. This action would require long term disruptions in passenger experience and utility shutdowns, thus resulting in significant operational impacts.

APPROPRIATIONS:

Staff requests that funds in the amount of \$4,200,075 be appropriated and allocated from the LAX Revenue Fund to WBS Element 1.12.19A-700 (MSC) and other Board approved WBS elements as may be required.

Staff further requests that a budget of \$700,000 be withdrawn from the LAWA Owner Contingency previously approved and appropriated under Change Order No. 6 to Contract No. DA-4971 with Turner | PCL, A Joint Venture, and allocated in the not-to-exceed amount of \$700,000 to WBS Element 1.12.19A-700 (MSC) as may be required.

STANDARD PROVISIONS:

1. Any activity (approval of bids, execution of contracts, allocation of funds, etc.) for which the underlying project has previously been evaluated for environmental significance and processed according to the requirements of the California Environmental Quality Act (CEQA) is exempt from further review pursuant to Article II, Section 2.i of the Los Angeles City CEQA Guidelines. The Midfield Satellite Concourse Environmental Impact Report (EIR) was certified by the Board of Airport Commissioners for this project on July 21, 2014 (Resolution No. 25478).
2. The underlying contract was approved as to form by the City Attorney.
3. Actions taken on this item by the Board of Airport Commissioners will become final pursuant to the provisions of Los Angeles City Charter Section 245.
4. As this is a construction project, Turner | PCL, a Joint Venture will comply with the applicable provisions of the Living Wage Ordinance and the Labor Code of the State of California (Prevailing Wage).
5. Procurement Services Division reviewed this action (File No. 10038219) and established a mandatory 15% Small Business Enterprise goal for the Design Phase and a 15% Small Business Enterprise goal for the Construction Phase of the project. Turner | PCL, a Joint Venture has committed to 15% SBE participation separately for both phases and has achieved 19.76% to date.
6. Turner | PCL, a Joint Venture is required by contract to comply with the provisions of the Affirmative Action Program.
7. Turner | PCL, a Joint Venture has been assigned Business Tax Registration Certificate Number 0002801775-0001-4.

8. Turner I PCL, a Joint Venture is required by contract to comply with the provisions of the Child Support Obligations Ordinance.
9. Turner I PCL, a Joint Venture has approved insurance documents, in the terms and amounts required, on file with Los Angeles World Airports.
10. Pursuant to Charter Section 1022, staff determined the work specified on the proposed contract can be performed more feasibly or economically by an Independent Contractor than by City employees.
11. Turner I PCL, a Joint Venture has submitted the Contractor Responsibility Program Pledge of Compliance and will comply with the provisions of the Contractor Responsibility Program.
12. Turner I PCL, a Joint Venture has been determined by Public Works, Office of Contract Compliance to be in compliance with the provisions of the Equal Benefits Ordinance.
13. Turner I PCL, a Joint Venture will be required to comply with the provisions of the First Source Hiring Program for all non-trade Airport jobs.
14. Turner I PCL, a Joint Venture has submitted the Bidder Contributions CEC Form 55 and will comply with its provisions.
15. This action is not subject to the provisions of the Iran Contracting Act.

EXHIBIT

6

July 2019 |

Los Angeles International Airport

Environmental Analysis

Phase 2 of the Midfield Satellite Concourse Program

Prepared for:

Los Angeles World Airports

Prepared by:

RICONDO

In association with:

Connico, Inc.

Ricondo & Associates, Inc. (Ricondo) prepared this document for the stated purposes as expressly set forth herein and for the sole use of Los Angeles World Airports and its intended recipients. The techniques and methodologies used in preparing this document are consistent with industry practices at the time of preparation and this Report should be read in its entirety for an understanding of the analysis, assumptions, and opinions presented. Ricondo & Associates, Inc. is not registered as a municipal advisor under Section 15B of the Securities Exchange Act of 1934 and does not provide financial advisory services within the meaning of such act.

TABLE OF CONTENTS

1. Introduction	1
2. Previously Approved Program	2
2.1 LAX Master Plan	2
2.2 Midfield Satellite Concourse EIR	4
3. Project Description	9
3.1 Operational Characteristics	11
3.2 Construction	11
4. California Environmental Quality Act Analysis	12
4.1 Evaluation	12
4.1.1 Air Quality, Greenhouse Gas Emissions, and Human Health	12
4.1.2 Construction Traffic	16
4.2 Recommended Documentation	19

LIST OF APPENDICES

Appendix A	Aircraft Operational Analysis
Appendix B	Construction Schedule and Assumptions
Appendix C	Air Quality
Appendix D	Construction Traffic

LIST OF TABLES

Table 1	Maximum Construction Emissions (lbs/day)	13
Table 2	Incremental Operational Emissions (lbs/day)	16
Table 3	Peak Construction Trips (PCE)	18
Table 4	Construction Traffic Analysis	19

LIST OF FIGURES

Figure 1	LAX Master Plan Alternative D	3
Figure 2	MSC Program Identified in the MSC EIR	5
Figure 3	MSC North Approved Project Overview	6
Figure 4	Future Phases of the MSC Program Identified in the MSC EIR	8
Figure 5	Phase 2 of the MSC Program	10

1. INTRODUCTION

The Los Angeles World Airports (LAWA) Board of Airport Commissioners (BOAC) has initiated a new multi-level concourse at Los Angeles International Airport (LAX) west of Tom Bradley International Terminal (TBIT). Development of this new multi-level concourse is called the Midfield Satellite Concourse (MSC) Program. Due to the size and scale of the MSC Program and immediate need to enable rehabilitation and modernization of existing facilities, LAWA is implementing the program in phases. On July 21, 2014, the BOAC certified a Final Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for all phases of the MSC Program. Phase 1 of the MSC Program is the construction of the northern portion of the multi-story MSC facility and associated improvements, referred to as the MSC North Project. The MSC EIR contained a project-level analysis of the MSC North Project, and a program-level analysis of the full MSC Program, including the planned southerly extension of the MSC building.¹

LAWA is now proposing to construct and operate Phase 2 of the MSC Program to provide additional gates. Phase 2 of the MSC Program is needed to enable LAWA to maintain passenger level-of-service while LAX continues to undergo modernization that includes terminal renovations, passenger boarding bridge replacements, and taxiway and apron pavement rehabilitation. The MSC Program EIR envisioned up to an additional 18 gates for ADG III to ADG VI aircraft as part of the southerly extension of the MSC North building; the proposed Phase 2 of the MSC Program would provide up to 8 new gates for ADG III aircraft. Although the future phase(s) of the MSC Program was analyzed at a programmatic level in the MSC EIR, this document evaluates Phase 2 of the MSC Program at a project level of detail to determine if it has any effects that were not examined in the MSC EIR to determine whether an additional CEQA document must be prepared.

¹ On March 19, 2015, BOAC considered an Addendum to the EIR, which addressed the relocation of LAX's existing Remote Transmitter/Receiver (RTR) facility. BOAC considered a second Addendum to the EIR on November 17, 2016, which addressed an extension of the MSC North concourse to the north; the addition of a 'Gateway' Facility; passenger and utility/baggage tunnels; and the relocation of a Los Angeles Department of Water and Power remote substation. A third addendum was prepared in October 2018, which addressed the conversion of four Aircraft Design Group (ADG) V gates in the MSC North concourse to dual-use gates that could each accommodate either one ADG V/VI aircraft or two ADG III aircraft. All of these project elements are included in Phase 1 of the MSC Program.

2. PREVIOUSLY APPROVED PROGRAM

2.1 LAX MASTER PLAN

The Los Angeles International Airport (LAX) Master Plan², approved by the City of Los Angeles City Council in December 2004, is the strategic framework for future development at LAX. The main components of the LAX Master Plan include the modernization of the runway and taxiway system, redevelopment of the terminal area, access improvements to LAX, and enhancement of passenger safety, security, and convenience. The LAX Master Plan was the subject of a joint Environmental Impact Statement (EIS) and EIR completed in January 2005.³ The City of Los Angeles City Council certified the Final EIR as complying with CEQA and the Federal Aviation Administration (FAA) issued a Record of Decision on the Final EIS in compliance with the National Environmental Policy Act (NEPA).

The approved LAX Master Plan includes the development of the “West Satellite Concourse”, which subsequent to the release of the Final EIR/EIS, was renamed the Midfield Satellite Concourse (MSC). The overall MSC Program, as documented in the LAX Master Plan, includes the following facilities:

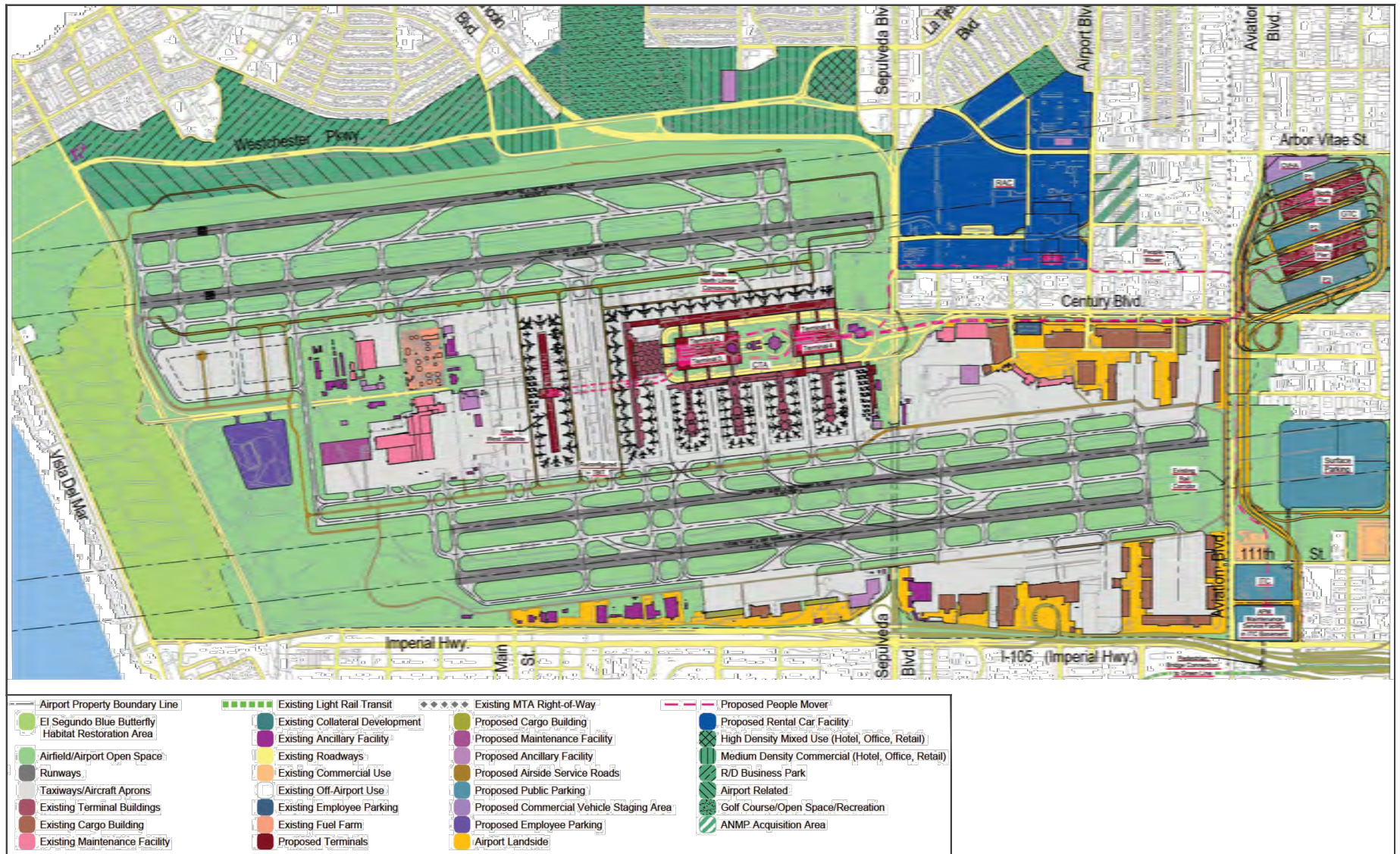
- A Midfield Satellite Concourse (MSC) west of the Tom Bradley International Terminal (TBIT);
- A Central Terminal Processor (CTP) in the Central Terminal Area (CTA);
- A connector/conveyance system between the MSC and the CTP; and
- Construction of new taxiways/taxilanes, apron areas, and utilities to service the MSC.

The main elements of the MSC Program, as described above, are identified on the airfield plan associated with the approved LAX Master Plan, Alternative D. **Figure 1** delineates the main components of the approved LAX Master Plan and shows a new concourse where one does not currently exist, labeled “New West Satellite,” and two crossfield taxiways immediately to the west side of this concourse. The MSC, referred to as the “West Satellite Concourse” in the LAX Master Plan and related EIS/EIR, are also noted in Sections 2.4 and 3.2.9 of the LAX Master Plan Final EIS/EIR and Sections 2.4 and 2.10 of the Final LAX Master Plan text, as presented below:

- Construct a new multi-level West Satellite Concourse west of the TBIT building in the area [formerly] occupied by the TWA, US Airways, and American Airlines aircraft maintenance hangars (Final LAX Master Plan page 2-123).
- A new 120-foot-wide by 1,900-foot-long West Satellite Concourse would be constructed west of the TBIT and would be accessed via an airside secure underground Automated People Mover (APM) from the CTA (LAX Master Plan Final EIR page 3-75)
- A new linear West Satellite Concourse would be constructed west of the TBIT and be accessed via an airside secure underground APM from the reconfigured CTA. The concourse would accommodate approximately 41 aircraft gates (Final LAX Master Plan page 2-85).

² City of Los Angeles, Los Angeles World Airports, *Taking Flight for a Better Future, Los Angeles International Airport Final Master Plan*, April 2004.

³ City of Los Angeles, Los Angeles World Airports *Final Environmental Impact Report, Los Angeles International Airport Proposed Master Plan Improvements*, April 2004; U.S. Department of Transportation, Federal Aviation Administration, *Environmental Impact Statement, Los Angeles International Airport Proposed Master Plan Improvements*, January 2005.



SOURCE: City of Los Angeles, Los Angeles World Airports Final Environmental Impact Report, Los Angeles International Airport Proposed Master Plan Improvements, April 2004; U.S. Department of Transportation, Federal Aviation Administration, Environmental Impact Statement, Los Angeles International Airport Proposed Master Plan Improvements, January 2005.

FIGURE 1



LAX MASTER PLAN ALTERNATIVE D

Drawing: P:\Project-Chicago\LA\WALAX MSC South\06 - Environmental\04 - AutoCAD\MSC SOUTH-Project Description Exhibits_20190719.dwg Layout: Fig 1 Plotted: Jul 19, 2019, 01:56PM

- Construct, light, and mark new midfield crossfield taxiways west of the new West Satellite Concourse. Build aircraft parking apron associated with satellite concourse. Relocated Taxiways Q and S that are located immediately to the west of the TBIT building (Final LAX Master Plan page 2-123).
- Construct an underground tunnel for Airside APM and baggage systems from the future West Satellite Concourse to the redeveloped CTA. Construction would be phased to coincide with apron and taxiway reconstruction (Final LAX Master Plan page 2-123).

The Los Angeles City Council certified the LAX Master Plan EIR and approved the LAX Master Plan on December 7, 2004. Under NEPA, the FAA issued a Record of Decision (ROD) on the LAX Master Plan EIS that included environmental approval of the construction and operation of the full MSC Program as depicted on the ALP.

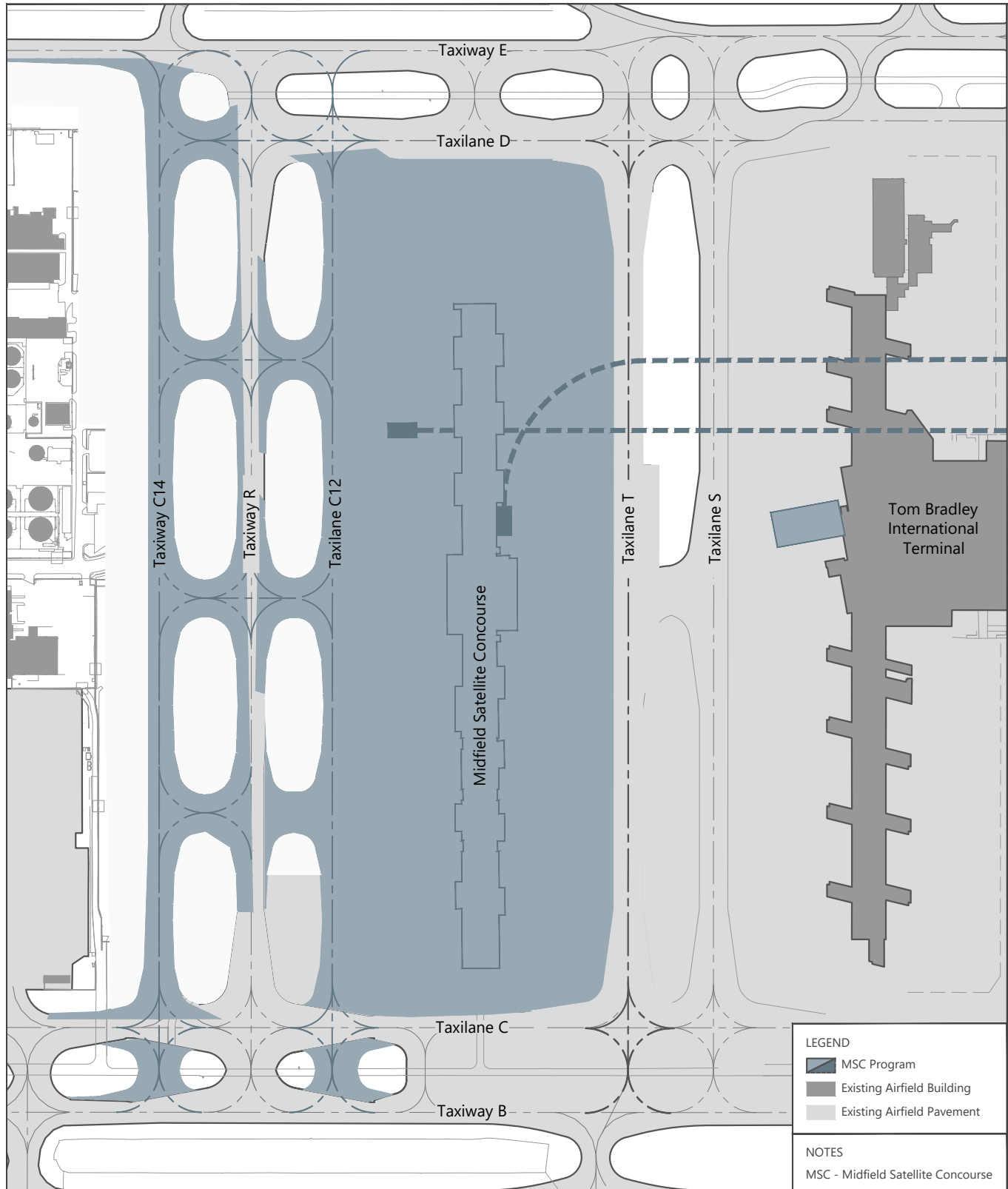
2.2 MIDFIELD SATELLITE CONCOURSE EIR

Subsequent to the certification of the LAX Master Plan Final EIS/EIR, the MSC Program was further refined. The MSC EIR⁴ consisted of a project-level environmental review of the MSC North Project and a programmatic-level environmental review of the future phase(s) of the MSC Program. More specifically, the MSC EIR focused on significant environmental effects of the MSC North Project that may not have been fully addressed in the LAX Master Plan Final EIS /EIR, as well as any updates to the MSC Program from that assessed in the LAX Master Plan Final EIS/EIR. The MSC Program, as analyzed in the MSC EIR certified by the BOAC in July 2014, consisted of a new multi-level concourse with conveyance systems connecting the MSC and the CTA as well as a new taxilane, taxiways, apron, and utilities required to serve the MSC. Components of the MSC Program as discussed in the MSC EIR and subsequent addenda are shown on **Figure 2**. Due to the size and scale of the MSC Program and immediate need to enable rehabilitation and modernization of existing facilities, LAWA is implementing the program in phases. Phase 1 of the MSC Program is referred to as the MSC North Project. The MSC North Project is currently under construction and includes the following components, as shown on **Figure 3**:

- MSC North concourse and apron. The MSC North concourse would have a footprint of approximately 258,000 square feet, with estimated dimensions of 1,648 feet in length (north-south) and 125 to 250 feet in width (east-west).⁵ The floor space of the MSC North concourse would consist of three to five levels and provide approximately 800,000 square feet for facilities such as passenger holdrooms, concessions, restrooms, airline lounges, utility rooms, and circulation. The MSC North concourse would have the ability to serve both international and domestic flights and provide 12 to 16 aircraft gates capable of accommodating ADG V and ADG VI aircraft down to ADG III aircraft. Four of the 12 gates at MSC North are dual-purpose gates that could each accommodate either one ADG V/VI aircraft or two ADG III aircraft, thus allowing up to 16 gates. The MSC North apron would extend from Taxiway D to the north, Taxilane C12 to the west, Taxilane T to the east, and a point just south of World Way West to the south.
- Construction of additional taxiways and taxilanes.
- Construction of approximately 2,900 linear feet of underground tunneling for baggage conveyance, utilities, and passengers from the MSC North concourse to the TBIT.

⁴ Los Angeles World Airports, *Final Environmental Impact Report, Midfield Satellite Concourse*, June 2014.

⁵ Gatehouses are 24 feet, making the concourse 168 feet wide in some areas. Additionally, the 'Core' of the MSC would have a width of approximately 250 feet.

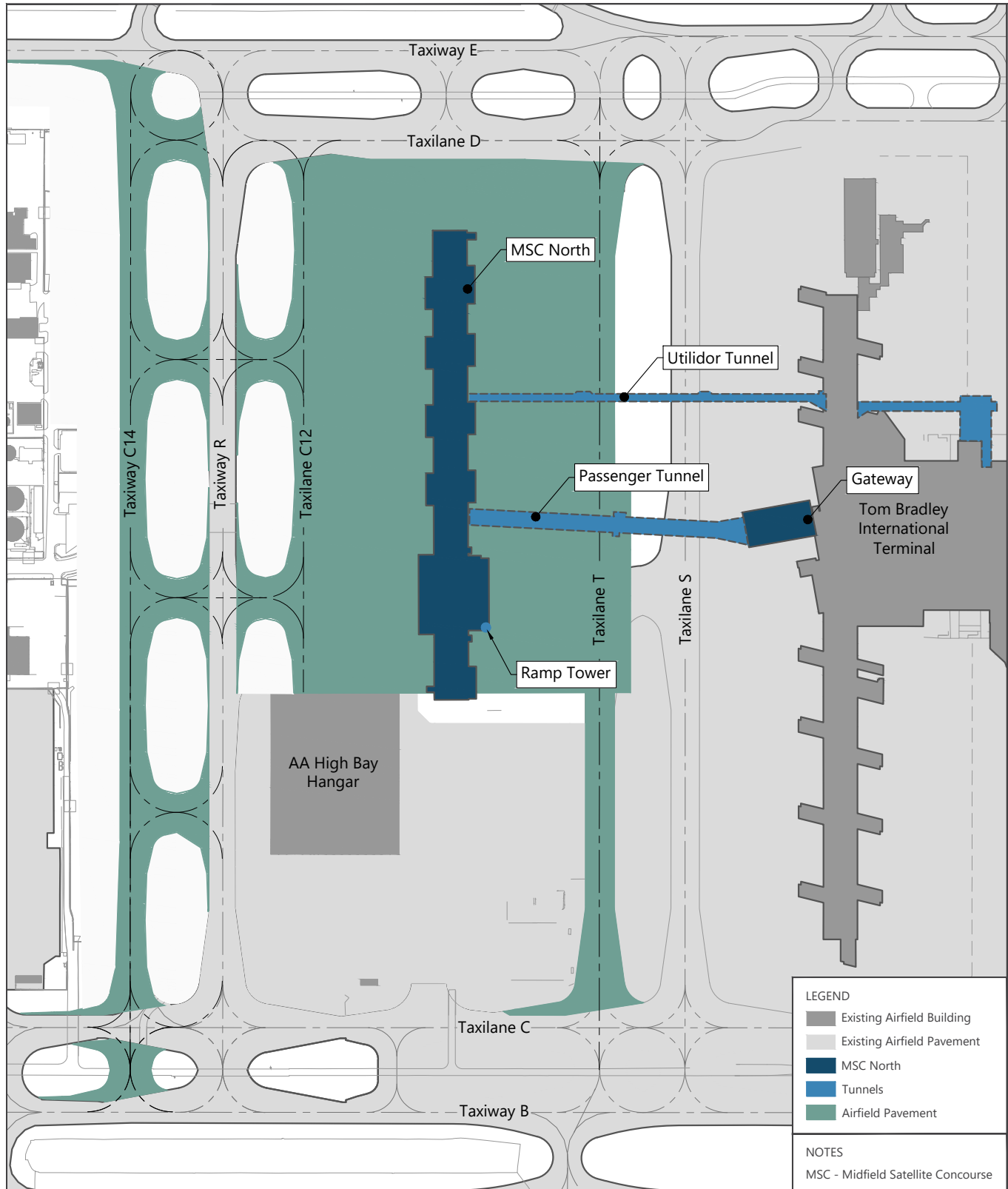


SOURCE: HNTB, Corp., Los Angeles International Draft ALP, July 2012; Ricondo & Associates, Inc., April 2019.

FIGURE 2



MSC PROGRAM IDENTIFIED IN THE MSC EIR



SOURCE: HNTB, Corp., Los Angeles International Draft ALP, July 2012; Ricondo & Associates, Inc., April 2019.

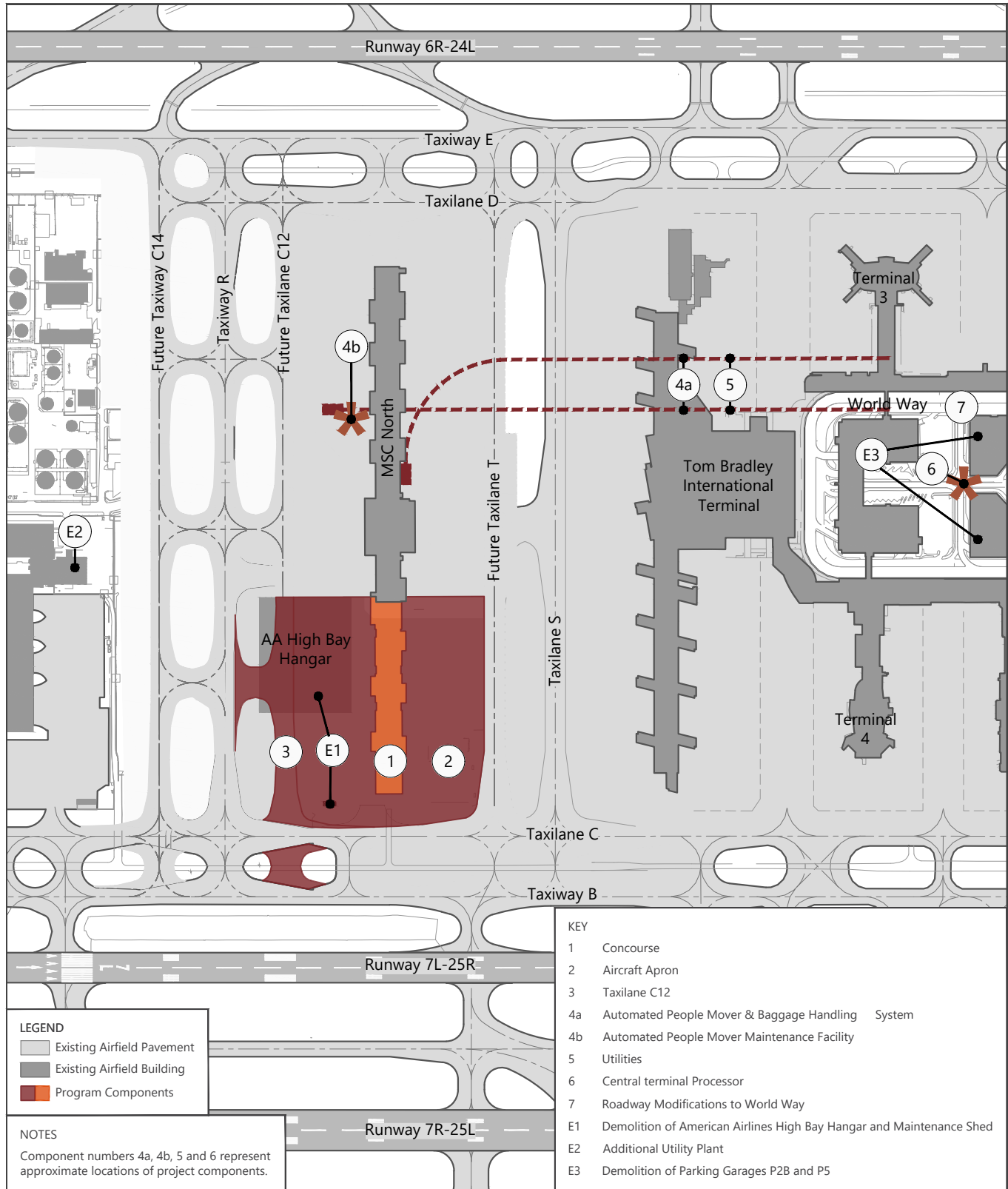


FIGURE 3
MSC NORTH
APPROVED PROJECT OVERVIEW

- Construction of a ramp tower, approximately 169 feet in height, to ensure that the LAX airport traffic control tower (ATCT) has a clear, unobstructed, and direct view of aircraft located on runways and taxiways in the vicinity of the MSC North Project. The ramp tower would be constructed on top of the MSC North concourse building.
- Construction of a three-level 'Gateway' building, including approximately 50,000 square feet of floor space, to facilitate passenger transition from TBIT to the underground walkway. The Gateway would provide Airline Club spaces on the concourse level.
- Relocation and/or removal of several existing airfield facilities located at the MSC North Project site.

The MSC Program components that are not part of the MSC North Project were identified in the MSC EIR as future phase(s) of the MSC Program. Components associated with the future phase(s) of the MSC Program, as described and analyzed in the MSC EIR, generally include: 1) the southerly extension of the MSC building and associated facilities; 2) extension of Taxilane C12; 3) utilities that support the future phase(s) of the MSC Program; and 4) a Central Terminal Processor (see **Figure 4**):

- Extension of the MSC North concourse: As previously proposed, the future phase(s) of the MSC Program would extend the MSC building south in one or more phases. The future phase(s) of the MSC Program was estimated to expand the MSC North building by a footprint of up to 160,000 square feet, with approximate dimensions of 1,000 feet in length (north-south) and between 140 feet and 160 feet in width (east-west), and the ability to serve both international and domestic flights and accommodate up to 18 gates for ADG III to ADG VI aircraft. The extension would include up to four levels and approximately 560,000 square feet of floor space for facilities such as passenger holdrooms, concessions, restrooms, airline lounges, utility rooms, and circulation.
- Central Terminal Processor (CTP). Construction of a dual level CTP in the CTA to provide (in part) MSC passenger processing facilities that cannot be fully accommodated in the existing CTA terminals. The CTP would process departing and arriving passengers from a facility that would be centrally positioned within the CTA where parking garages are currently located. The CTP would be constructed in the area where parking structures P2B and P5 are located and extend between World Way North and World Way South.
- Construction of a conveyance system to move passengers and baggage between the MSC and the CTP, and vice versa. The conveyance system for the future phase(s) of the MSC Program was planned for passenger and baggage circulation in both a sterile and secure/non-sterile format. A vertical circulation element and an airside APM were anticipated to convey checked-in passengers to the MSC. A maintenance facility to service the airside APM was also to have been constructed on Airport property.
- Utilities to accommodate the additional gates, the CTP, the automated people mover and baggage handling system, and facilities.
- Extension of Taxilane C12 south to connect to Taxilane C.
- Enabling projects, including:
 - Relocation and demolition of the American Airlines High Bay Hangar and American Airlines maintenance shed;
 - Additional utility plant; and
 - Relocation and demolition of parking garages P2B and P5.



Source: HNTB, Corp., Los Angeles International Draft ALP, July 2012; Ricondo & Associates, Inc., April 2019.

FIGURE 4

FUTURE PHASES OF THE MSC PROGRAM IDENTIFIED IN THE MSC EIR



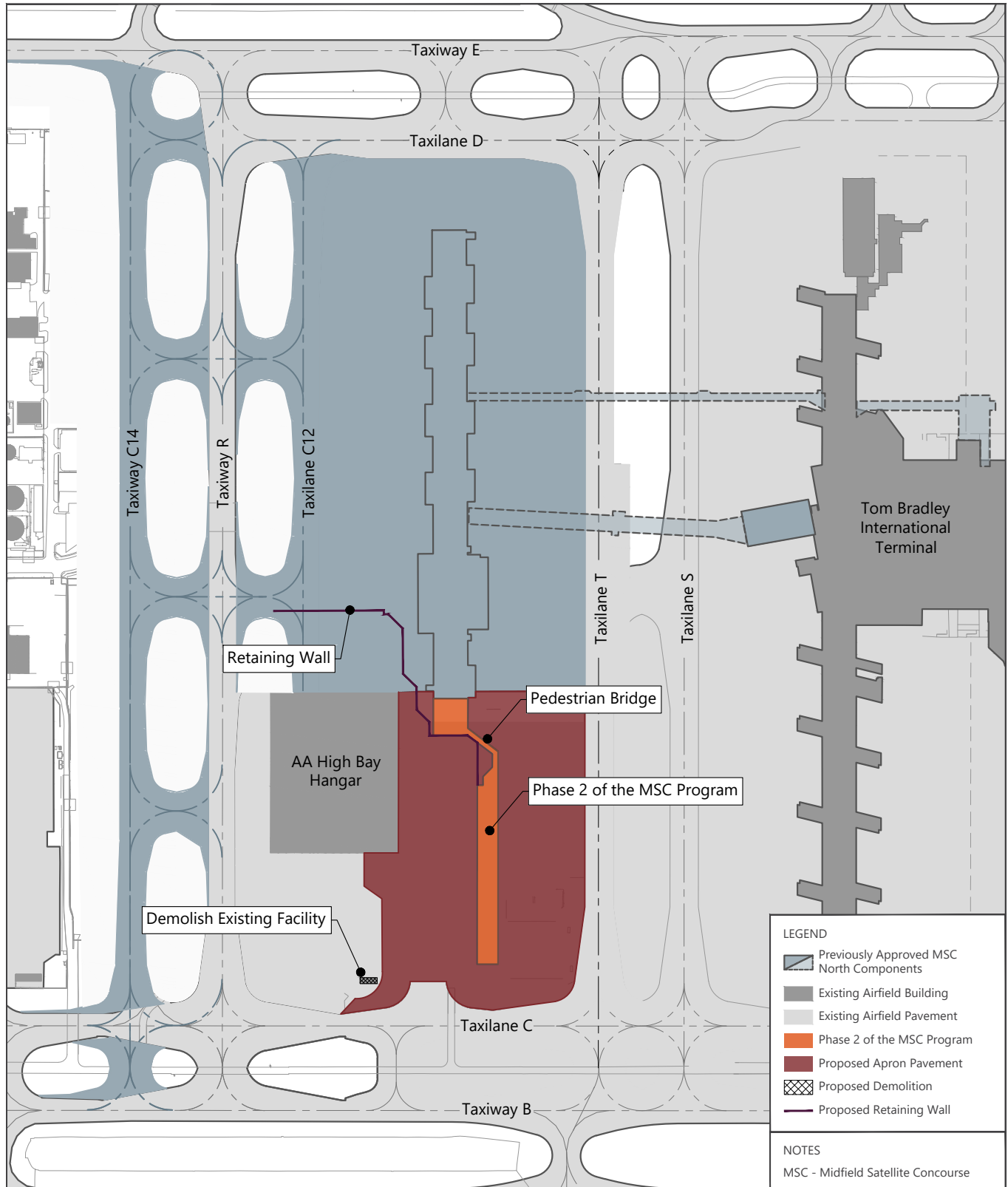
3. PROJECT DESCRIPTION

LAWA has now identified the next phase, Phase 2, of the MSC Program. Phase 2 of the MSC Program would consist of a two-story structure with approximately 100,000-120,000 square feet of floor space. The facility would have approximate dimensions of 700-800 feet in length (north-south) and approximately 70-80 feet in width (east-west), with the ability to serve domestic flights and accommodate up to 8 gates for ADG III aircraft. The facility would be located east of and adjacent to the full MSC Program building footprint approved in the MSC EIR and would be connected to the MSC North via an elevated pedestrian bridge. The original footprint for the MSC Program building would be preserved for additional future phase(s) of the MSC Program.

Phase 2 of the MSC Program would include construction of the following components, as shown on **Figure 5**:

- Connection to MSC North. The MSC North building would be extended to provide adequate space for aircraft operations at Gate 225A. The three-level extension would provide a total of approximately 45,000 square feet of floor space. The facility would have approximate dimensions of between 90 and 160 feet in length (north-south) and 120 feet in width (east-west). Phase 2 of the MSC Program would connect to this MSC North extension via a 20-foot wide elevated pedestrian bridge. Pedestrians would access Phase 2 of the MSC Program via a vertical circulation core at the north end of the facility.
- Apron pavement. Approximately 680,000 square feet of apron pavement on both the west and east sides of the concourse would be demolished and reconstructed.
- Hydrant fueling. A network of fueling hydrants and piping to provide fueling to each gate.
- Retaining wall. An approximate 125-foot long retaining wall to the west and south of MSC North.
- Demolition of the 1,500 square-foot American Airlines maintenance shed; and
- Utility connections, including extension of the existing sewer line.

Phase 2 of the MSC Program is consistent with the MSC EIR in that the building size, number of aircraft gates, and amount of aircraft apron demolition and reconstruction are less than that assumed in the MSC EIR. Additionally, the hydrant fueling, utility connections, and demolition of the 1,500 square-foot American Airlines maintenance shed were also identified and assessed as part of the future phase(s) of the MSC Program in the MSC EIR.



SOURCE: HNTB, Corp., Los Angeles International Draft ALP, July 2012; Ricondo & Associates, Inc., November 2018.

FIGURE 5



PHASE 2 OF THE MSC PROGRAM

3.1 OPERATIONAL CHARACTERISTICS

The overall objective of the MSC Program is to provide LAWA with the flexibility to accommodate existing demand for aircraft gates while modernizing other terminals, taxiway and apron pavement, and other facilities at LAX, and reduce reliance on the West Remote Gates/Pads. Consistent with the MSC EIR, the next phase of the MSC Program would operate as an “empty chair”, providing capacity for the temporary relocation of carrier operations during routine construction or modernization activities of existing facilities, and be supported by existing processing facilities.

The ability to accommodate ADG III aircraft at Phase 2 of the MSC Program is critical based on the characteristics of the commercial passenger fleet operating at LAX. According to published schedule information for the peak month of August 2018, approximately 77 percent of commercial passenger operations at LAX are ADG III aircraft operations. Phase 2 of the MSC Program would allow for eight ADG III gates that would alleviate any potential gate shortages during construction and modernization activities. It is anticipated that these gates could accommodate an average of 56 aircraft a day (7 turns per gate or 112 daily operations) providing facilities required to allow routine construction or modernization of existing facilities and reduce the reliance on the West Remote Gates/Pads.

Operational assumptions for Phase 2 of the MSC Program are further discussed in **Appendix A**.

3.2 CONSTRUCTION

Construction of the Phase 2 of the MSC Program is anticipated to occur over approximately 1.5-2.5 years; beginning in June 2020 and finishing by first quarter 2023. To the extent possible, construction laydown, staging areas, and employee contractor parking for the proposed facility would use the areas being used for MSC North construction activities, which will be substantially complete when construction of Phase 2 of the MSC Program begins. Construction haul routes to the proposed site would utilize Imperial Highway, Pershing Drive, and World Way West.

Assumptions regarding the schedule and the equipment and manpower estimates are provided in **Appendix B**.

4. CALIFORNIA ENVIRONMENTAL QUALITY ACT ANALYSIS

4.1 EVALUATION

To determine whether the environmental effects of Phase 2 of the MSC Program are within the scope of the MSC EIR, this evaluation considers whether the currently proposed phase would result in any new significant environmental effects that were not examined in the MSC EIR or any substantial increases in the severity of previously identified significant effects.

The certified MSC EIR (including the Notice of Preparation/Initial Study [NOP/IS] for the MSC EIR [refer to Appendix A of MSC EIR⁶]) determined that implementation of the future phase(s) of the MSC Program would have no impact impacts related to agricultural and forestry resources, mineral resources, or recreation. Similarly, Phase 2 of the MSC Program would not have any impacts related to agricultural and forestry resources, mineral resources, or recreation.

The certified MSC EIR (including the NOP/IS) determined that implementation of the future phase(s) of the MSC Program would have a less than significant impact, or a less than significant impact after mitigation, on aesthetics, biological resources, cultural resources, geology/soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation/traffic, and utilities and service systems. LAWA would incorporate all feasible mitigation measures identified for the future phase(s) of the MSC Program developed in the MSC EIR into Phase 2 of the MSC Program. With incorporation of these mitigation measures, Phase 2 of the MSC Program would have less than significant impacts on aesthetics, biological resources, cultural resources, geology/soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation/traffic, and utilities and service systems.

The certified MSC EIR determined that future phase(s) of the MSC Program would result in significant and unavoidable impacts with regard to air quality, greenhouse gas emissions, human health, and construction traffic. Phase 2 of the MSC Program would also affect air quality, greenhouse gas emissions, human health risk, and construction traffic, but would not result in any new significant impacts that were not examined in the MSC EIR or any substantial increases in the severity of previously identified effects, as discussed below.

4.1.1 AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND HUMAN HEALTH

4.1.1.1 CONSTRUCTION

As discussed in the MSC EIR, construction emissions for the MSC Program were analyzed in the LAX Master Plan Final EIR at a program level and were determined in the MSC EIR to not be substantively different from those identified in the LAX Master Plan Final EIR. The MSC EIR noted that a project-level environmental review would need to be initiated for any future phase(s) of the MSC Program once timing was determined. Now that the next phase, Phase 2, of the MSC Program has been identified, a project-level construction emissions inventory has been prepared.

The maximum daily emissions for Phase 2 of the MSC Program were calculated from a peak-month average day for each year of construction, based on the construction estimates and schedule included in **Appendix B**. The

⁶ Los Angeles World Airports, *Final Environmental Impact Report, Midfield Satellite Concourse*, June 2014, Appendix A.

maximum daily emission rates from Phase 2 of the MSC Program are shown in **Table 1**, as well as the South Coast Air Quality Management District (SCAQMD) CEQA construction emission thresholds for criteria pollutants, including: carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic compounds (VOCs), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), and particulate matter with a diameter less than or equal to 2.5 micrometers (PM_{2.5}). For comparison purposes, maximum daily mitigated construction emissions for Alternative D, as disclosed in the LAX Master Plan Final EIR, and the maximum daily construction emissions for the MSC North Project, are also shown in Table 1. Information regarding assumptions and methodologies are included in **Appendix C**.

TABLE 1 MAXIMUM CONSTRUCTION EMISSIONS (LBS/DAY)

POLLUTANT	ALTERNATIVE D (FROM LAX MASTER PLAN FINAL EIR)	MSC NORTH PROJECT (FROM MSC EIR)	PHASE 2 OF THE MSC PROGRAM	SCAQMD THRESHOLD	NEW SIGNIFICANT IMPACT OR SUBSTANTIAL INCREASE IN SEVERITY
CO	5,476	1,235	33	550	No
VOC	847	118	10	75	No
NO _x	11,203	1,156	94	100	No
SO ₂	33	4	0	150	No
PM ₁₀	3,265	308	17	150	No
PM _{2.5}	N/A	105	5	55	No

NOTE:

N/A = not available

SOURCES: City of Los Angeles, Los Angeles World Airports *Final Environmental Impact Report, Los Angeles International Airport Proposed Master Plan Improvements*, April 2004; U.S. Department of Transportation, Federal Aviation Administration, *Environmental Impact Statement, Los Angeles International Airport Proposed Master Plan Improvements*, January 2005; City of Los Angeles, Los Angeles World Airports (LAWA), *Final Environmental Impact Report, Los Angeles International Airport (LAX) Midfield Satellite Concourse (MSC)*, June 2014; South Coast Air Quality Management District, "SCAQMD Air Quality Significance Thresholds," March 2015. Available at: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>; Ricondo & Associates Inc., March 2019.

As discussed in Section 2.1, the main components of the MSC Program were identified and analyzed in the LAX Master Plan EIR. As shown in Table 1, construction emissions of Phase 2 of the MSC Program are less than two percent of the maximum daily emissions reported in the LAX Master Plan EIR and are all below the SCAQMD thresholds for all pollutants, with incorporation of construction-related mitigation and control measures as identified in the MSC EIR. The MSC EIR identified one project-specific Mitigation Measure, MM-AQ (MSC)-1 – Preferential Use of Renewable Diesel Fuel, to address construction-related emissions associated with the approved MSC North Project. Additionally, as part of the LAX Master Plan, LAWA adopted four control measures designed to address air quality impacts related to implementation of the LAX Master Plan. All four of these control measures were incorporated into the MSC EIR: LAX-AQ-1 – General Air Quality Control Measures; LAX-AQ-2 – Construction-Related Measures; LAX-AQ-3 – Transportation-Related Mitigation Measures; and LAX-AQ-4 – Operations-Related Control Measures. All of these mitigation measures would be applied to the construction of Phase 2 of the MSC Program. No additional mitigation measures would be required for Phase 2 of the MSC Program. Therefore, construction-related criteria pollutant emissions of Phase 2 of the MSC Program would not be a new significant impact or a substantial increase in severity of a significant effect previously examined in the MSC EIR.

Construction of Phase 2 of the MSC Program would also result in greenhouse gas emissions. Based on the same assumptions and methodologies used for criteria pollutants, it is estimated that amortized construction of Phase 2

of the MSC Program would result in approximately 90 metric tons of CO₂ equivalent (MTCO_{2e}).⁷ As shown in Table 4.2-15 of the MSC EIR, amortized construction greenhouse gas emissions for the future phase(s) of the MSC Program were estimated at approximately 10,000 MTCO_{2e}. Therefore, greenhouse gas emissions for Phase 2 of the MSC Program are consistent with the analysis presented in the MSC EIR.

Construction of Phase 2 of the MSC Program may also result in the release of toxic air contaminants (TAC) that can pose a risk to human health, including health risks to on-Airport workers, cancer risks and chronic non-cancer hazards, and acute non-cancer hazard risks. As discussed in the MSC EIR, construction of the MSC North Project would not result in significant construction-related impacts related to human health. Based on the comparison of construction emissions shown in Table 1 for the MSC North Project and Phase 2 of the MSC Program, construction emissions for Phase 2 of the MSC Program are consistent with the analysis presented in the MSC EIR. Because Phase 2 of the MSC Program would not exceed applicable standards, health impacts would be avoided. Therefore, impacts related to human health would not be a new significant impact or a substantial increase in severity of a significant effect previously examined in the MSC EIR.

4.1.1.2 OPERATIONS

The MSC EIR analyzed operational emissions, for both criteria pollutants and greenhouse gases, from the future phase(s) of the MSC Program at a programmatic level for on-airport emissions, including those from aircraft, Ground Support Equipment (GSE), and Auxiliary Power Unit (APU) operations, on-airport roadways, and stationary sources. As shown in Tables 4.1-37 through 4.1-42 of the MSC EIR, project-related incremental criteria pollutant emissions for operations for the future phase(s) of the MSC Program were shown to be either zero or negative when comparing the future with and without MSC Program, with the exception of stationary source emissions.⁸ As shown in Tables 4.2-14 and 4.2-15 of the MSC EIR, greenhouse gas emissions for the future phase(s) of the MSC Program would exceed the significance threshold and would result in a significant impact with regard to greenhouse gas emissions. However, the MSC EIR noted that a project-level environmental review would need to be initiated for any future phase(s) of the MSC Program once timing was determined. Now that the next phase, Phase 2, of the MSC Program has been identified, emissions from the MSC EIR have been evaluated for changes due to the proposed project.

Phase 2 of the MSC Program would not increase operations at LAX, but would provide LAWA with the flexibility to accommodate existing demand for aircraft gates while modernizing other terminals, taxiway and apron pavement, and other facilities at LAX, and reduce reliance on the West Remote Gates/Pads. . As discussed in Appendix A, Phase 2 of the MSC Program would operate as an "empty chair", providing capacity for the temporary relocation of carrier operations during routine construction or modernization activities of existing facilities, and be supported by existing processing facilities. As such, use of Phase 2 of the MSC Program, including airlines and flight schedule, is currently unknown. However, by shifting operations from existing facilities to the next phase of the MSC Program, taxi routes and associated taxi distances/times would fluctuate based on the location of the construction or modernization activities. Potential changes in taxi distances are documented in Appendix A. Taxi routes and associated taxi distances/times directly correlate to operational aircraft emissions (including greenhouse gases and human health). However, based on the assumptions and methodology in Appendix A, changes in taxi distances to/from Phase 2 of

⁷ In accordance with SCAQMD guidance, GHG emissions from construction have been amortized over the 30-year lifetime of the proposed project to enable comparison to the SCAQMD and LA CEQA thresholds of significance (i.e., total construction GHG emissions were divided by 30 to determine an annual construction emissions estimate comparable to operational emissions).

⁸ Emissions from stationary sources would increase with the future phase(s) of the MSC Program on a lbs/day basis; however, emissions were substantially below the SCAQMD thresholds for all pollutants.

the MSC Program as compared to other existing facilities would, on average, be similar to or less than the resulting taxi distances/times if Phase 2 of the MSC Program was not implemented. Therefore, based on the analysis in Appendix A, it is assumed that taxi distances/times at the Airport would not significantly change from what was previously evaluated in the MSC EIR, and Phase 2 of the MSC Program would not result in a significant increase in operational aircraft emissions, including greenhouse gases. However, as Phase 2 of the MSC Program would reduce the use of the West Remote Gates/Pads, aircraft movements in the center of the airfield would increase. This increase, as discussed in the MSC EIR, causes incremental exceedances of 1-hour acrolein acute hazard indices at receptors on the north and south fence-lines of LAX for the MSC North Project: similar results are expected for Phase 2 of the MSC Program consistent with the analysis presented in the MSC EIR. Therefore, it is expected that Phase 2 of the MSC Program would have significant impacts to acute non-cancer health hazard impacts, as previously identified in the MSC EIR.

As noted in the MSC EIR, the acute Reference Exposure Level (REL) for acrolein has an uncertainty factor of 60.9. This factor indicates a moderate uncertainty in the REL based on specific sources of variability not addressed in the toxicological studies, such as individual variation and interspecies differences. Although the maximum acute hazard quotients for acrolein during operations of the proposed MSC is greater than 1, it should be noted that the acute REL is set at or below a level at which no adverse health impacts are expected for the majority of the population. Hence, it represents the tail-end of a distribution and not a specific "bright line" beyond which adverse effects are certain; instead any adverse acute non-cancer health effects (mucous membrane irritation) would be part of a complex probabilistic process. Although the maximum acute hazard quotient estimated as 1.9 is above the threshold of significance of 1, the value is still close to the threshold for acute effects, given the uncertainty in the toxicity factor, and may represent minimal actual acute non-cancer health hazards. Thus, an acute hazard quotient of 1.9 does not mean that adverse effects would definitely occur in the receptor population; rather, it indicates that such effects cannot be ruled out on the basis of current knowledge.

Phase 2 of the MSC Program would not result in any change to traffic distribution (passenger pick-up or drop-off) within the CTA; therefore, emissions from on-airport roadways would be consistent with those identified in the MSC EIR. Furthermore, emissions from stationary sources as part of Phase 2 of the MSC Program are accounted for in the MSC EIR. The MSC EIR assumed up to 560,000 square feet of floor space for the future phase(s) of the MSC Program and Phase 2 of the MSC Program would be only approximately 100,000 square feet, less than 20 percent of the floor space analyzed. However, the MSC EIR assumed that passengers would access the future phase(s) of the MSC Program via an APM. Although a passenger walkway between TBIT and the MSC is being constructed as part of MSC North, the APM is not scheduled to be operational before construction of Phase 2 of the MSC Program. Conservatively, it is assumed that busing operations as planned under the MSC North Project would expand to the southern gates and continue through Phase 2 of the MSC Program.

For comparison to busing emissions identified in the MSC EIR, it is assumed that busing operations under Phase 2 of the MSC Program would be double the busing emissions assumed for the MSC North Project. Incremental peak operational emissions for the future phase(s) of the MSC Program, as identified in the MSC EIR, and for the projected busing emissions are shown in **Table 2**. As discussed in Section 4.1.9 of the MSC EIR, operations of the future phase(s) of the MSC Program would not exceed the SCAQMD significance thresholds for CO, VOC, NO_x, SO₂, PM₁₀, and PM_{2.5}. As shown in Table 2, the additional emissions associated with busing operations, when added to the total incremental emissions from the MSC EIR, would be consistent with the analyses presented in the MSC EIR.

⁹ California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, [Air Toxics Hot Spots Program Technical Support Document for the Derivation of Noncancer Reference Exposure Levels](#), December 2008.

While the emissions shown in Table 2 are specific to criteria pollutants, changes to greenhouse gas emissions and human health risk from the increased busing operations are similarly negligible and would also be consistent with the analyses presented in the MSC EIR.

TABLE 2 INCREMENTAL OPERATIONAL EMISSIONS (LBS/DAY)

POLLUTANT	MSC PROGRAM INCREMENTAL CHANGE ¹ (FROM MSC EIR)	PROJECTED BUSING EMISSIONS ²	TOTAL INCREMENTAL CHANGE	SCAQMD THRESHOLD	NEW SIGNIFICANT IMPACT OR SUBSTANTIAL INCREASE IN SEVERITY
CO	-91	1.0	-92	550	No
VOC	24	0.0	24	75	No
NO _x	-32	13.0	-19	100	No
SO ₂	-5.1	0.0	-5.1	150	No
PM ₁₀	-1.1	0.0	-1.1	150	No
PM _{2.5}	-1.1	0.0	-1.1	55	No

NOTES:

- As identified in the EIR, in accordance with the South Coast Air Quality Management District's *Air Quality Handbook*, a significant air quality impact would occur if the incremental increase in operations-related emissions attributable to a proposed project would be greater than the daily emission thresholds. EIR incremental change is the change between the proposed future phase(s) of the MSC Program operational emissions and the No Project operational emissions for 2025.
- For purposes of this analysis, it is assumed that busing operations under the next phase of the MSC Program would be double the busing emissions assumed for the MSC North Project.

SOURCE: City of Los Angeles, Los Angeles World Airports (LAWA), *Final Environmental Impact Report, Los Angeles International Airport (LAX) Midfield Satellite Concourse (MSC)*, June 2014; South Coast Air Quality Management District, "SCAQMD Air Quality Significance Thresholds," March 2015. Available at: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>; Ricondo & Associates Inc., March 2019.

4.1.2 CONSTRUCTION TRAFFIC

Implementation of the future phase(s) of the MSC Program would generate vehicle traffic associated with workers traveling to and from the construction employee parking areas, haul/delivery trips, and miscellaneous construction-related travel. These trips could result in traffic impacts on the local roadway system during the construction period. As discussed in the MSC EIR, construction trips for the MSC Program were analyzed in the LAX Master Plan Final EIR at a program level and were determined in the MSC EIR to not be substantively different from that assumed in the LAX Master Plan Final EIR. Now that the next phase, Phase 2, of the MSC Program has been identified, a project-level qualitative construction traffic analysis has been prepared.

Project-generated traffic, including employee and materials hauling/delivery trips, for Phase 2 of the MSC Program were calculated based on the construction estimates and schedule included in Appendix B. **Table 3** identifies the peak-month average construction day activity for construction trips by hour. All trips are calculated in terms of Passenger Car Equivalents (PCE). The PCE is 1.0 for employee vehicles and 2.5 for haul/delivery trucks. Additional assumptions used in the analysis are presented in **Appendix D**.

Consistent with LAX Master Plan Commitment ST-14 (Construction Employee Shift Hours), with which Phase 2 of the MSC Program would comply, employees are assumed to be on-site prior to the a.m. commuter peak period of 7:00 a.m. to 9:00 a.m. and off-site prior to the p.m. commuter peak period of 4:30 p.m. to 6:30 p.m. It was conservatively assumed for this analysis that haul/delivery trucks would be operating consistently throughout the day, including during the a.m. and p.m. commuter peak period; therefore, the only construction-related vehicles conservatively assumed in the analysis are haul/delivery trucks. Consistent with the MSC EIR, haul/delivery truck

trips are limited to accessing the construction staging area via Imperial Highway and Pershing Drive in accordance with LAX Master Plan Commitment ST-22 (Designated Truck Routes), which stipulates that deliveries for dirt, aggregate, and other materials will use designated freeways and non-residential streets.

For purposes of this analysis, the 10 additional PCE haul/delivery truck trips were added to the baseline 2018 traffic volumes (shown below in **Table 4**) to assess the percent traffic increase caused by construction-related trips for Phase 2 of the MSC Program. It was estimated that the intersections along the designated construction hauling routes, including Imperial Highway/Main Street and Imperial Highway/Pershing Drive, are operating at a level of service (LOS) C or better under future baseline conditions. Based on this LOS and City of Los Angeles Department of Transportation (LADOT) criteria, a significant impact would occur if the project-related increase to traffic is four percent or greater. However, the 10 additional PCE haul/delivery truck trips account for less than two percent of the total traffic in the westbound through and eastbound through movements of Imperial Highway and Main Street. Similarly, the additional construction-related trips account for less than two percent of the total traffic in the westbound right and southbound left movements of Imperial Highway and Pershing Drive. As such, the construction trips related to Phase 2 of the MSC Program would be consistent with the analyses presented in the MSC EIR.

TABLE 3 PEAK CONSTRUCTION TRIPS (PCE)

HOUR	EMPLOYEE VEHICLES (IN)	EMPLOYEE VEHICLES (OUT)	HAUL/DELIVERY TRUCKS (IN)	HAUL/DELIVERY TRUCKS (OUT)	TOTAL VEHICLE TRIPS
0:00 – 1:00	-	-	-	-	-
1:00 – 2:00	-	-	-	-	-
2:00 – 3:00	-	-	-	-	-
3:00 – 4:00	-	-	-	-	-
4:00 – 5:00	50	-	-	-	50
5:00 – 6:00	-	-	13	13	26
6:00 – 7:00	-	-	13	13	26
7:00 – 8:00	-	-	10	10	20
8:00 – 9:00	-	-	10	10	20
9:00 – 10:00	-	-	10	10	20
10:00 – 11:00	-	-	10	10	20
11:00 – 12:00	-	-	10	10	20
12:00 – 13:00	-	-	10	10	20
13:00 – 14:00	-	-	10	10	20
14:00 – 15:00	-	-	10	10	20
15:00 – 16:00	-	50	10	10	20
16:00 – 17:00	-	-	10	10	20
17:00 – 18:00	-	-	-	-	-
18:00 – 19:00	-	-	-	-	-
19:00 – 20:00	-	-	-	-	-
20:00 – 21:00	-	-	-	-	-
21:00 – 22:00	-	-	-	-	-
22:00 – 23:00	-	-	-	-	-
23:00 – 24:00	-	-	-	-	-
DAILY TOTAL	50	50	126	126	352

NOTES:

All trips are calculated in terms of Passenger Car Equivalents (PCE). The PCE for employee vehicles is 1.0 and 2.5 for haul/delivery trucks.

The a.m. commuter peak period is identified as 7:00 a.m. to 9:00 a.m., while the p.m. commuter peak period is identified as 4:30 p.m. to 6:30 p.m.

SOURCE: Ricondo & Associates, Inc., February 2019.

TABLE 4 CONSTRUCTION TRAFFIC ANALYSIS

INTERSECTION	PEAK HOUR	INTERSECTION MOVEMENT	BASELINE VOLUME	ADDITIONAL PCE TRIPS	TOTAL VOLUME	PERCENT INCREASE
Imperial Highway/Main Street	AM	Westbound Through	1,429	10	1,439	0.7%
Imperial Highway/Main Street	PM	Westbound Through	810	10	820	1.2%
Imperial Highway/Main Street	AM	Eastbound Through	920	10	930	1.1%
Imperial Highway/Main Street	PM	Eastbound Through	1,156	10	1,166	0.9%
Imperial Highway/Pershing Drive	AM	Westbound Right	1,497	10	1,507	0.7%
Imperial Highway/Pershing Drive	PM	Westbound Right	619	10	629	1.6%
Imperial Highway/Pershing Drive	AM	Southbound Left	799	10	809	1.3%
Imperial Highway/Pershing Drive	PM	Southbound Left	991	10	1,001	1.0%

NOTES:

PCE=Passenger Car Equivalents

The a.m. commuter peak period is identified as 7:00 a.m. to 9:00 a.m., while the p.m. commuter peak period is identified as 4:30 p.m. to 6:30 p.m.

SOURCE: Ricondo and Associates, Inc., June 2019.

Consistent with the MSC EIR, this analysis incorporates traffic-related mitigation and control measures as previously identified in the MSC EIR. The MSC EIR identified 13 applicable LAX Master Plan commitments and mitigation measures to address traffic impacts, including:

- C-1. Establishment of a Ground Transportation/Construction Coordination Office.
- C-2. Construction Personnel Airport Orientation.
- ST-9. Construction Deliveries.
- ST-12. Designated Truck Delivery Hours.
- ST-14. Construction Employee Shift Hours.
- ST-16. Designated Haul Routes.
- ST-17. Maintenance of Haul Routes.
- ST-18. Construction Traffic Management Plan.
- ST-22. Designated Truck Routes.

These commitments and mitigation measures would be implemented during construction of Phase 2 of the MSC Program, as applicable, in a manner consistent with those suggested in the MSC EIR. No additional mitigation measures would be required for Phase 2 of the MSC Program.

4.2 RECOMMENDED DOCUMENTATION

Public Resources Code Section 21083 and Section 15168 of the State CEQA Guidelines identifies the circumstances that necessitate whether additional environmental documentation must be prepared after a program EIR has been adopted for a project. The State CEQA Guidelines state that:

- (c) Use with Later Activities. Later activities in the program must be examined in light of the program EIR to determine whether an additional environmental document must be prepared.

- (1) If a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration. That later analysis may tier from the program EIR as provided in Section 15152.
- (2) If the agency finds that pursuant to Section 15162, no subsequent EIR would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required. Whether a later activity is within the scope of a program EIR is a factual question that the lead agency determines based on substantial evidence in the record. Factors that an agency may consider in making that determination include, but are not limited to, consistency of the later activity with the type of allowable land use, overall planned density and building intensity, geographic area analyzed for environmental impacts, and covered infrastructure, as described in the program EIR.
- (3) An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into later activities in the program.
- (4) Where the later activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were within the scope of the program EIR.
- (5) A program EIR will be most helpful in dealing with later activities if it provides a description of planned activities that would implement the program and deals with the effects of the program as specifically and comprehensively as possible. With a good and detailed project description and analysis of the program, many later activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required.

Based on the evaluation of environmental impacts in Section 4.1, Phase 2 of the MSC Program would not trigger any of the conditions described in Public Resources Code Section 21166 and State CEQA Guidelines Section 15162 requiring preparation of a subsequent EIR. When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

- (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) New information of substantial importance, which was not known and could not have been known, with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or Negative Declaration;

- (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;*
- (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*
- (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*

Pursuant to Section 15168 of the State CEQA Guidelines, Phase 2 of the MSC Program would not result in any effects that were not examined in the MSC EIR; anticipated effects of construction and implementation of Phase 2 of the MSC Program are consistent with the analyses presented in the MSC EIR. Additionally, the scope of Phase 2 of the MSC Program is consistent with the future phase(s) of the MSC Program identified and analyzed in the MSC EIR. Finally, all feasible mitigation measures identified in the MSC EIR will be applied and incorporated into Phase 2 of the MSC Program. Therefore, as Phase 2 of the MSC Program is consistent with the assumptions and environmental effects identified in the MSC EIR for the future phase(s) of the MSC Program, no new environmental documentation is required.

EXHIBIT

7

LAX NASIP Technical Analyses

Status Update

PRESENTED TO:
NASIP Steering Committee

PRESENTED BY:
Ricondo

PRESENTED ON:
Tuesday, June 5, 2018

Agenda

- Aircraft Delays
- Landside Roadway Concepts
- Concourse 0 and Terminal 9 Status
- Next Steps

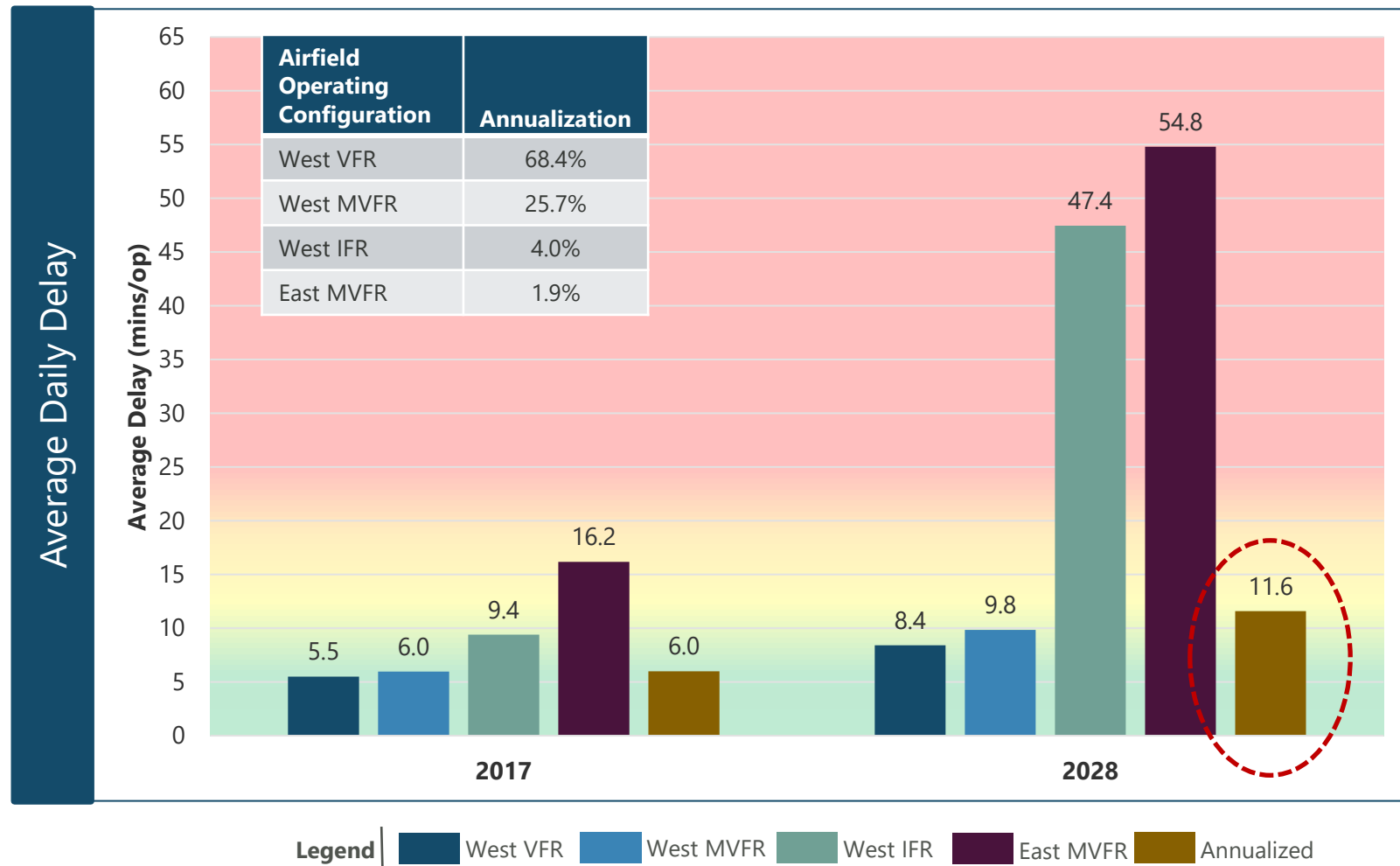
Aircraft Delays

Airfield Demand/Capacity Analysis

- 2017 Baseline Completed
 - Existing airfield with Taxiway C14 and MSC-N
- 2028 No Project Completed
 - Same airfield as 2017 Baseline
- 2017 and 2028 With Project (Airfield Only) Completed
 - Runway 6L-24R Exit Improvements
 - Westward Extension of Taxiway D
- 2028 With Project (Airfield and Terminal) Sensitivity Testing
 - Concourse 0 and Terminal 9 analyzed independently (completed)
 - Both scenarios show slight reduction in delay
 - Concourse 0 and Terminal 9 combined are currently being evaluated

2017 Baseline and 2028 No Project

Average Daily Delay Summary

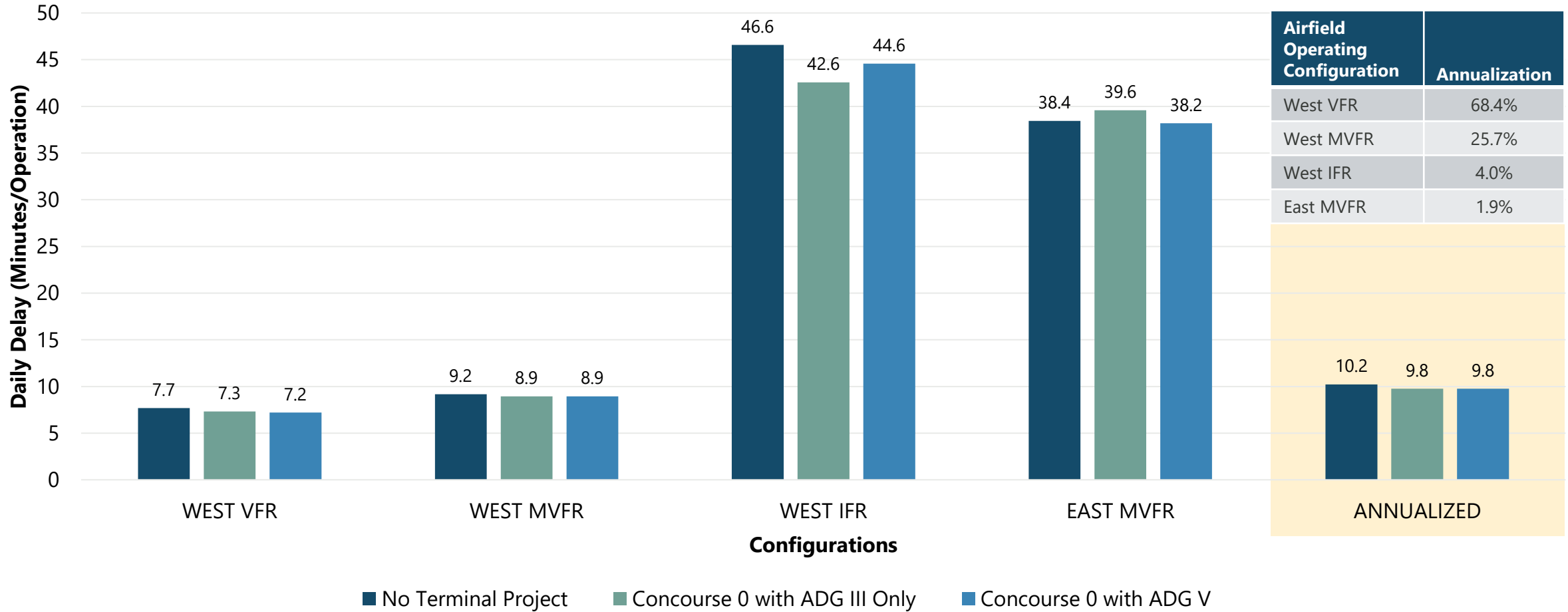


- West VFR and West MVFR configurations perform with **less than 10 minutes** of delay per operation at 2028 activity level
- The less efficient configurations, East MVFR and West IFR, experience significant levels of congestion at 2028 activity level

Source: SIMMOD output, March 2018.

Concourse 0 Sensitivity Testing – 2028

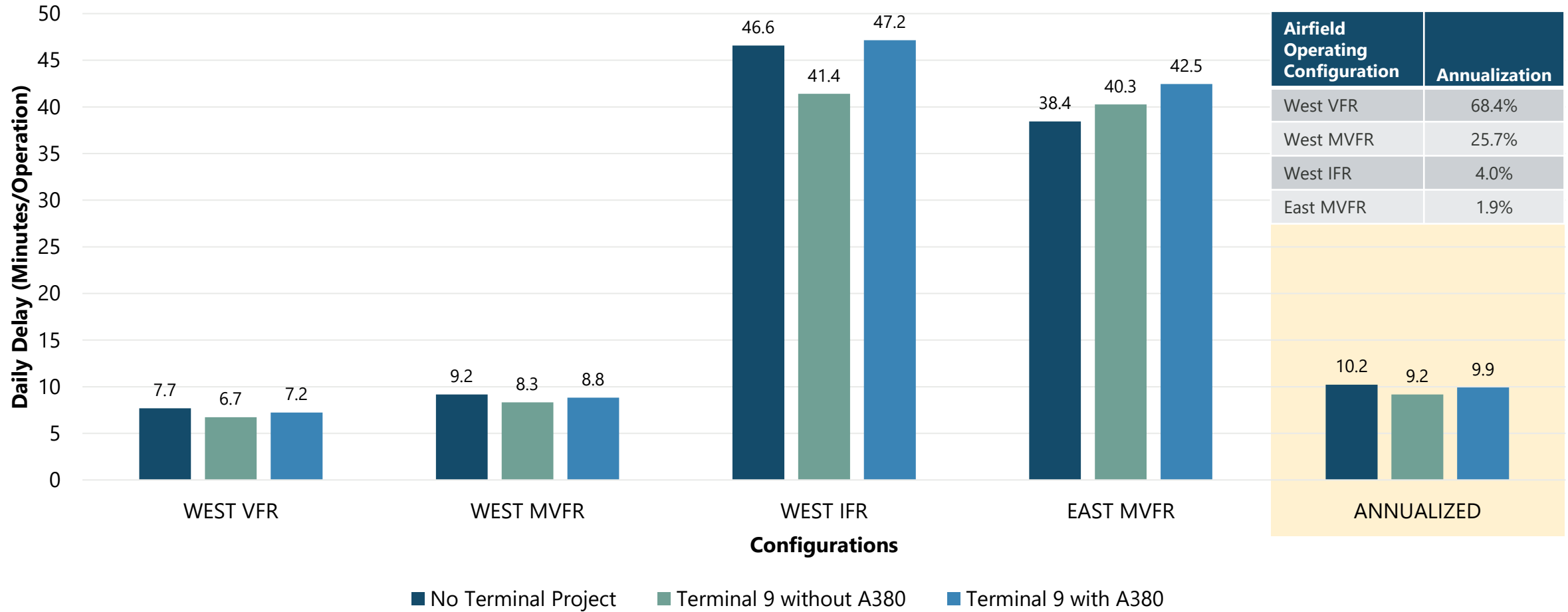
Average Daily Delay Summary



NOTE: All models used for the Concourse 0 sensitivity tests do not include gate reconfiguration at Terminals 5 and 6.
 SOURCE: SIMMOD output, May 2018.

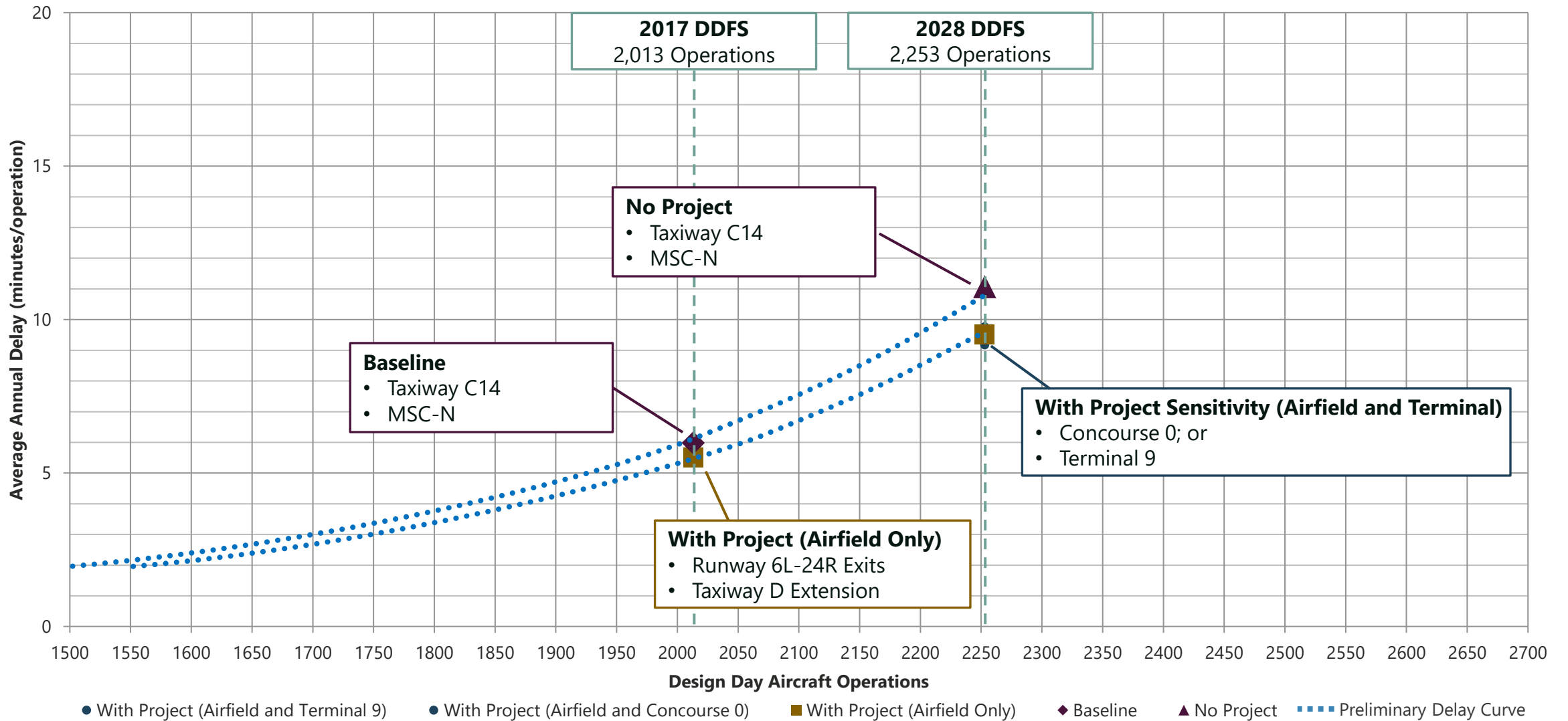
Terminal 9 Sensitivity Testing – 2028

Average Daily Delay Summary



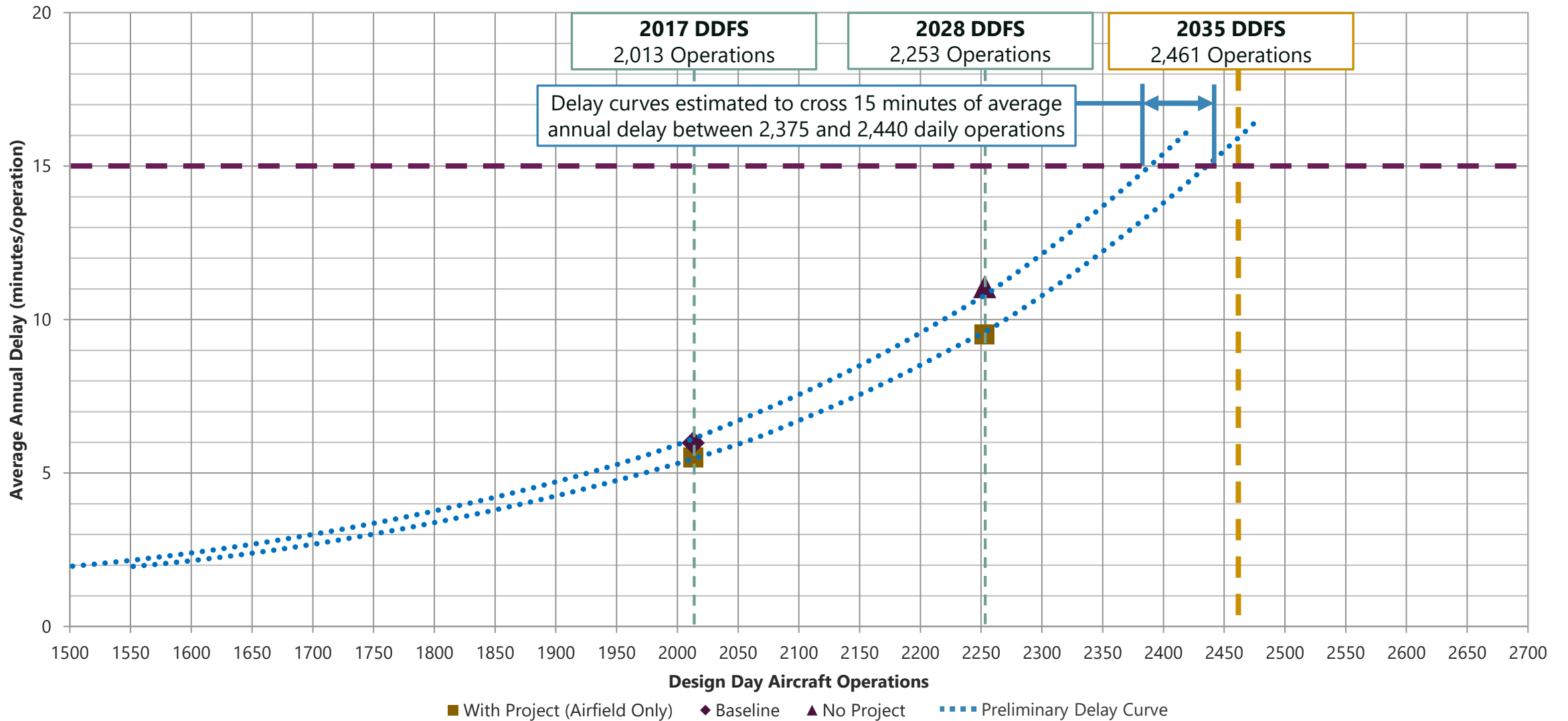
NOTE: All models used for the Terminal 9 sensitivity tests do not include gate reconfiguration at Terminals 5 and 6.
 SOURCE: SIMMOD output, May 2018.

Simulation Delay Summary



SOURCES: Simmod output, October 2017 (preliminary delay curve shape); Simmod Output, May 2018 (Baseline, No Project, and With Project delay)

Simulation Delay Curve Estimate - Post 2028



SOURCES: Simmod output, October 2017 (preliminary delay curve shape); Simmod Output, May 2018 (Baseline, No Project, and With Project delay)

Leading into Demand Management

- FAA does not have a threshold of delay to declare an airport an IATA Level 2 or Level 3 congestion airport
 - Level 1: Non-coordinated/non-facilitated (capacity is sufficient to meet demand)
 - Level 2: Facilitated (demand is approaching one or more capacity constraints)
 - Level 3: Coordinated/Slot Controls (demand regularly exceeds capacity)
- FAA evaluates an airport based on its unique conditions
- An airport, airline(s) or FAA can request Level 2 or Level 3 designation

NOTE: 1/ 82 FR 45938 - Notice of Submission Deadline for Schedule Information for Chicago O'Hare International Airport, John F. Kennedy International Airport, Los Angeles International Airport, Newark Liberty International Airport, and San Francisco International Airport for the Summer 2018 Scheduling Season.

Case Study: FAA Declares LAX as Level 2

- March 6, 2015: FAA announced the designation of LAX as a Level 2 airport under IATA WSG effective June 28, 2015 due to capacity constraints caused by runway construction between 2015 and 2018.
- FAA evaluated the potential delay due to runway closures using historical demand levels:

FAA Analysis: Delay for Demand Period between 6:00 a.m. and 11:59 p.m. /¹

Runway 25L Closure	Arrival Delay	Departure Delay
March 2015 Demand-March Historic Capacity	4.9	4.7
March 2015 Demand-March Construction Capacity	12.7	26.3

– Described as “moderate delays” by FAA ^{2/}

Runway 24R Closure	Arrival Delay	Departure Delay
July/August 2015 Demand-July Historic Capacity	9.6	14.8
July/August 2015 Demand-August Historic Capacity	3.6	7.8
Simulated Sept/Oct 2015 Demand-September Historic Capacity	2.4	4.7
Simulated Sept/Oct 2015 Demand-October Historic Capacity	2.0	5.2
July/August 2015 Demand-July Construction Capacity	30.2	83.7
July/August 2015 Demand-August Construction Capacity	29.8	83.6
Simulated Sept/Oct 2015 Demand -September Construction Capacity	4.7	27.3
Simulated Sept/Oct 2015 Demand-October Construction Capacity	4.9	27.1

Described as “more extensive delays” by FAA ^{2/}

Source: 1/ Federal Aviation Administration, Air Traffic Organization System Operations Services. “LAX IATA Level 2 Facilitation and Slot Administration Considerations” (presentation, April 1, 2015); 2/ 80 FR 12253 – Notice of Submission Deadline for Schedule Information for Los Angeles International Airport for the Summer 2015 Scheduling Season.

Case Study: FAA Declares Newark International (EWR) Airport Level 2 from Level 3

- May 1, 2008 - FAA designated EWR as Level 3 and limited operations to 81 per hour
- April 4, 2016 – FAA designated EWR as Level 2 – Compared 2015 to 2007 peak conditions
 - **Scheduled demand** was routinely **below the 81 hourly scheduling limits** in the Order
 - Model Results:
 - Average **arrival delays decreased from 24.0 minutes to 16.3 minutes**, and **departure delays from 18.0 minutes to 14.2 minutes**
 - **Number of flights delayed greater than one hour are down from 94 to 41 for arrivals**, and **from 16 to 13 for departures**

Airfield Demand/Capacity Findings

- Forecast growth in operations will increase delays
- NASIP airfield improvements provide operational efficiencies and reduces delays
- Concourse 0 independently provides operational efficiencies and reduces delays
- Terminal 9 independently provides operational efficiencies and reduces delays
- NASIP airfield and terminal improvements should allow airfield delays to remain tolerable (not require Level 3 facilitation) through 2033 to 2035 forecast timeframe
- Confirmation of proposed thresholds of tolerable delay for LAX require a third data point (delay curve) at or above 15 minutes of delay
- 15 minutes is a key consideration at identifying tolerable delays and additional analysis is needed to provide a more complete basis of defining the practicable airport capacity at LAX

Landside Roadway Concepts

Landside Roadway Concepts

- Separate PPT presentation prepared by Tony Skidmore

Concourse 0 and Terminal 9 Status

Concourse 0 and Terminal 9 - Topics for June 11th Meeting

- Purpose and Need
- Methodology for development of concepts
- LAWA goals and objectives for concept development
- Composite airport site overview
- Concourse 0 + Terminal 9 Concepts
 - Area of impact
 - Enabling projects
 - Airfield + Landside + APM coordination
 - Facility program
 - Floor plans
 - Blocking + Stacking
 - Primary flows
- Next Steps

Next Steps

Next Steps

- Airside
 - Complete 2028 with Project (including combined C0 & T9) airfield capacity/delay assessment by June 15th
 - Complete 2035 with Project (including combined C0 & T9) airfield capacity/delay assessment by June 25th
- Gates
 - Finalize 2035 forecast with project gating analyses this week
- Terminals
 - June 11th Briefing to Steering Committee
- Landside
 - Follow-up on Comments/Input from Today's NASIP Steering Committee Meeting
 - Provide Similar Briefing to Southwest and United Airlines (June 20th??) and Receive Feedback
 - Integrate Preferred Landside Access Concept into T9 Concept Planning

EXHIBIT

8



*Los Angeles
World Airports*

FAA BRIEFING

AUGUST 29, 2018

NORTH AIRFIELD SAFETY IMPROVEMENT PROJECT

NASIP Planning Work to Date

- General Project Description
- Defined objectives for the project
- Identified enabling projects and areas of impact
- Formulated Facility requirements
- Refined concept-level detail for building functions, layout, footprint
 - Site plan; landside, apron configuration and facility footprint(s)
 - Operational parameters for airside and landside connectivity
 - Fundamental space program and critical adjacencies
 - Blocking and stacking; building volumes
- Construction feasibility and phasing – in progress
- ROM cost estimate – in progress

NORTH RUNWAY AND TAXIWAY D IMPROVEMENTS RECOMMENDED CONCEPT

Runway 6L-24R Exits

Preferred Concept

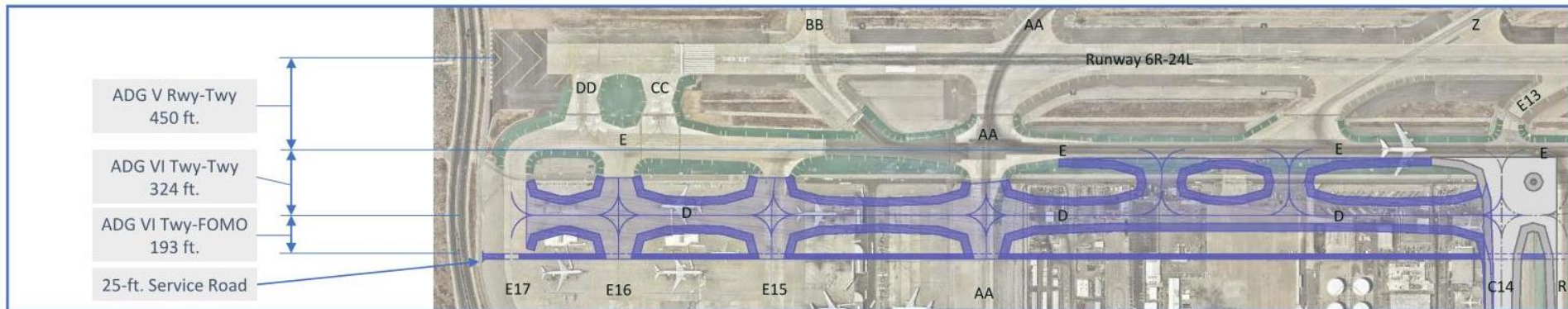


Concept Components

- Remove or decommission Taxiways Z and Y
- Install two new acute angled exits for West Flow and two for East Flow
 - West Flow exits located east of Taxiway AA
 - East Flow exits located east and west of Taxiway W
- Plan per FAA Conditionally Approved ALP (June 6, 2018)

Taxiway Improvements – West Preferred Concept

FAA Conditionally Approved ALP (June 6, 2018)



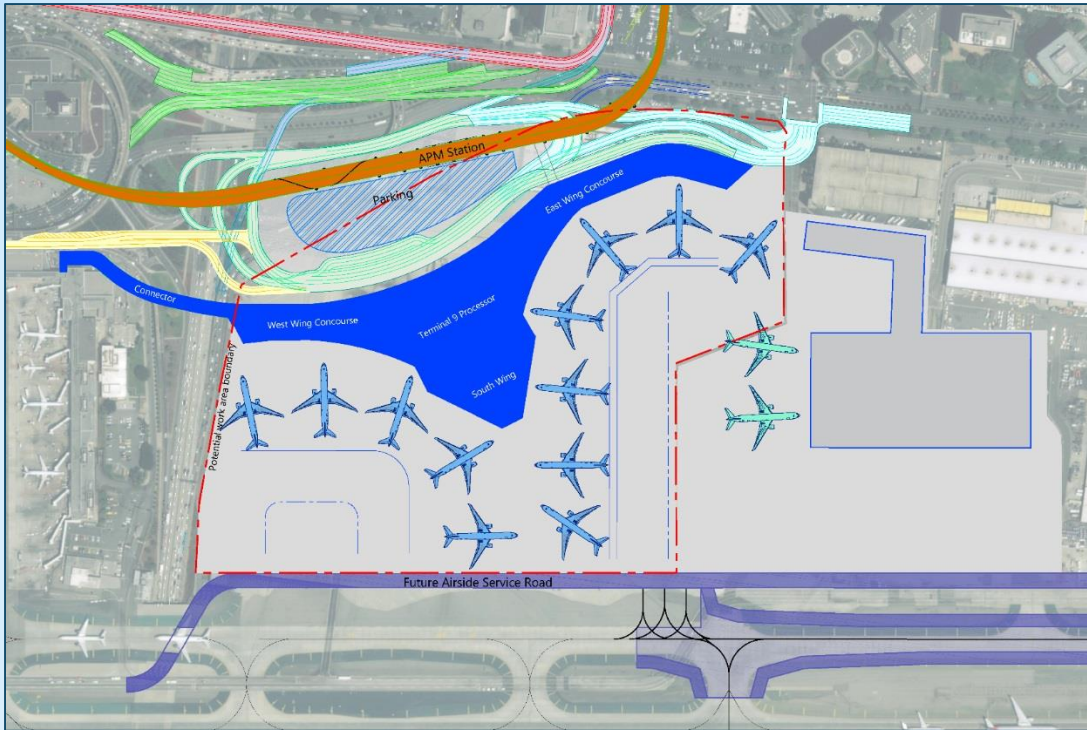
Concept Components

- Extend Taxiway D from Taxiway C14 to Taxiway E17 at ADG VI separation
- Relocate service road south of Taxiway D extension

Impacts several facilities including Remote Gates

TERMINAL 9 – TERMINAL CONCEPT

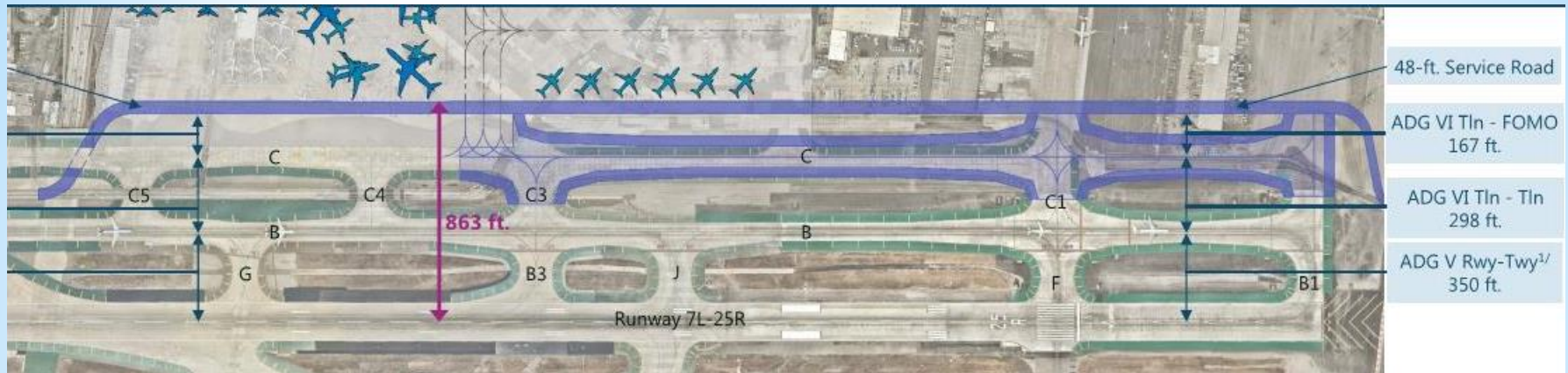
Terminal 9 – LAWA Current Concept



- 12 WB gates
- 1.15 million square feet of floor area
- 4 levels (Ticketing, Concourse, Apron and Arrivals)
- Pedestrian bridge to CTA
- Potential for direct connection (tunnel) to APM station

TERMINAL 9 - AIRSIDE ACCESS CONCEPT

Preferred Taxiway Concepts (Terminal 9)



Taxiway/Taxilane C

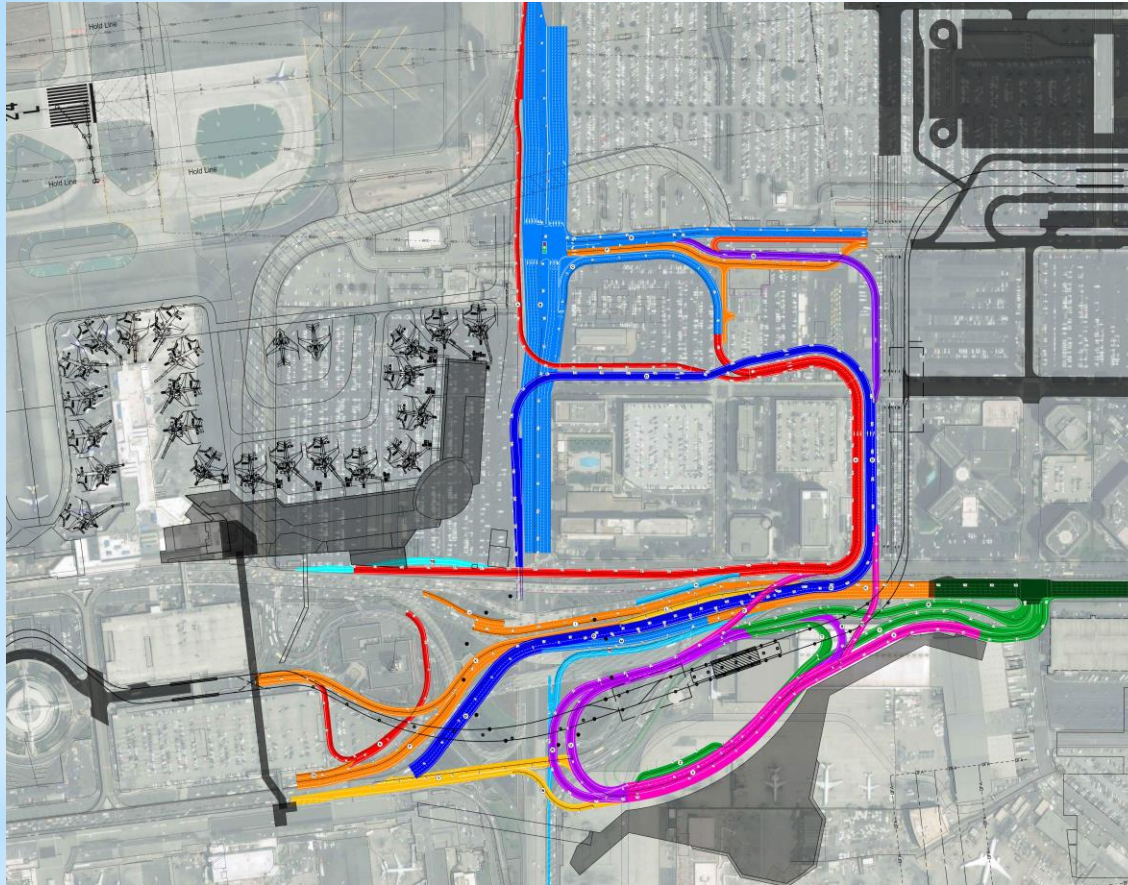
- Utilize existing 298-foot separation between Taxiways C3 and C5
- Extend Taxiway C east of Taxiway C3 at 298-foot separation to Taxiway B1
- Enlarges area where ADG VI operations do not impact operations on taxiways or runways
- May require MOS to use taxilane criteria on movement area
- May require MOS for non-standard taxiway width

Service Road

- Extend service road relocation east to Taxiway B1
- May require MOS to use taxilane criteria on movement area

LANDSIDE ACCESS CONCEPT

Consolidated Entrance Concept Specific to T9

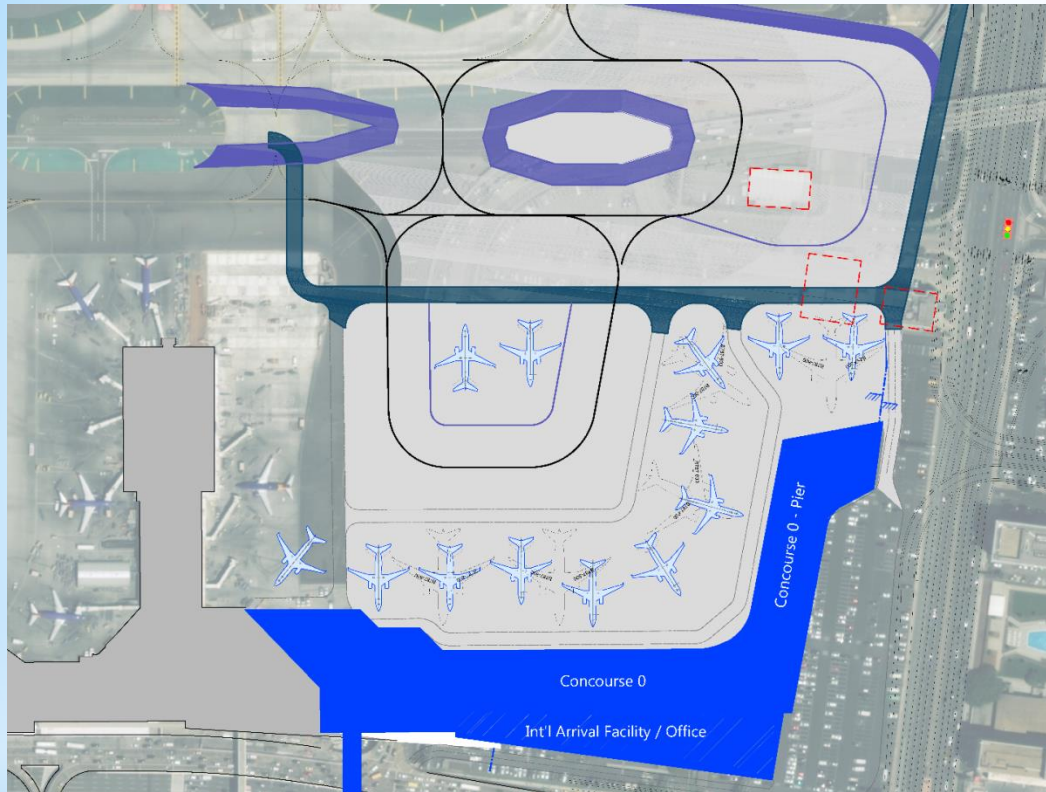


- Build upon the goals of current LAMP concept, especially relative access to ITF-W and APM
- Integrate T9 within the Airport's overall access and circulation goals
- Shift CTA entrance to east of Sepulveda
- Provide two primary points of access
 - 96th/98th Streets
 - Century Blvd
- Lengthen wayfinding experience
- Provide a consolidated return-to-terminal ramp that accommodates all terminals
- Eliminate direct access between CTA and Sepulveda Blvd

➦ NASIP planning and environmental analysis will evaluate option of providing direct access to Terminal 9 via ramps from Northbound Sepulveda

CONCOURSE 0 – CONCOURSE CONCEPT

Concourse 0 – LAWA Current Concept



- 11NB / 5 WB gates
- 744,729 square feet of floor area
- 4 levels (Mezzanine, Concourse, Apron and Arrivals)
- Extension of T1 processor

CONCOURSE 0 - AIRSIDE ACCESS CONCEPT

With Project - Preferred Taxiway Concepts (Concourse 0)



Taxiway E / Taxilane D

- Utilize ADG V separation between Taxiway E and Taxilane D

Non-Movement Area

- Utilize pavement area east of new ADG V taxilane for Concourse 0 ADG III pushbacks and penalty box

Service Road

- Relocate 2-lane service road to 138 feet (ADG V taxilane FOMO) south of Taxilane D north of Concourse 0

AIRFIELD MODELING

Airfield Demand/Capacity Analysis

✈ 2017 Baseline Completed

- Assumes existing airfield with Taxiway C14 and MSC-N

✈ 2028 No Project Completed

- Assumes same airfield as 2017 Baseline

✈ 2017 and 2028 With Project (Airfield Only) Completed

- Includes runway 6L-24R Exit Improvements
- Includes westward Extension of Taxiway D

✈ 2028 With Project (Airfield and Terminal) Sensitivity Testing

- Concourse 0 and Terminal 9 analyzed independently (completed)
- Both independent scenarios show slight reduction in delay
- Concourse 0 and Terminal 9 combined are currently being evaluated

Airfield Demand/Capacity Findings

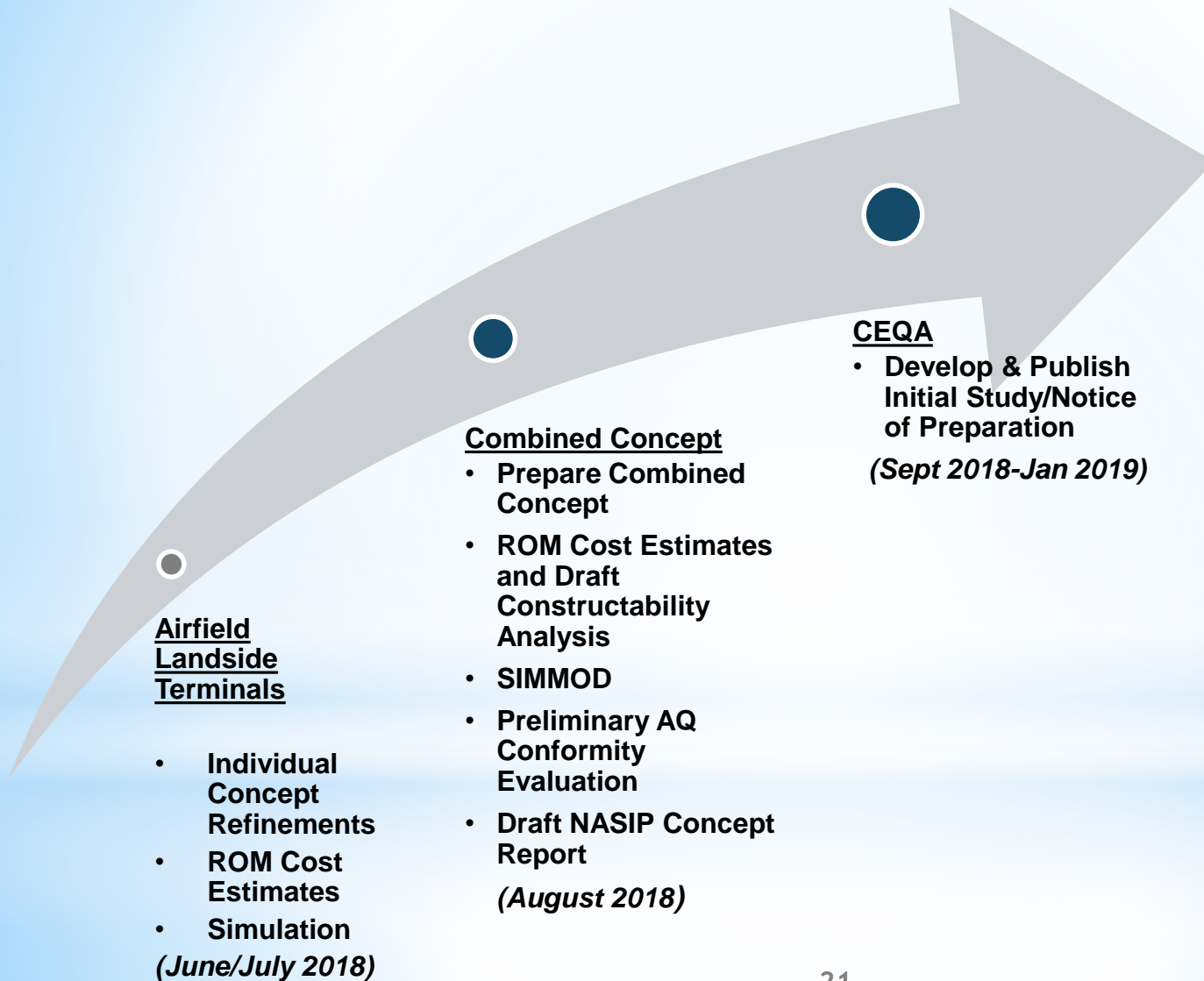
- ✈ Forecast growth in operations will increase delays
- ✈ NASIP airfield improvements provide operational efficiencies and reduces delays
- ✈ Concourse 0 independently provides operational efficiencies and reduces delays
- ✈ Terminal 9 independently provides operational efficiencies and reduces delays
- ✈ NASIP airfield and terminal improvements should allow airfield delays to remain manageable through 2033 to 2035 forecast timeframe
- ✈ 15 minutes is a key consideration at identifying tolerable delays and additional analysis is needed to provide a more complete basis of defining the practicable airport capacity at LAX

NEXT STEPS

Next Steps

- **Combined Elements (Airside-Landside-Terminals Combined)**
 - Complete ROM cost estimates
 - Complete constructability analysis including development of phasing framework
 - Prepare NASIP Concept Report as basis for Project Description
- **Prepare for, and engage, environmental review processes**
- **Evaluate Clean Air Act (CAA) Conformity Strategy Options**

Lead-Up to Environmental Process



NEPA

Identify Proposed Action
(August 2018)

Identify Project Objectives & Purpose and Need
(Sept/Oct 2018)

Draft AQ Protocol & Identify Alternatives
(December 2018)

Initiate Scoping
(February 2019)

Operational and Safety Assessment (OSA)

OSA	INFO NEEDED PRIOR TO COORDINATION	COORDINATION ACTION REQUESTED
<p>OSA will be a planning-level evaluation workshop; is not a Safety Risk Management Panel (SRMP)</p> <p>Purpose is to assess whether there are any notable operational and/or safety concerns related to proposed NASIP airfield improvements</p> <p>Participants to include LAWA, FAA, and UA/SWA Chief Pilots</p> <p>Can provide recommendations for incorporation into future more detailed planning and design of airfield improvement</p>	<p>Identification of workshop participants, location, and date</p>	<p>Identification of FAA participants</p>

September

TIMELINE - 2018

Southern California Association of Governments (SCAG)

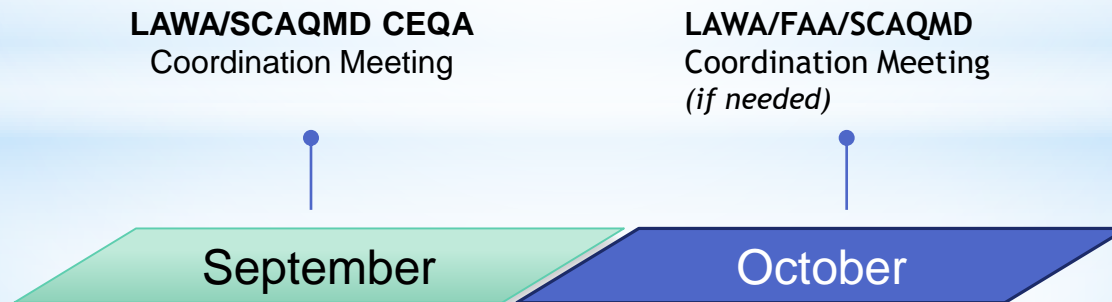
AVIATION FORECAST	INFO NEEDED PRIOR TO COORDINATION	COORDINATION ACTION REQUESTED
<p>Adopted Regional Transportation Plan (RTP) assumes up to 96.6 MAP for LAX.</p> <p>SCAG has indicated update to RTP may increase LAX MAP to 106 by 2026.</p> <p>Modeling underway</p>	<p>Main project elements and schedule (expected August 2018)</p> <p>Activity levels and analysis years for unconstrained and constrained (expected August 2018)</p>	<p>Coordinate Aviation Activity forecast to be included in 2045 RTP Update.</p> <p><i>NOTE: Aircraft operational emissions contained in the State Implementation Plan are based on the RTP forecasts.</i></p>



TIMELINE - 2018

Southern California Air Quality Management District (SCAQMD)

AIR QUALITY CONFORMITY	INFO NEEDED PRIOR TO COORDINATION	COORDINATION ACTION REQUESTED
Possible emission budget allocation to demonstrate conformity (construction and operations).	Main elements and schedule (estimated August 2018); activity levels and analysis years (estimated August 2018); preliminary construction estimates (Sept 2018) and approach for operational emissions (Sept 2018)	LAWA to introduce project and discuss AQMD modeling requirements for CEQA. Coordinate with AQMD on emission budget allocation if needed.



TIMELINE - 2018

Air Quality Agencies

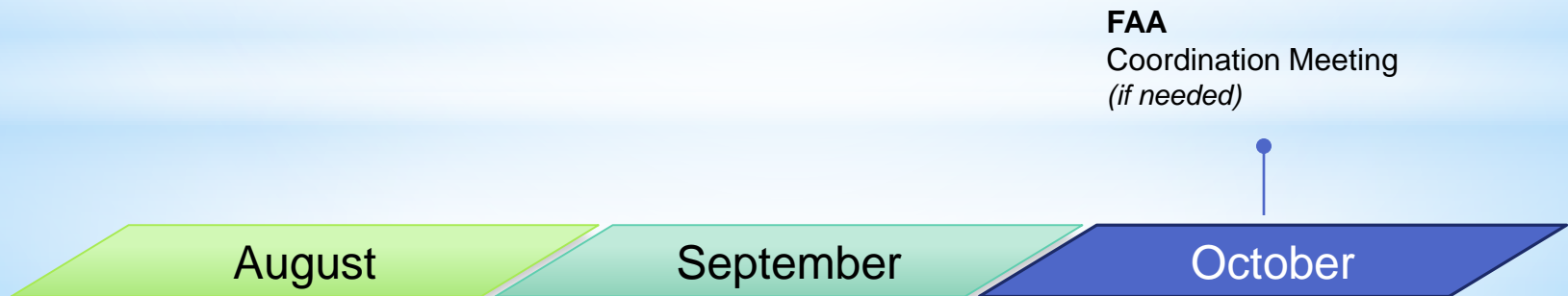
AIR QUALITY PROTOCOL REVIEW	INFO NEEDED PRIOR TO COORDINATION	COORDINATION ACTION REQUESTED
Need Agency Review and Acceptance of Air Quality Protocol	Main elements and schedule (August 2018); activity levels and analysis years (August 2018); strategy to demonstrate air quality conformity (late Oct 2018); EPA input on conformity strategy (Nov. 2018-Jan 2019)	FAA to send out air quality protocol to air quality agencies for review and comment



TIMELINE – 2019

Cultural and Historic Resources

ISSUE - SECTION 106 & NATIVE AMERICAN COORDINATION	ACTION REQUESTED
NO ISSUES ANTICIPATED Introduce the Project	No Impacts to Resources - Normal coordination process



TIMELINE – 2018

EXHIBIT

9



Los Angeles long-term plan
Network Planning
June 19, 2019

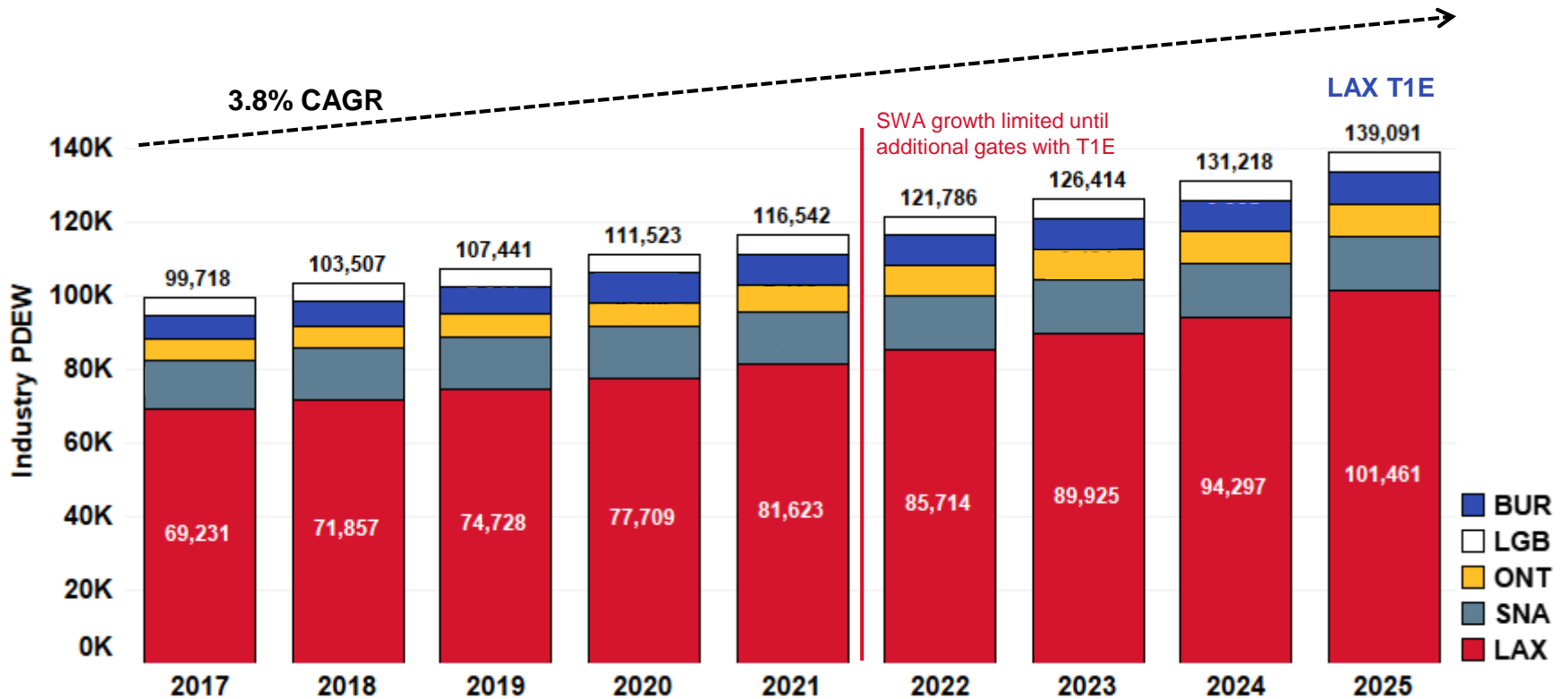
Executive Summary

- Terminal One East (T1E) is required to grow the LA Basin area beyond 2021
 - Southwest is expecting a 3-5% growth rate in LA Basin area over the next 10-15 years
 - Much of the growth will be at LAX because of constraints at surrounding airports
 - BUR (facilities), LGB (slot), and SNA (enplanement cap)
 - The main sources of growth are long-haul flights, Hawaii, and new international routes
 - Future interline/codeshare ambitions would increase domestic feeder flights
- Additional gates would improve operational performance
 - Current gate utilization rate (10.9 turns/gate) is highest rate at LAX and higher than Southwest system average of 7.7 turns/gate¹
 - Would bring gate utilization closer to SWA system goal of 8.5 turns/gate
 - As we increase the number of ETOPS flights, international flights, and 175-seat aircraft into LAX our aircraft will require more turn time at the gate for boarding/deplaning
- Planned growth at Midfield Satellite Concourse could occur in 2023 when a critical mass of flights justifies the additional cost and complexity in operations

1. Full year 2018 average daily turns per gate for Mega and Large stations (excluding LAX)

LA Basin industry growth projection

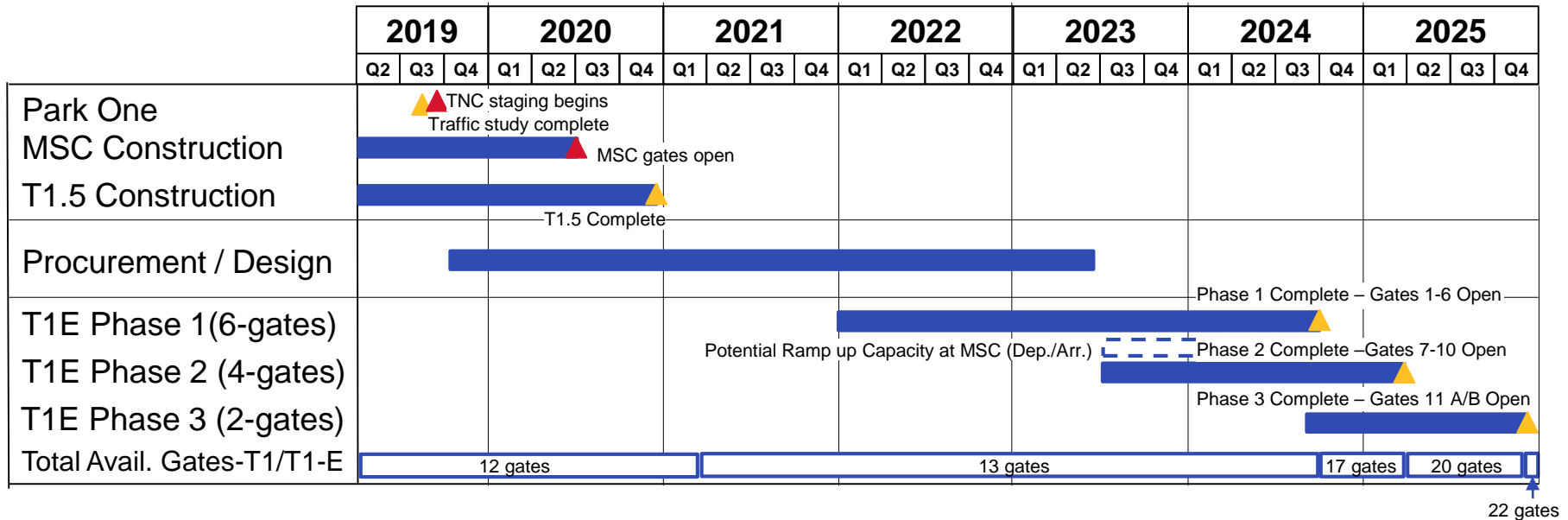
Economic and passenger indicators reflect a 3.8% 8-year CAGR



Sources: DIIO Mi LA Basin to all destinations and MSA GDP

Draft of project timeline

Additional gates will facilitate future growth and ease of operations



➤ **Currently, Southwest runs both a higher gate utilization than other airlines at LAX and compared to our system average¹**

1. Full year 2018 average daily turns per gate for Mega and Large stations (excluding LAX) of 7.7 turns/gate

Midfield Satellite Concourse (MSC) considerations

Near Term:

- When MSC comes online, our international arrivals will not be moved from TBIT to MSC
- No departures at MSC until a critical mass of flight activity
 - Requires use of own ground equipment
 - Distance from T1 will require significant additional staffing
 - Connectivity would be limited due to complexity
 - Customer experience considerations

Mid Term:

- Potentially grow to small operations to MSC to ramp up flight activity before T1E
- Limited connecting passengers from MSC to T1E
- Build out all the support space (Managers Office, Breakroom)

EXHIBIT

10

Southwest Airlines Terminal 1 East CDO & TDIP DED Briefing

January 15, 2020



Agenda



1. Introductions
2. History
3. Building Programming
4. Other LAX Projects/Linkages
5. Preliminary Project Schedule & Phasing
6. Discussion and Questions

T1E History: 2015 – Today

T1E is Necessary for SWA to Grow Regionally

- Southwest is expecting 3-5% growth rate in LA Basin area over the next 10-15 years
- Much of the growth will be at LAX because of constraints at surrounding airports
 - BUR (facilities), LGB (slot), and SNA (enplanement cap)
- The main sources of growth are long-haul flights, Hawaii, and new international routes
- Future interline/codeshare ambitions would increase domestic feeder flights



Recognized Five Years Ago & Recently Confirmed

Gate Access Limits Growth

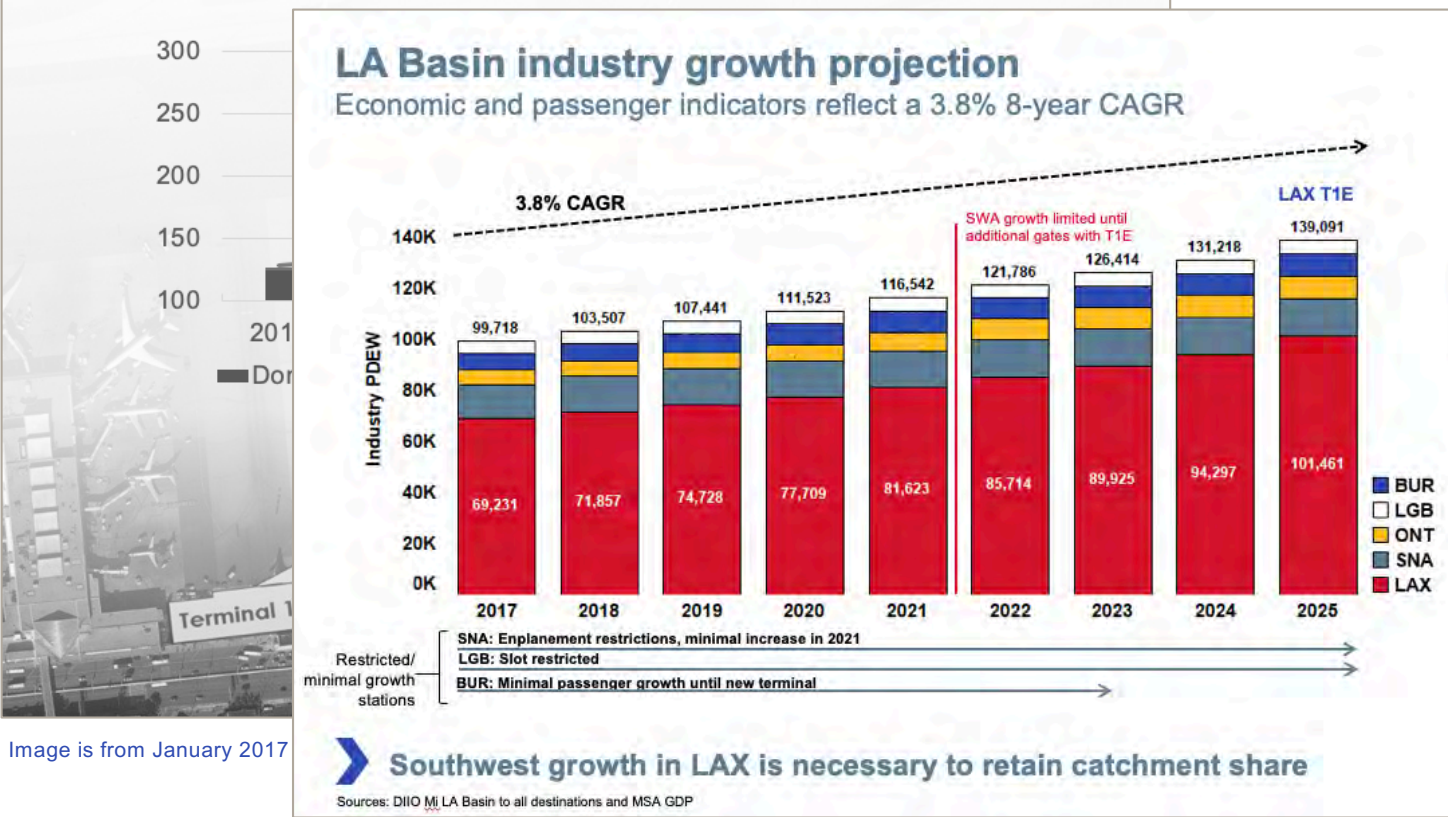
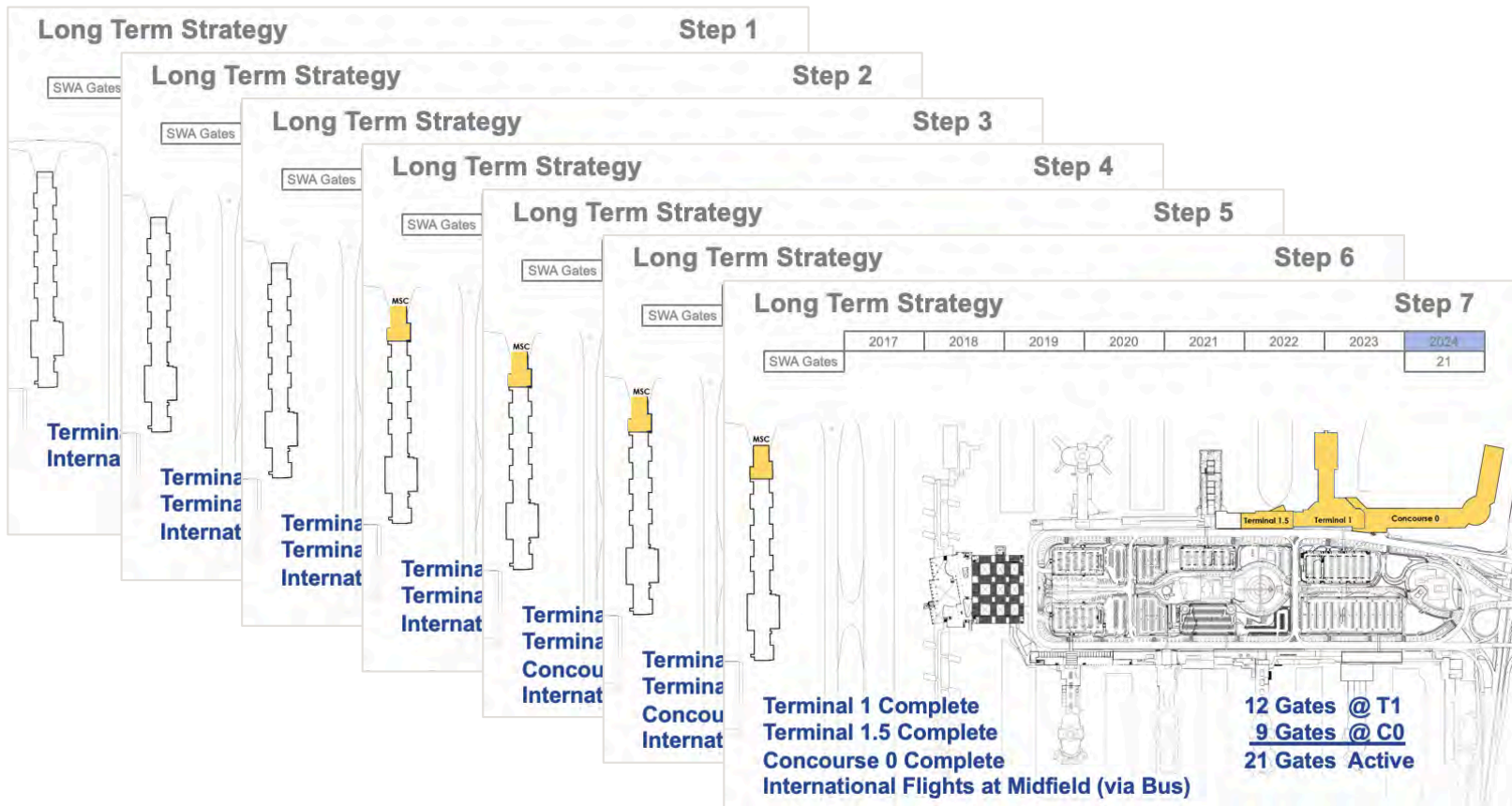


Image is from January 2017

Image is from June 2019 Network Planning Briefing to LAWA.

Always Part of SWA's Long Term Strategy at LAX



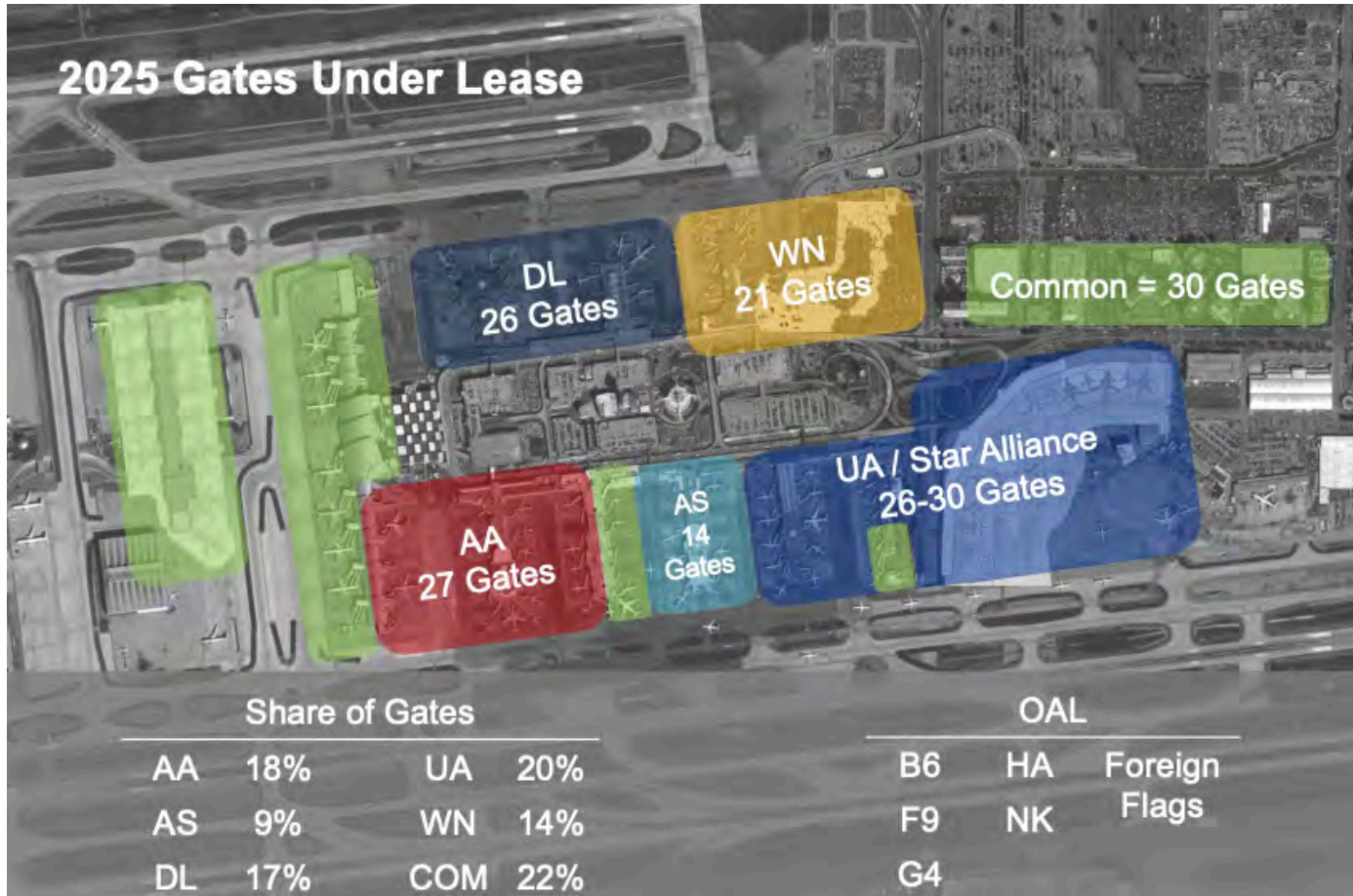
Images are from January 2017 Long Term Development Strategy Briefing to LAWA; actual gate count at conclusion of T1MP was 12 gates – not 11 as shown.

Necessary to Optimize SWA Operations

- Current gate utilization rate (10.9 turns/gate) is highest rate at LAX and higher than Southwest system average of 7.7 turns/gate¹
- Would bring gate utilization to >8.0 turns/gate
- As SWA increase the number of ETOPS flights, international flights, and 175-seat aircraft into LAX our aircraft will require more turn time at the gate for boarding/deplaning
 - Also planning for B737 MAX10 and potential code share partners

1. Full year 2018 average daily turns per gate for Mega and Large stations (excluding LAX)

Further Airline Parity at LAX



Images are from January 2017 Long Term Development Strategy Briefing to LAWA.

Already Completed Terminal 1 Modernization

- Award-winning remodel
- 12 gates accommodating B737-800W aircraft
- New departures lobby, including self-check and bag tag kiosks
- New domestic bag claim hall with two large bag claim carousels
- New consolidated 12-lane Security Screening Check Point (SSCP)
- Fully automated inline Checked Baggage Inspection System (CBIS)
- Enhanced concourse passenger experience with expanded gate lounge holdrooms
- New vibrant Food & Beverage and Retail Concessions
- Renovated and new public restrooms
- Other passenger amenities

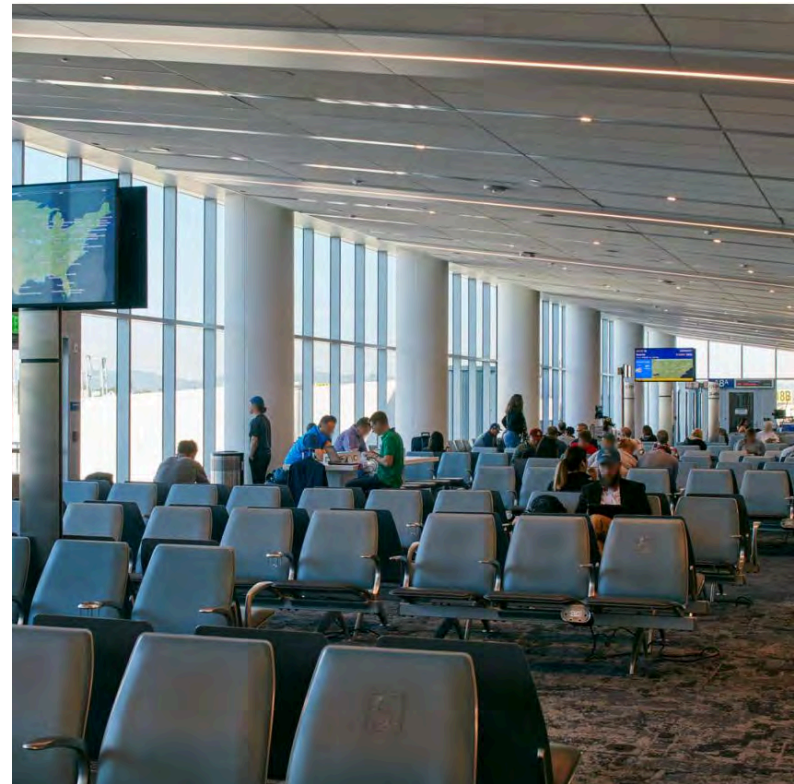
Completed: December 2018
Approved Lease Agreement: \$515.8M
Final Cost: \$514.7M

Terminal 1



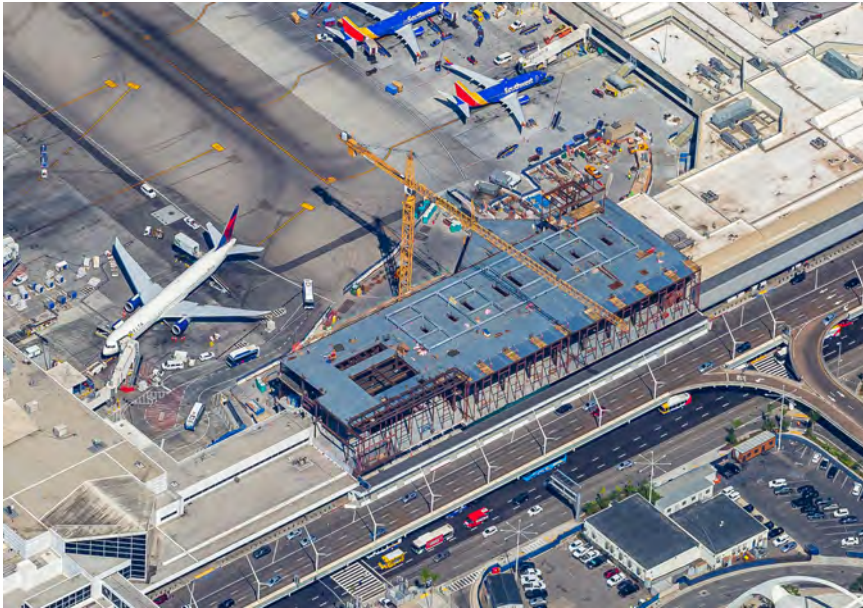
Photos: Dana Hoff Photography

Terminal 1



Photos: Dana Hoff Photography

Terminal 1.5 Currently Under Construction



- Currently under construction
- Full- and self-service check-in counters
- Additional domestic baggage claim facilities
- Bus Gate to allow transport of passengers between Terminals 1 and 1.5 and MSC
- Passenger bridge support and vertical circulation core connecting to the APM
- Airline office and support space for Southwest and other airlines

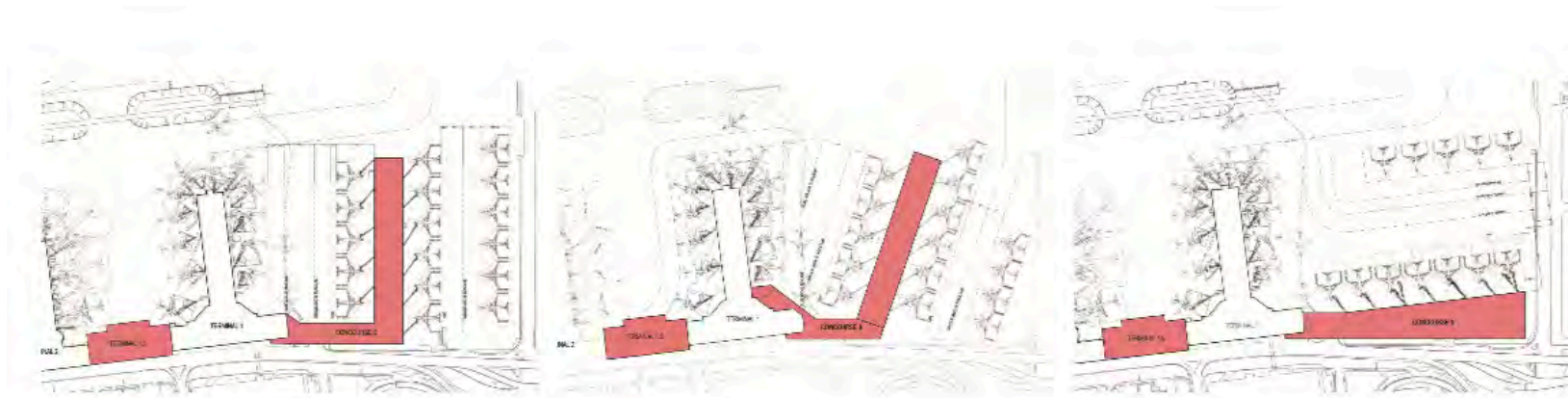
Lease Agreement Deadline: December 31, 2021
Forecast Substantial Completion: December 2020
Forecast Financial Closeout: May 2021
Approved Lease Agreement: \$489.9M
Current Trend: \$464.8M

Terminal 1 East Programming

PDB Dates to 2016



Studied Variety of Configurations



OPTION 1: DOUBLE-SIDED PERPENDICULAR PIER

Option 1 could potentially result in an "L-Shaped" eleven ADG-III (B737-900) contact gates double loaded pier concourse. If the entire site were available for concourse development, it could also accommodate additional remote hardstands for 5 to 6 aircraft. The concourse could be developed with a dual ADG-III taxilane to the west between the Terminal 1 concourse and the new Concourse 0. A single ADG-III taxilane and remote hardstands could be created east of Concourse 0.

The advantages of Option 1 are that it could provide up to 11 contact gates on a relatively short and efficient double-sided concourse with reasonable passenger walking distances. It could also provide nearby remote gates.

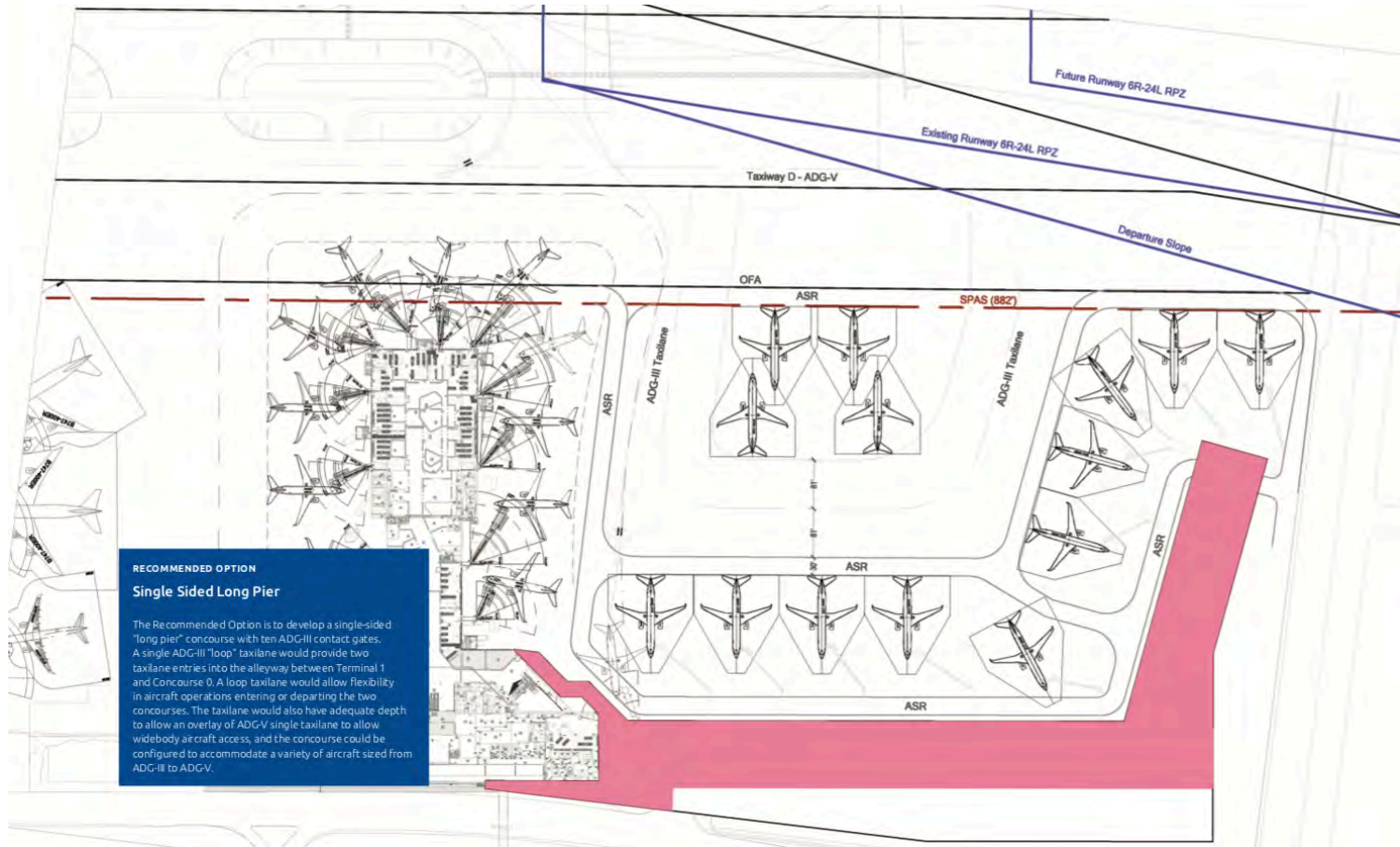
OPTION 2: DOUBLE-SIDED ANGLED PIER

Option 2 could also potentially result in a double loaded pier concourse with eleven ADG-III contact gates, and some adjacent remote hardstand positions. By angling the concourse passenger walking distances could be comparable to Option 1. This option however, would create dual taxilanes between Terminal 1 concourse and Concourse 0 that converge in the southern taxilane area, creating operational conflicts between arriving and departing aircraft. The east single taxilane would also have potential constraints at its north end due to the close proximity to Sepulveda Blvd.

OPTION 3: SINGLE-SIDED "WEDGE" PIER

Option 3 could develop a single-sided "wedge-shaped" pier concourse along the south boundary of the site, with additional nearby remote hardstand positions to the north. That option would have potential to arrange a dual ADG-III taxilane alleyway that could also accommodate larger ADG-IV and V widebody aircraft, if that becomes necessary or desirable in the future. The principal advantage of Option 3 is that it could result in a relatively short compact concourse with flexibility for a variety of aircraft sizes to accommodate. It could also accommodate a new US Customs and Border Protection Federal Inspection Service (FIS) facility to process arriving international passengers. The principal disadvantage is that the concourse would have fewer ADG-III contact gates than either Options 1 or 2.

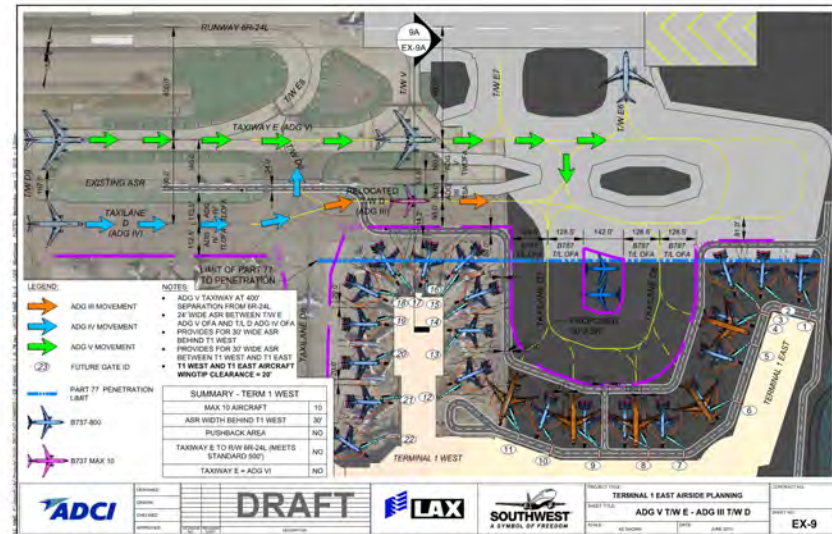
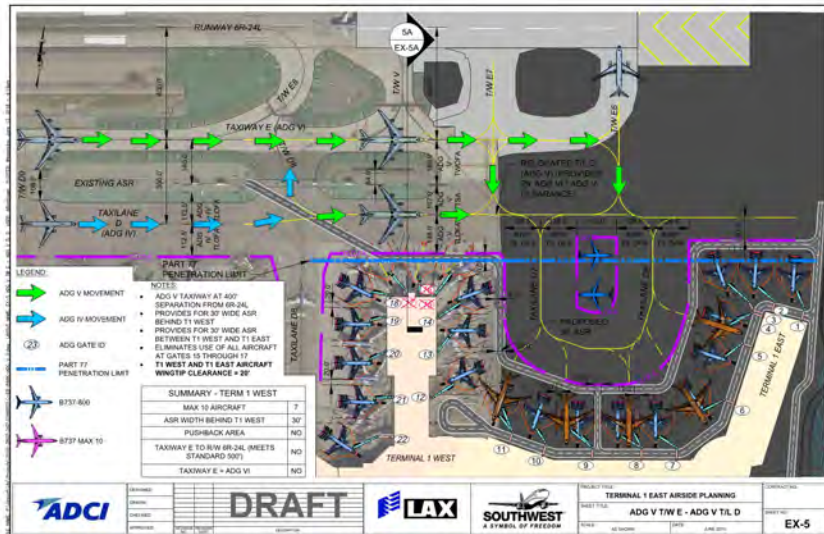
Recommended Single-Sided Long Pier



Studied Number of Airfield Layouts

- From Dual ADG V, with significant, negative impacts to T1

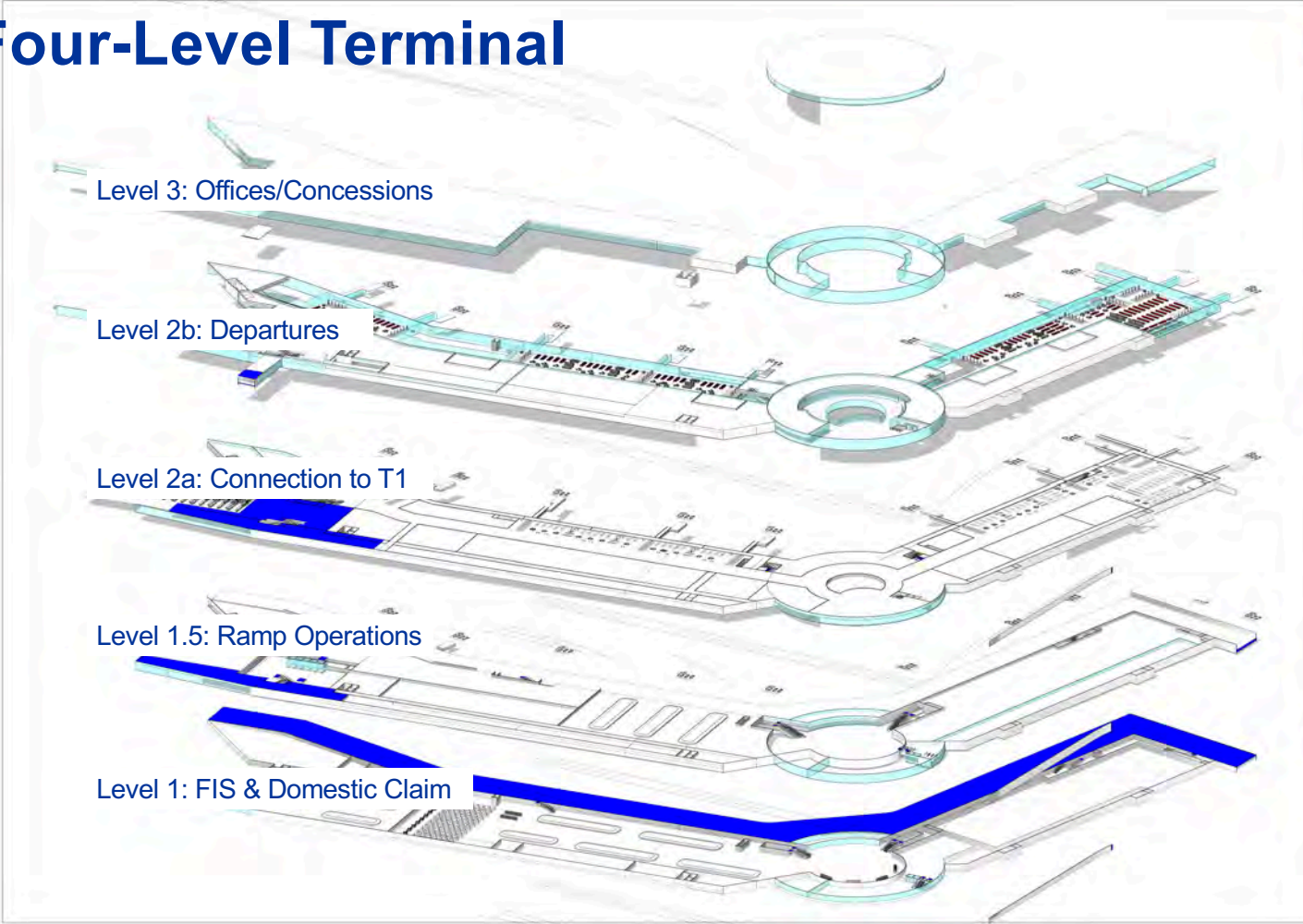
- To Preferred ADG V / ADG III with a “penalty box”



Program Value

- Southwest currently estimates program at ±\$2B
- Hard construction costs could exceed \$1.4B, including:
 - Significant utilities/enabling work beyond site boundary
 - 11-gate terminal (9 of which are new) and associated apron
 - Tie-in to Terminal 1
 - Terminal core providing connection and vertical circulation for APM
 - Passenger bridge from APM station to T1E core
 - Significant airfield improvements (Taxiway D & E)
- Soft costs potentially in excess of \$250M, include A/E, PM and testing/inspection

Four-Level Terminal



Los Angeles World Airports

Southwest

AvAirPros

5551 Ridgewood Drive St 300
Naples, FL 34108
P: 239.262.0010

Gillespie
Consulting
Architects
& Planners

4136 Del Rey Ave.
Marina Del Rey, CA 90292
2730 Idlewood Lane,
Sacramento, CA 95821
P: 415.656.6092

LAX
TERMINAL 1 EAST
Exploded Axon
Plans

Project Number	T1E
Date	01/21/2019
Drawn By	ME
Checked By	DG & KG
Scale	A11

1/23/2019 11:43:57 AM

Space Summary

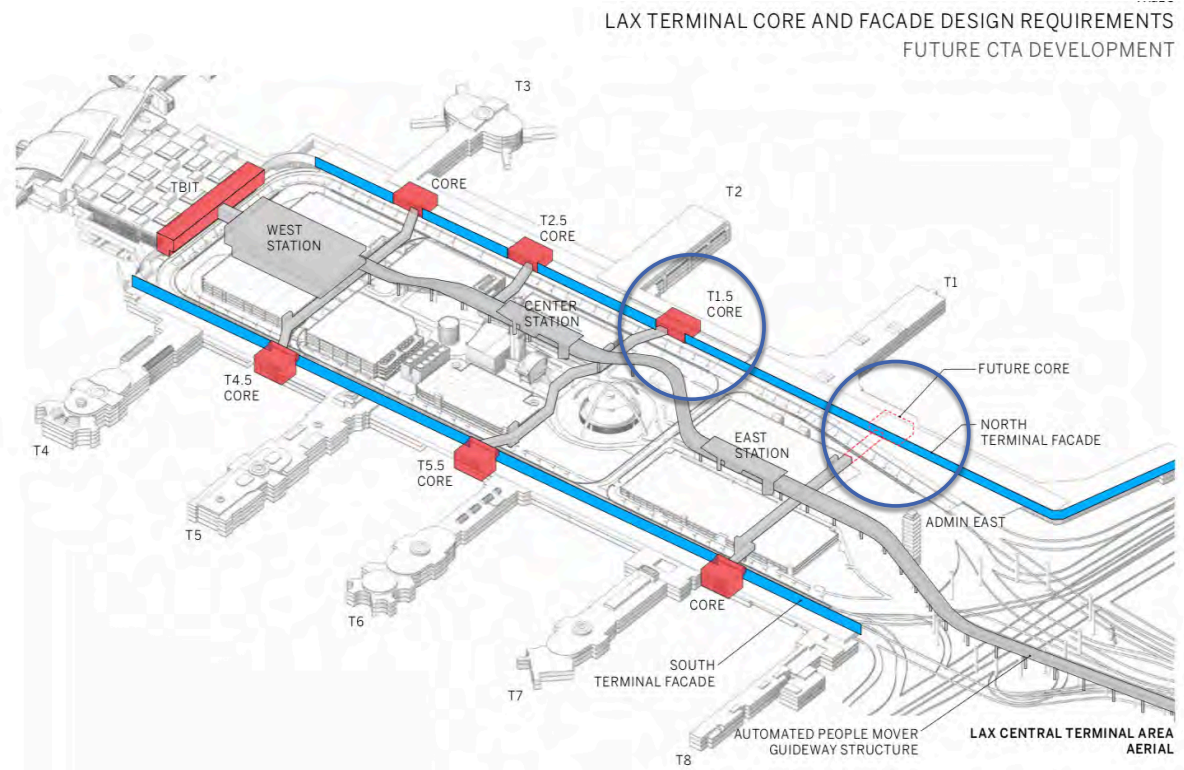
Level	Function	Approx. GFA
Level 1	Customs & Border Protection	161,250
	Public Lobby, Domestic Bag Claim & Support	101,740
Subtotal Level 1		262,990
Level 1.5	Ramp Ops-Baggage Handling	55,550
	Circulation, Loading Docks & MEP	47,980
	Operations Offices	79,910
Subtotal Level 1.5		182,390
Level 2	Security Screening Checkpoint Expansion	21,220
	10 Gate Holdrooms	47,190
	Concessions & Seating	81,910
	Public Restrooms & Support	34,090
	Sterile Corridor & Circulation	82,260
Subtotal Level 2		266,670
Level 3	Offices & Concessions	46,540
	MEP Rooms	13,570
	Circulation	24,780
Subtotal Level 3		84,890
TOTAL GROSS FLOOR AREA		796,940

SSCP, CBIS/CBRA, and BHS

- SSCP will largely be located in Terminal 1
 - T1 has 12 screening lanes
 - T1.5 adds 6 new lanes
 - T1E adds 4 more lanes and provides for passenger flows to the east into T1E
- CBIS/CBRA
 - Currently being expanded as part of T1.5 program
 - Sized to meet increased demand from T1E operations
- BHS
 - New outbound BHS and make-up in T1E

APM Vertical Cores

- T1.5
 - West end of building
 - Will be first core completed on campus
- T1E
 - West end of building
 - Expectation is T1E program will construct bridge to station



Other Scope

- Terminal 1.99 connector bridge
 - Removed from T1.5 program
- T1 façade
 - T1.5 and T1E will conform to LAWA design standards
 - Intended to blend appearance of T1.5, T1 and T1E



Other Relevant Scope

- Provisioning Facility (23,000 sf)
 - Will be displaced by westerly extension of Twy D
- GSE Maintenance Facility (90,000-130,000 sf)
 - Potentially displaced by expansion of LAX Fuel facilities to maintain 3-day supply
- Cargo Facility (55,000-86,000 sf)
 - LAX East Cargo Facility project likely to affect facility when project resumes
- Additional West Coast Line Maintenance
 - With expanding operations in SoCal and NorCal, SWA expects to need additional line maintenance facilities
 - Not prepared to construct hangar facilities
 - But potentially interested in FedEx midfield facilities if timing is right

Need to Re-examine T1E Programming

- PDB dates from 2016
- Expect to begin full design in April 2020
- First order of business: re-examine programming
 - Airfield and plane parking positions feel solid
 - Building is too big
 - Building may not align with expected operations
 - SWA has refined flight planning since 2016 DDFS
- Will consider ability to synergistically include other SWA needs at LAX

LAWA Review of PDB

- Principles & Criteria date to April 2018
 - Need to revisit?
- Substantial comments on PDB, many of which remain open
 - Held workshops to address in late 2018 and early 2019
 - None since January 2019
- Further discussions should await re-examination of programming
 - But there are some important inputs needed for success of T1E



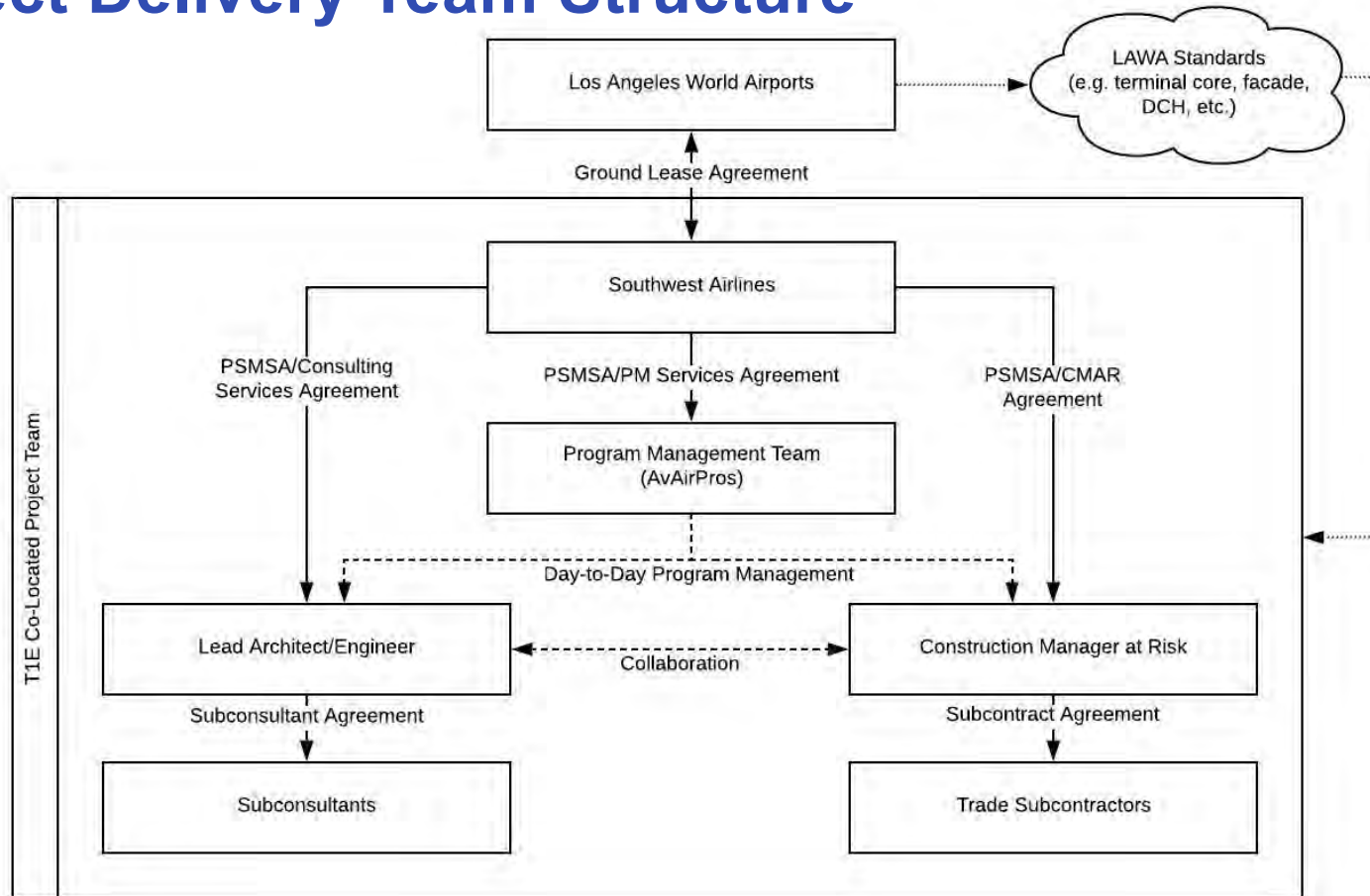
Business Deal

- Southwest does not yet have binding agreement for T1E development
 - Understands it is proceeding at risk
- Working on finalizing term sheet now
 - Approach is similar to other tenant projects
 - Ground lease with option of airport to purchase
 - Largest issue is earned rights for preferential operations
- Looking to have signed lease mid- to late-2020
- Prepared to finance the project through completion, in a single-phase if necessary

Project Delivery

- SWA will utilize Construction Manager at Risk delivery methodology
- Just completed selection of CMR
 - Two-phase, best-value procurement
 - Statement of Qualifications, Proposal, Interview, and Price Factors (fee and rates)
 - Selected Hensel Phelps Construction Company
- In the middle of lead designer RFP process
 - Single-phase, best-value procurement
 - Proposal, Interview, and Price Factors (rates)
 - Expect to complete selection by end of January 2020
- NTP to team to begin by April 1, 2020

Project Delivery Team Structure



Other LAX Projects/Linkages

Environmental Review

- T1E subject to environmental review as part of the Airfield & Terminal Modernization Project (ATMP)
- Expect ROD in December 2020
- Ability to proceed with project is directly tied to environmental review
- PMT has been working to coordinate with LAWA Environmental and CDM Smith on inputs to EIR
 - Phasing and logistics key to AQ



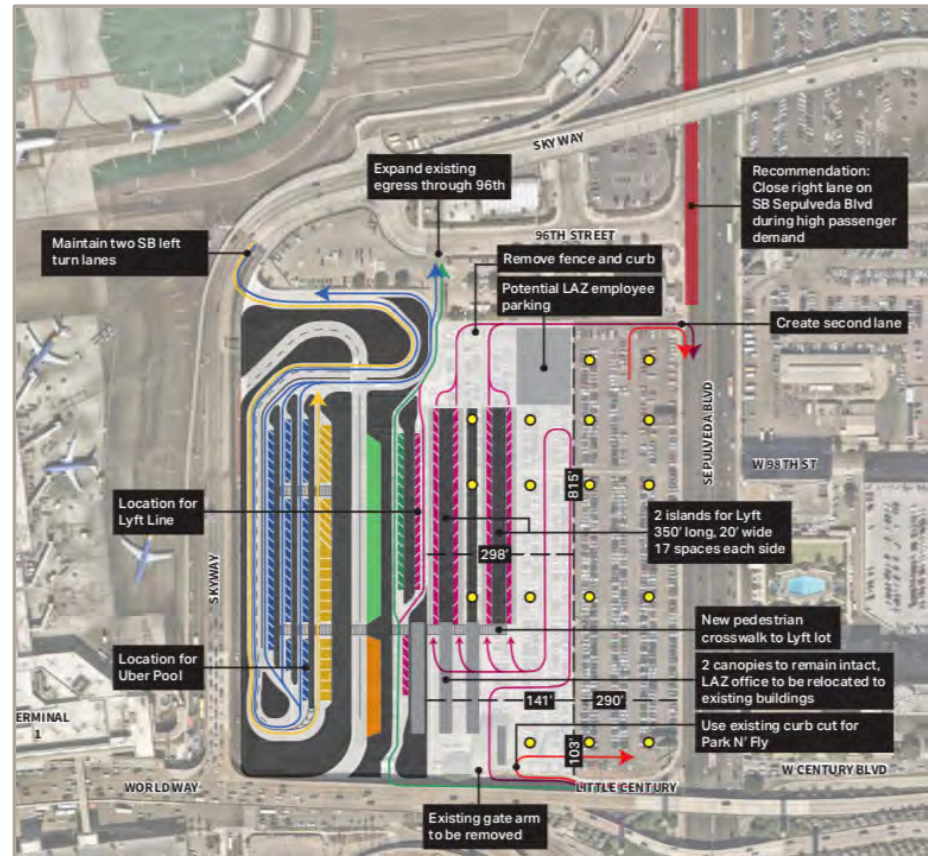
Automated People Mover

- No direct interface, but Southwest's ability to demolish Sky Way is directly tied to the opening of the APM
- Delay to APM will affect schedule for and delivery of T1E
- Important that we receive updates on progress against plan to assess potential delays to T1E



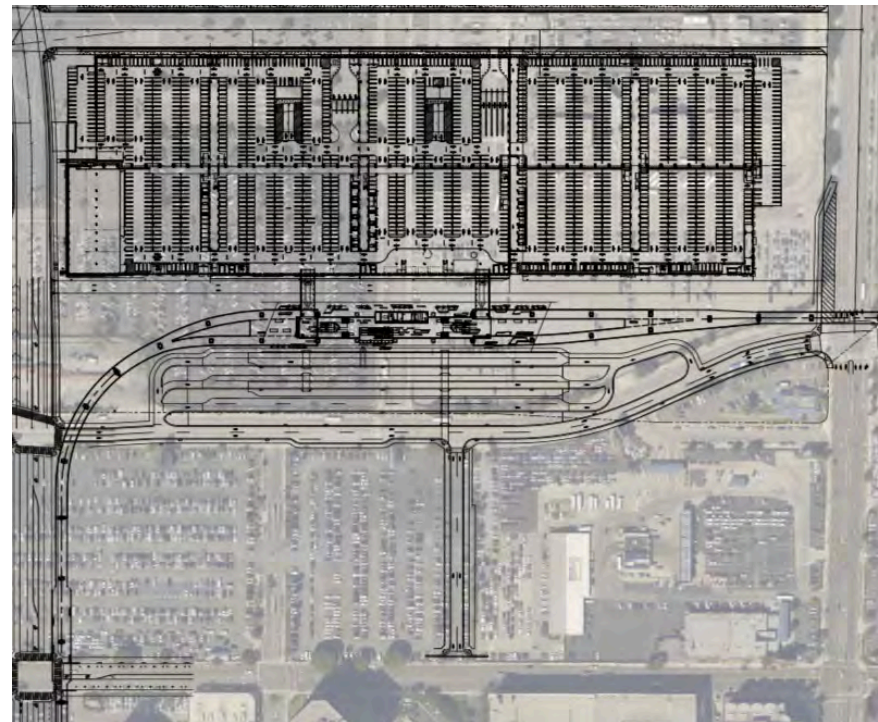
LAX-it

- Original configuration left eastern $\frac{2}{3}$ available for construction
- Lot immediately expanded and reconfigured leaving only eastern $\frac{1}{2}$ available
- Potential for further expansion, leaving less than $\frac{1}{3}$ available
- SWA's ability to start construction prior to closure of LAX-it requires sufficient portion of site to be available



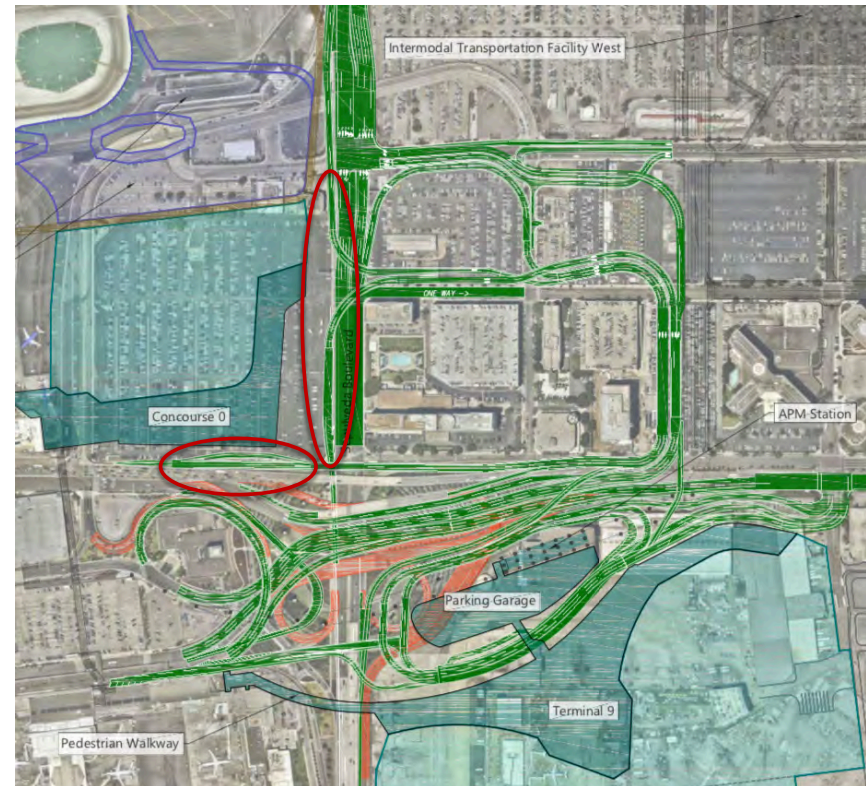
ITF-West

- No direct interface, but potential location to which Taxi and TNC operations will be relocated
- Programming take account of lessons learned from LAX-it?
- Potential to relocate LAX-it to ITF-West following opening?
 - Avoid dual bussing operations
 - Would allow SWA better site access for terminal development



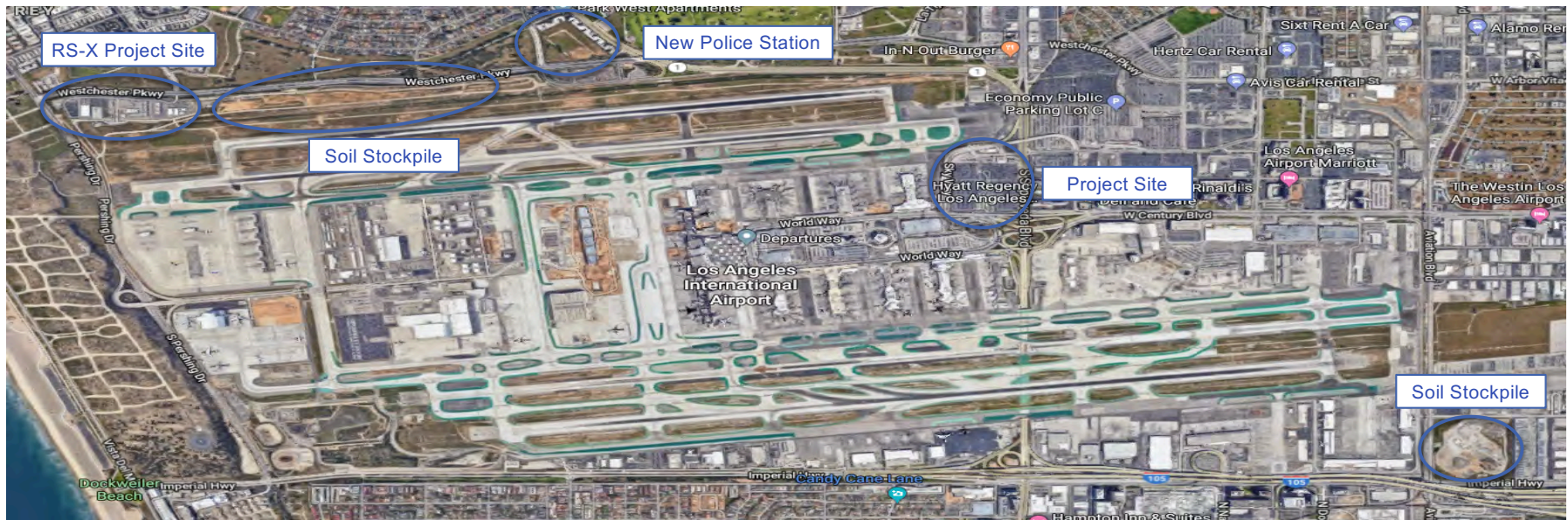
Roadways – Phase 1 and Phase 2

- On south side, LAWA has entitled slip ramp from Sepulveda/Little Century to the Departures-Level Roadway
- On east side, LAWA has planned two new ramps from/to new elevated roadways to Century Blvd
- Understand roadway concepts are evolving
 - Would like to understand how
 - Need to coordinate interface between projects
 - Potential SWA construction of foundations and columns?



New Police Station and RS-X Projects

- T1E requires net import up to 175,000 cubic yards of soil
- New police station and RS-X projects are stockpiling soils nearby to reduce project cost, haul impacts, and emissions



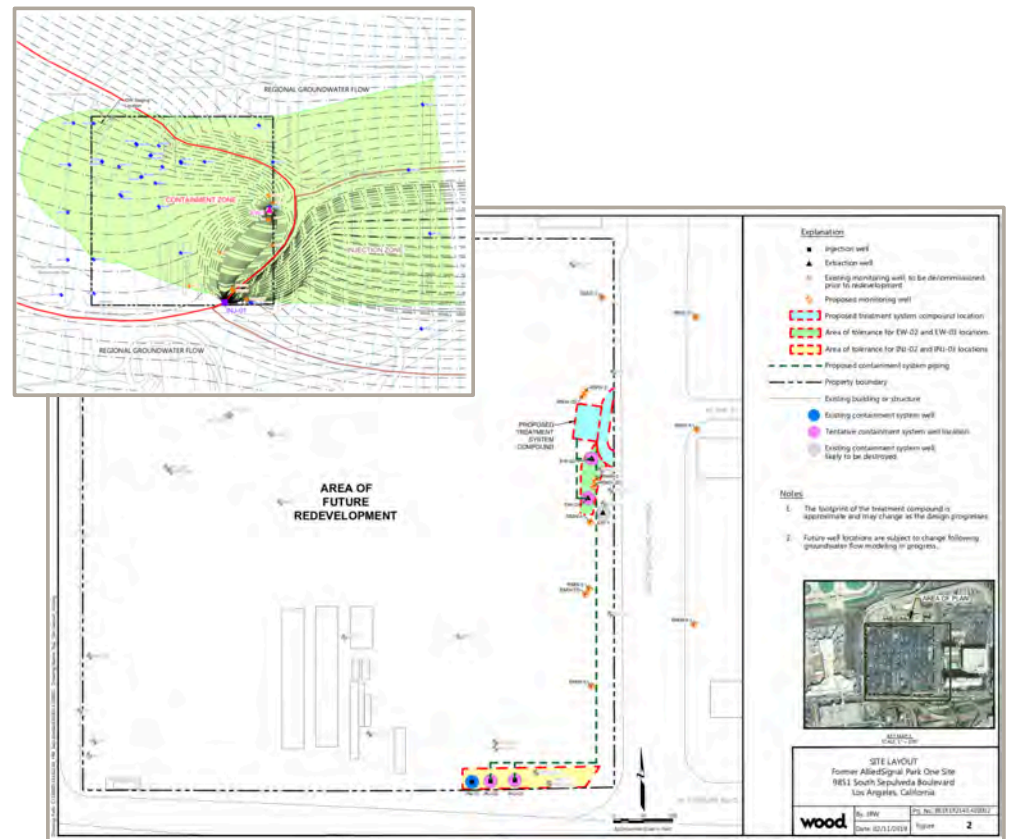
Post 3

- Post 3 will be displaced as part of T1E development to accommodate airfield improvements
- Potential to relocate east of Sepulveda and preserve Vicksburg/96th Street overpass?



Environmental Contamination & Remediation

- From 1941-1988, site was used for aerospace manufacturing
- Significant, residual contamination
 - Extends to soils, vapor trapped in soil, and ground water
- Need to cooperate with Honeywell – successor in interest to Allied Signal
 - Closure of multiple wells
 - Ground water treatment



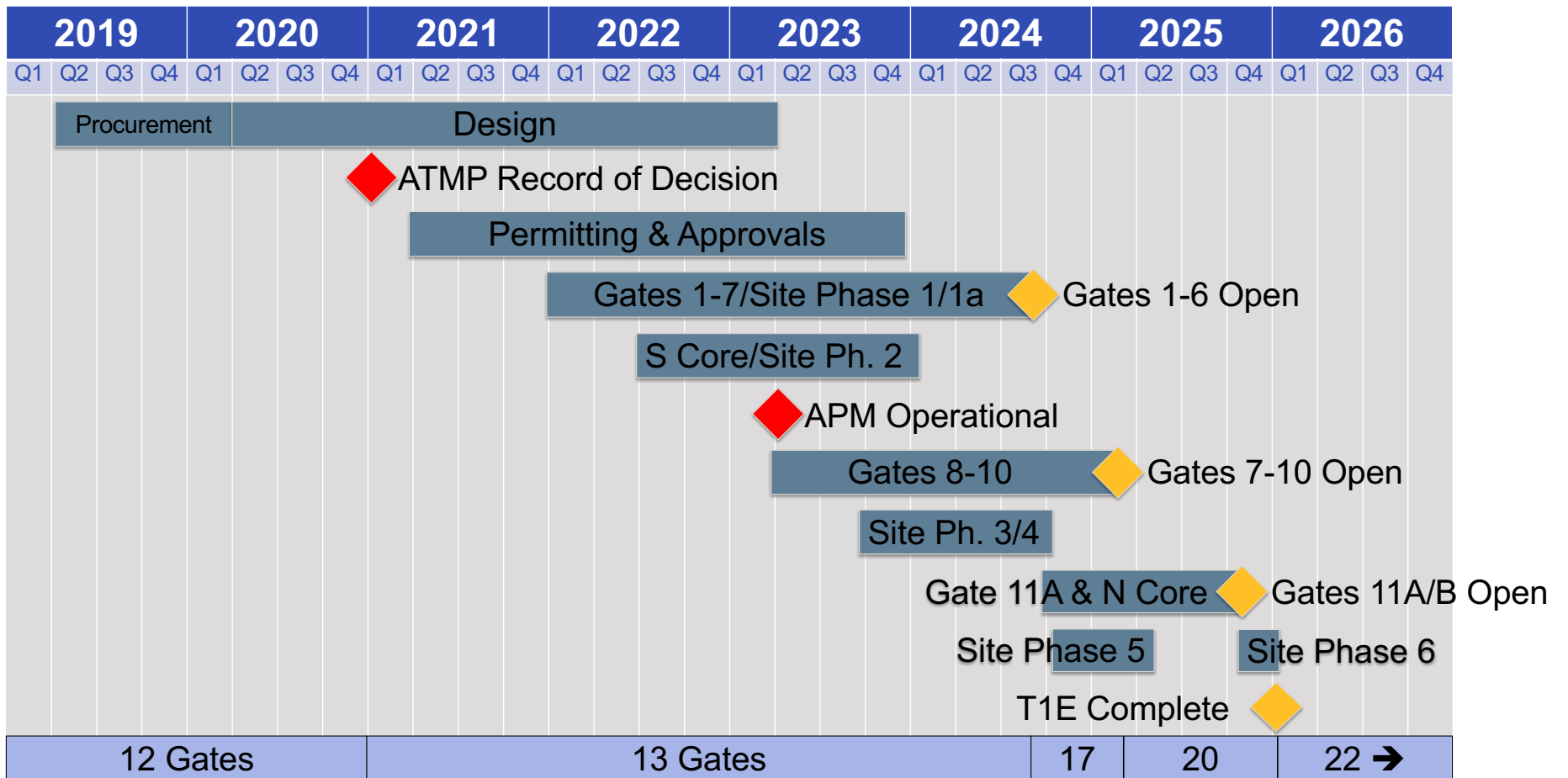
LAWA Standards

- Significant coordination required
 - Early input needed
 - Before lease signed
 - Timely decisions
- Potential modifications needed to support sustainability efforts



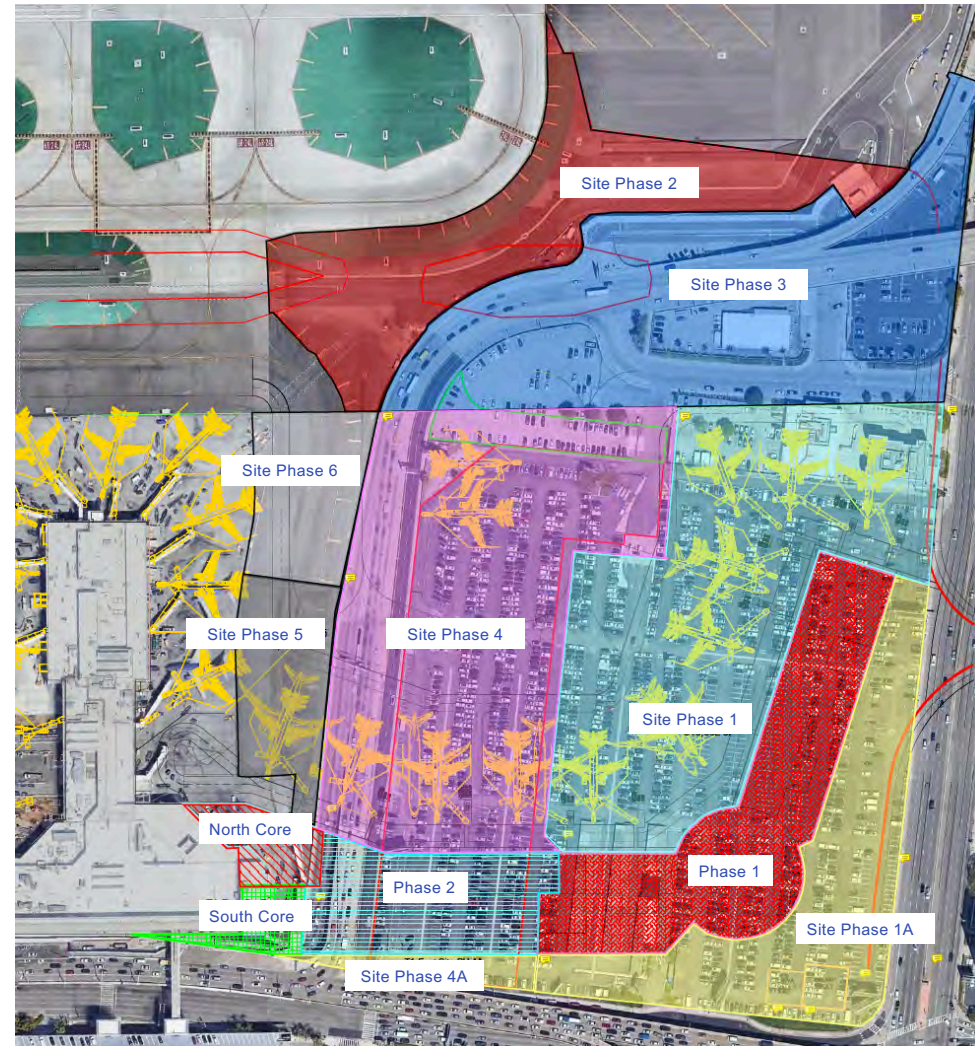
Preliminary Project Schedule & Phasing

Terminal 1 East Development Schedule



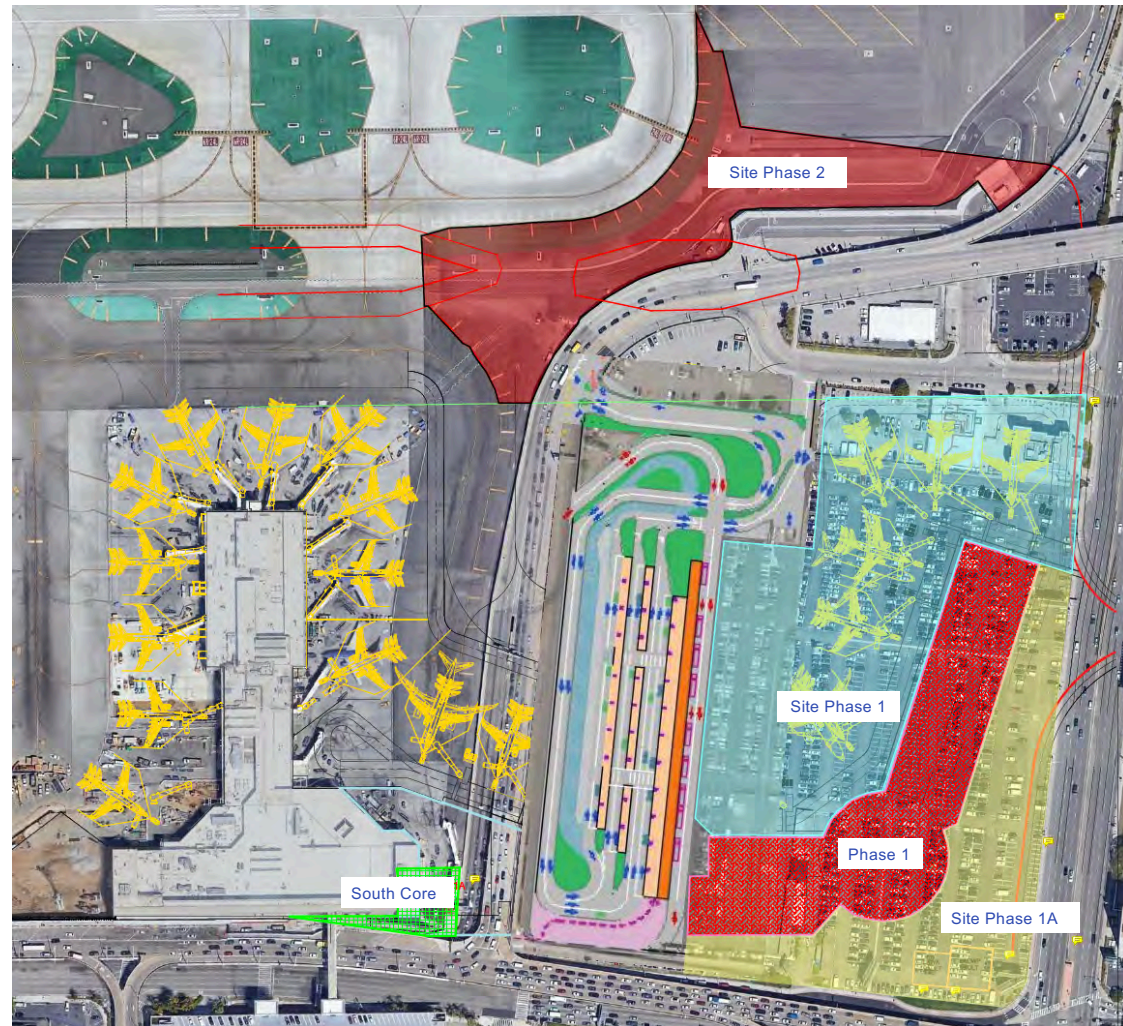
Preliminary Phasing Plan

- Driven by Southwest's gating requirements and the APM
- Building is broken into four, main parts to facilitate its construction before and after APM opens
- Airfield is broken into six parts, primarily to support flight operations
 - Assumes SWA will construct airfield improvements (Twy D & E) to support terminal operations



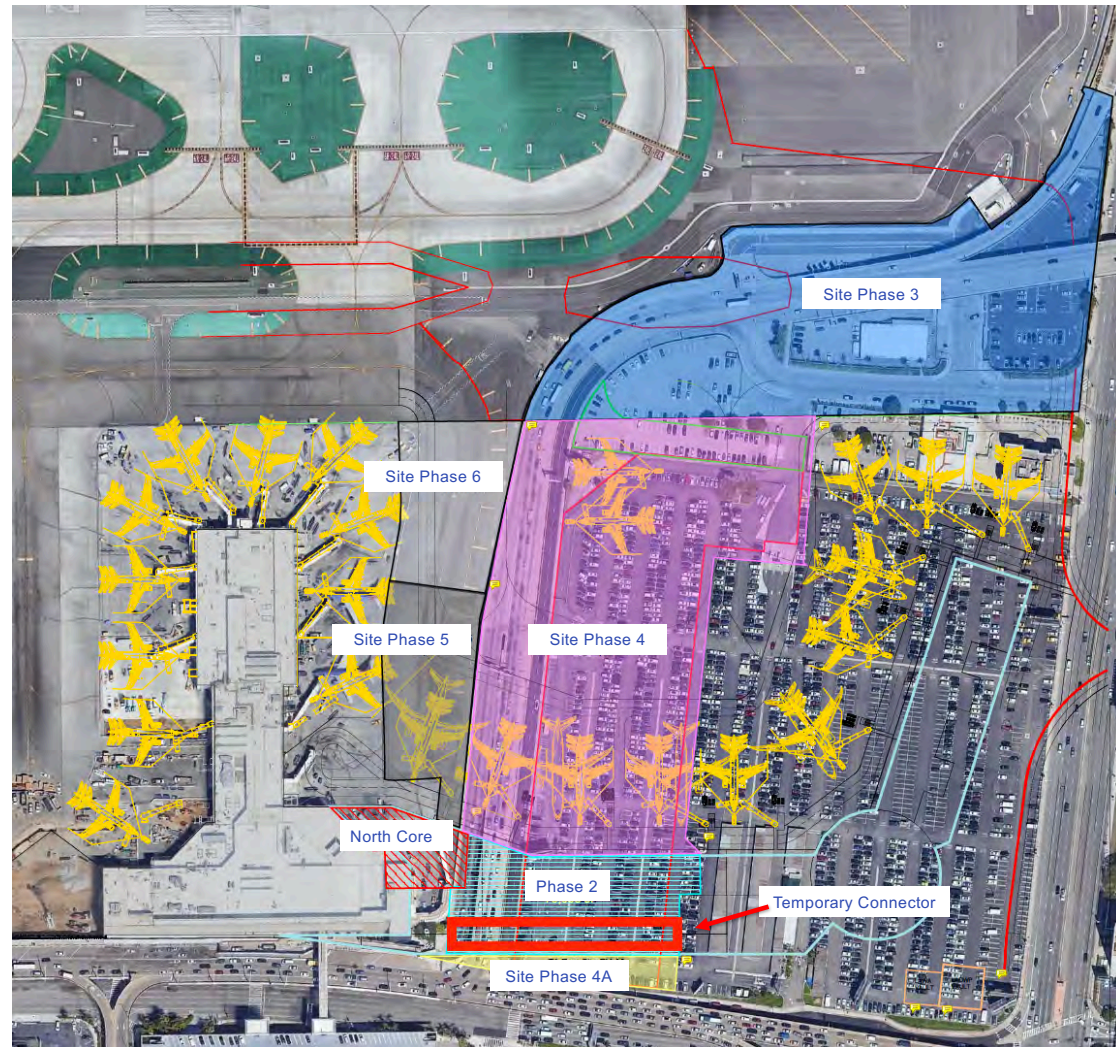
Pre-APM Work

- Sky Way remains open; Auxiliary Curb in use
- Gates 1-7 and surrounding pavements under construction
- To support connection to T1E east gates, South Core is also under construction
- Airfield north of Sky Way free to proceed



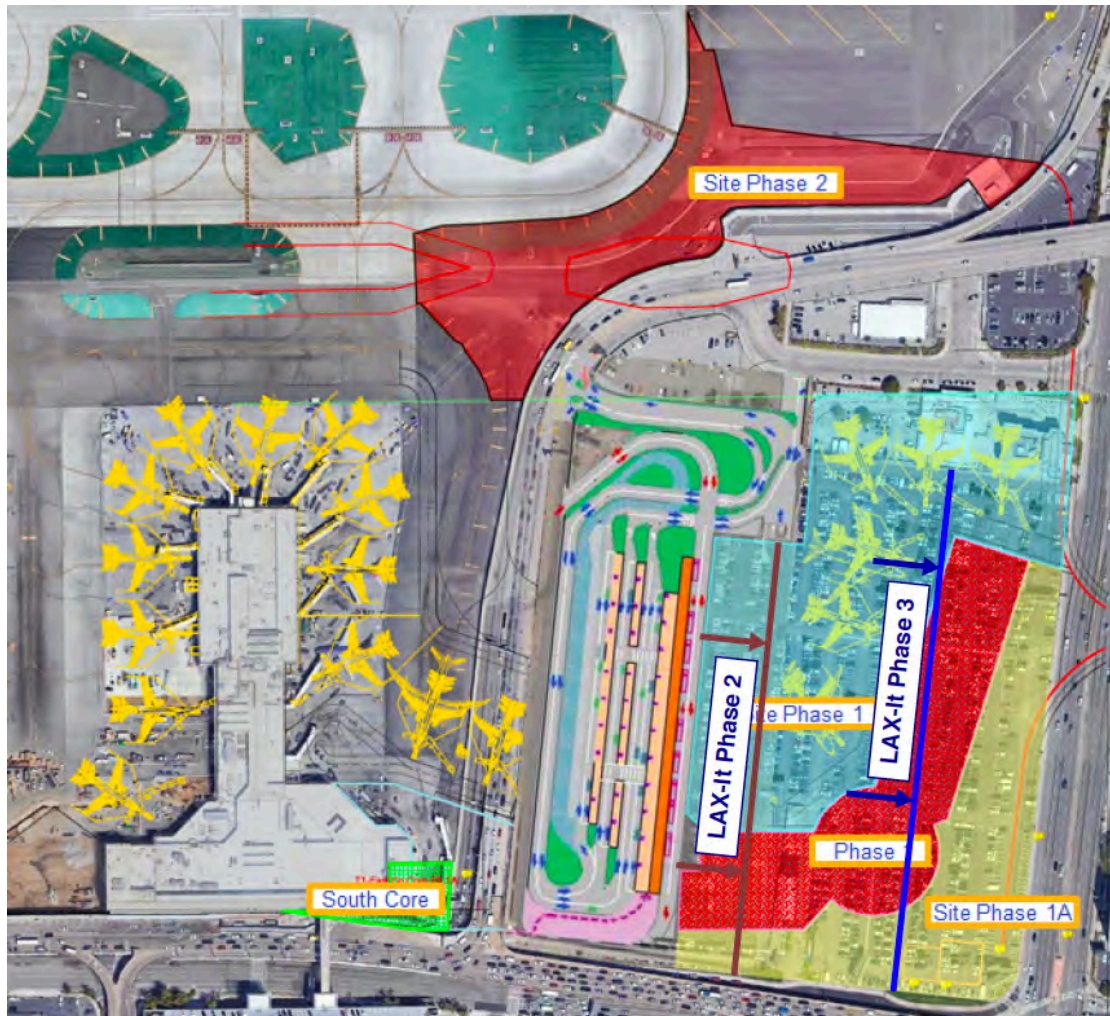
Post-APM Work

- Sky Way and auxiliary curb demolished
- Structure to support connection to, and pavements to support operation from, Gates 1-6 are initial focus
- Then completion of Gates 8-10 and then 11 & 12
- Finally, pavements to support operations from east side of T1



Impact of LAX-it Expansion

- LAX-it Phase 2 expansion decreases space for Building Phase 1 increases criticality of Building Phase 2
- LAX-it Phase 3 expansion likely precludes construction before LAX-it closure



Inputs Needed in Near Term to Advance T1E

- Communication and coordination around ATMP
 - We do not want first time SWA sees analysis to be publication of draft EIR
- Ability to advance through TIAP process without lease
 - May not have lease until late 2020
 - Plan to be approaching 30% design at that point in time
- Utilities
 - Must be able to work through, and obtain commitments for, utility service/POCs
 - Ability to rely on Central Utility Plant must be decided very early
 - Otherwise, program will be required to program both boilers and chillers
- Roadway Evolution
 - Directly impacts periphery of site; must be sure to avoid conflicts
 - Look for ways to support/advance development
- Access to LAX-it for geotechnical and environmental investigation

Discussion and Questions



EXHIBIT

11

Comments on the Draft Environmental Impact Report (DEIR) of the LAX Landside Access Modernization Program (LAMP)

Traffic Growth and Capacity Issues

The DEIR for the LAX Landside Access Modernization Program (LAMP) fails to adequately assess the growth impacts of the program on aviation activity levels, including air passengers, flight operations, and ground access traffic, and to provide mitigation measures for such growth. It assumes that the growth in aviation activity is unaffected by the program and that the same levels of activity will materialize regardless of whether the program is implemented or not. The DEIR states that airport access constraints do not affect aviation activity.

1. **Capacity Issues:** The airport is a group of components operating in sequence to accommodate traffic/passenger flow (access system-terminals-gates-airfield-airspace). Each of these components is a link in a chain and has a capacity. The lowest capacity of these links constrains flow and determines the capacity of the whole system. This was recognized by the LAX 2004 Master plan which stated: “The most constraining component defines the capacity of the entire airport”. The 2004 master plan considered an unconstrained demand forecast of 98 MAP in 2015 and evaluated four alternative configurations and estimated the airport capacity for each using the principle that this capacity is constrained by that of the lowest capacity component. The four alternatives considered were:
 - a. No Action No Project:
 - i. Capacity of 78 MAP
 - ii. constrained by the Curb and Roadways.
 - b. Alternative A &B including 5th runway, increased gates, and Landside Improvement (LAMP):
 - i. Capacity 97.9 MAP
 - ii. constrained by 5-runway airfield.
 - c. Alternative C including increased gates and LAMP improvements, but only 4 runways:
 - i. Capacity 89.6 MAP
 - ii. constrained by 4-runway airfield.
 - d. Alternative D including LAMP improvements and limited to 153 gates:
 - i. Capacity 78 MAP
 - ii. constrained by gates as well as curb and roadways.

The DEIR therefore contradicts the 2004 Master Plan which recognizes the fact that the curb and roadway (access system) can constrain airport capacity and consequently hinder growth, and that LAMP improvements will relieve this constraint and permit aviation activity to grow toward the capacity constrained by the next barrier to growth.

As shown in section 4.12.2-5 the ground traffic analysis contained in the DEIR is based on aviation activity levels of 86 MAP in 2024 and 95 MAP in 2035. These levels of activity could not be accommodated with the access system in its existing condition with its capacity of 78 MAP as determined in the Master Plan.¹

2. **Demand Forecasting Issue:** In section 6.3.2 the DEIR maintains that the demands forecast will materialize with or without the proposed project. It quotes the FAA 2014 Terminal Area Forecasts as based on local and national economic conditions “independent of the ability of the airport and air traffic control system to furnish the capacity required to meet the demand”. As such the DEIR fails to recognize the difference between “demand” and actual “aviation activity level”, and makes an assumption that permits activity levels to exceed available capacities. It is clear that forecast demand levels will not materialize if the capacity is not provided to accommodate them. The DEIR further quotes the FAA as saying that “...existing constraints are “embedded in historical data” used by the FAA as a base for the forecast” and makes the wrong conclusion that there is “no correlation between activity level and existing conditions of the CTA”. Existing conditions are reflected in historic data which show activity levels resulting from the interaction of demand and supply, and when the supply is limited the activity level cannot exceed that limit. Historic passenger traffic data at LAX did not, and could not reach beyond the 78 MAP capacity of the curb and roadway system, even if economic conditions created the “demand”.

The LAX Master Plan of 2004, while working in the face of 98 MAP forecast recognized that passenger traffic levels could not exceed 78 MAP unless LAMP improvements were made to release that constraint on capacity. The DEIR does not recognize this and implicitly assumes that activity levels up to the airfield capacity constrain will materialize far exceeding the stated capacity of the curb and roadway system. Such growth cannot occur unless the curb and roadway constraint is removed by the implementation of LAMP.

3. **Airport Market Share Issues:** The Los Angeles metropolitan area is served by a number of airports. In a multi-airport region passengers have a choice among airports. This choice has been the subject of many studies that are well documented in the literature. The ACRP report 98, which is quoted in the DEIR, provides a good summary of the findings on this subject. It identifies the primary drivers of airport choice in a multi-airport market such as: the price, air service

¹ For further information, please refer to “Addressing Future Capacity Needs in the U.S. Aviation System ” report by Eno Center for Transportation (November 2013) (https://www.ustravel.org/sites/default/files/Media%20Root/USTravel_Eno_1.pdf), which states: “Ground access to the airport at LAX is the most significant chokehold in the airport’s system and according to Los Angeles World Airports (LAWA) airport access infrastructure was projected to hit complete gridlock at 78.9 million annual passengers without improvements to the system. While 78.9 million annual passengers is a precise number [sic], it is accurate enough to mean that adding about 15 million annual passengers above the 62.6 million in 2012 will be too much for the access and gate infrastructure to handle.”

quality, airline/alliance loyalty, and airport ground access. It recognizes airport accessibility as the extent to which passengers can get to the airport from their residence or place of business. This is usually measured by the access time. Numerous studies quoted here and elsewhere recognize the importance of time as a variable affecting airport choice.

LAX remains the primary airport serving the region because of its other service advantages: nonstop flights to more destinations, international connections, wider choice of airlines, etc. But the fact remains that access constraints will affect the airport's share of the market. The ACRP 98 report, concludes based on a the Los Angeles regional case study that²:

“Surface access issues across most of the regional – Passenger commute times remains a primary passenger choice driver in the Los Angeles Basin. Given the presence of several regional facilities across the area, the traffic situation in the Basin drives the airport choice for a large proportion of travelers”.

To the extent that LAMP improvements will relieve congestion in the CTA and improve travel time for passengers accessing or leaving the LAX terminal area, it will improve LAX's attractiveness relative to other airports in the region and will expand its market shed area. This has been shown to be true repeatedly in airport choice models that have consistently found significant effects of travel time as a factor in airport choice.

Another factor that has been shown to affect passenger airport and mode choice is the travel time reliability. Improving reliability is tantamount to reducing travel time because passengers will need to allow for shorter margins to avoid missing flights. The LAMP improvements will improve reliability by providing regular APM access to the CTA thereby reducing the fluctuations in travel time that arise when congestion is severe.

The DEIR simply dismisses all this by stating that the other factors such as air service quality, flight schedules, price, and loyalty program are the primary factors affecting passenger choice, and that therefore the LAMP improvements will not increase the market share of LAX.

Summary

The DEIR of the LAMP program incorrectly ignores the aviation activity growth effects of the project. It incorrectly ignores the fact that capacity constraints at the curb/roadway access system will limit airport activity, which cannot grow

² Parella, B.C. et. al. “Understanding Airline and Passenger Choice in Multi-Airport Regions”, Aviation Cooperative Research Program ACRP 98. Transportation Research Board. Washington, D.C., 2013. <https://www.nap.edu/download/22443>

towards the forecast demand level without the improvements in the access system. LAMP improvements are designed to accommodate activity levels of 86 MAP in 2024 and 95 MAP in 2035, levels that clearly could not be accommodated with the current access system with its 78 MAP capacity.

Furthermore, the DEIR ignores the potential effect of the LAMP improvements on LAX's accessibility attractiveness relative to the other airports in the region and the resulting increase in its share of the regional market.

Recommendation

The DEIR should include a thorough and comprehensive aviation activity modeling analysis to quantify the effect of the LAMP improvements on activity considering regional demand and airport market share. The analysis should evaluate how the reduction in access time and the improvement of access time reliability will improve LAX's accessibility relative to the other airports in the Los Angeles Basin and how that will affect its market share of the total travel demand in the Basin. The aviation activity modeling analysis should also show what effect LAMP will have on passengers' mode choice to LAX and the extent if any to which LAMP will increase public transportation access to the airport. Only with such a thorough and comprehensive analysis would it be possible to assess the aviation activity and environmental impacts of LAMP.

Adib Kanafani

Professor of the Graduate School, University of California at Berkeley. Kanafani holds a Ph.D. in Civil Engineering from the University of California at Berkeley. Since joining the faculty at Berkeley in 1971 he has taught and conducted research on transportation systems, transportation engineering, airport planning and design, and air transportation economics. He has served on a number of national and international advisory panels to Government and industry. He was Director of Berkeley's Institute of Transportation Studies from 1982 to 1997, and Chairman of the Department of Civil and Environmental Engineering from 1997 to 2002, and Co-Director of the National Center of Excellence in Aviation Operations Research from 2001 to 2005. Kanafani's important contributions to air transportation include air transportation demand analysis, airport capacity analysis methods, and airline network analysis. His research on airline hubbing and on the relation between aircraft technology and airline network structure laid the ground for much of the work aimed at understanding the implications of airline deregulation in the late 1970's. He was a member of the research team that developed airport capacity analysis methods that are in widespread application in airport planning and design. Professor Kanafani has authored over 170 publications on transportation, including three books on Transportation Demand Analysis, on National Transportation Planning, and on the Economics of Networked Industries. He is a recipient of numerous including election to the U.S. National Academy of Engineering in 2002. He served as Chair of the Air Transport Division of the American Society of Civil Engineers, and as chair of the Transportation Research Board of the National Academies in 2009 and was named a Lifetime Associate of the National Academies in 2012.

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EXHIBIT

12

TRANSPORTATION AVIATION & AIRPORT GROUND SYSTEM ACCESS

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

2016
2040 **RTPSCS**

APPENDIX
ADOPTED | APRIL 2016

SCAG REGION AIRPORTS	1
INTRODUCTION	1
SOCIO-ECONOMIC OVERVIEW	4
REGIONAL AIR PASSENGER DEMAND FORECAST	8
AIRPORT DEMAND FORECASTS	18
AIRPORT GROUND ACCESS	22
NOTES	37



APPENDIX
TRANSPORTATION SYSTEM | AVIATION & AIRPORT GROUND
ACCESS

ADOPTED | APRIL 2016

AVIATION AND AIRPORT GROUND ACCESS

SCAG REGION AIRPORTS

INTRODUCTION

As illustrated in [EXHIBIT 1](#), the six counties of Southern California that make up the SCAG region are home to an airport system of more than 50 airports. The airport identifier codes assigned by the Federal Aviation Administration to the region's airports are listed in [TABLE 1](#). Ten of the airports are commercial airports, of which six had schedule commercial airline services in 2012, and one (March Inland Port, RIV) is a joint-use military airfield.

Because Southern California is a region with multiple airports that have overlapping catchment areas, travelers to and from the region can choose among several airports for their needs. Predicting future traffic levels at individual airports cannot be done in isolation and must consider the trends and dynamics occurring at other regional airports.

Therefore, to develop the projections of future activity, a forecast methodology has been adopted that blends a macro-economic forecast model relating historic passenger traffic to key socioeconomic variables for the entire SCAG region, with a traffic allocation model that allocates traffic across the individual airports based on factors that are known to drive a passenger's preference for a certain airport.

HISTORICAL COMMERCIAL PASSENGER TRAFFIC DEVELOPMENT

As illustrated in [FIGURE 1](#), aggregate historic passenger traffic at the SCAG region airports increased from 63.0 million annual passengers in 1990 to 88.0 million annual passengers in 2013, equivalent to a compound annual growth rate of 1.5 percent. In the last decade of the 20th century, traffic at the SCAG region airport system experienced a faster growth than had occurred over 1975-1990. In the period between 1990 and 2000, passenger traffic increased at an average growth rate of 3.4 percent, reaching a high of 88.7 million annual passengers in 2000. Following the terrorist attacks of September 11, 2001, the number of passengers decreased significantly. A softening economy in combination with tightened airport security measures led to weakened demand conditions and a decline in passenger traffic. Only in 2007, when the airports in the SCAG region handled 89.4 million passengers, did traffic finally exceed the previous high achieved in 2000. The recovery did not last long though, as the global financial crisis of 2007 had a profound impact on the air transport market in the United States, particularly California, where the housing crisis was severe. As a result, traffic numbers decreased to 79.0 million passengers in 2009, before demand conditions gradually improved again.

Throughout the historic period reviewed, the domestic market accounted for the majority of origin and destination (O&D) traffic at the SCAG region airports. Although the international segment gained importance, domestic O&D traffic in 2013 still accounted for 73.4 percent of total O&D traffic, compared to 80.4 percent in 1990. In addition to O&D traffic, the airport system in the SCAG region also handles a substantial amount of connecting traffic. The share of connecting passengers at the airports in the SCAG region has hovered around 17 percent of total enplaned and deplaned (E/D) passengers during the historic period reviewed.

AIRPORT PROFILES

Los Angeles International Airport (LAX) is the busiest airport located in the SCAG region in terms of passenger volume. As illustrated in [FIGURE 2](#), LAX handled nearly three quarters of all commercial passenger traffic in the SCAG region in 2012. John Wayne Airport (SNA), located in Orange County, is the second busiest airport, followed by LA/Ontario International Airport and Burbank Bob Hope Airport. See the following pages for profiles of the six major airports in the SCAG region that currently have commercial service.

FIGURE 1 Historic Traffic Development SCAG Region Airports

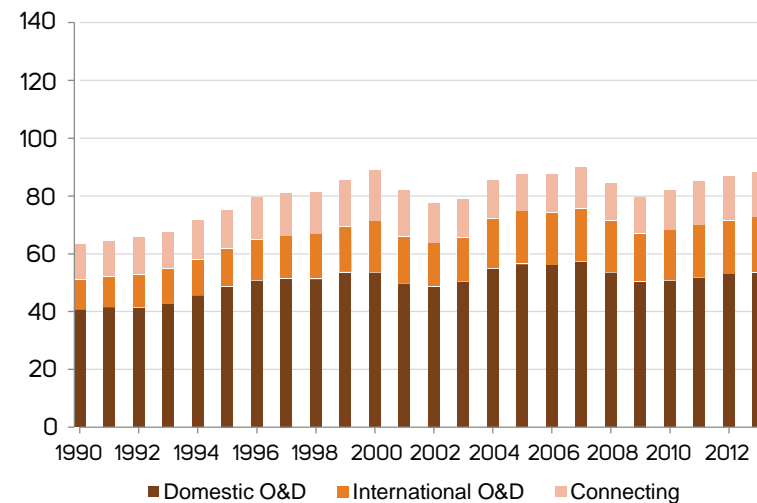
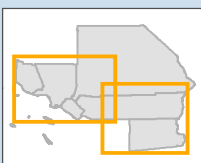
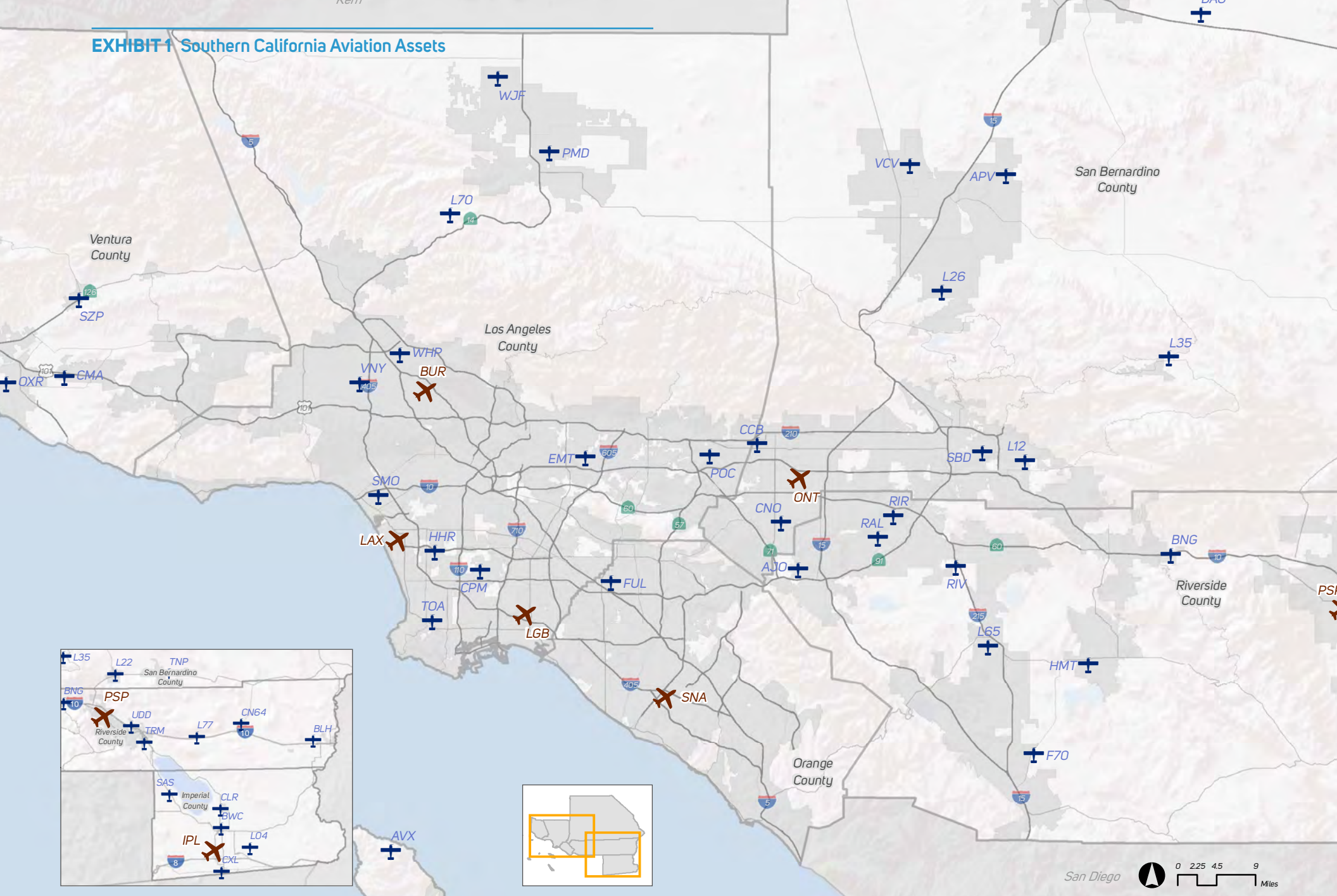




EXHIBIT 1 Southern California Aviation Assets



 Airports with scheduled service

 All other airports

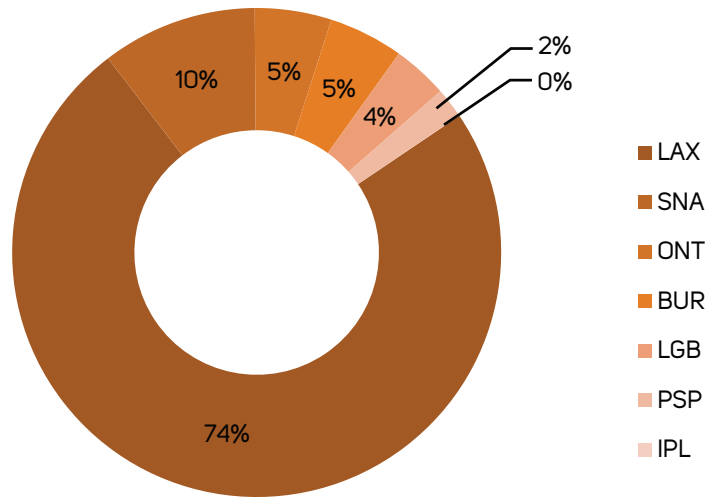
Source: SCAG, 2015

TABLE 1 Airport Identifier Codes

Airport Code	Airport Name
L70	Agua Dulce Airpark
APV	Apple Valley Airport
OO2	Baker Airport
BNG	Banning Municipal Airport
DAG	Barstow-Daggett Airport
UDD	Bermuda Dunes Airport
L35	Big Bear City Airport
BLH	Blythe Airport
BUR	Bob Hope Airport, Burbank
POC	Brackett Field, La Verne
BWC	Brawley Municipal Airport
CCB	Cable Airport
CXL	Calexico International Airport
CMA	Camarillo Airport
AVX	Catalina Airport
49X	Chemehuevi Valley Airport
CNO	Chino Airport
L77	Chiriaco Summit Airport
CLR	Cliff Hatfield Memorial Airport, Calipatria
CPM	Compton/Woodley Airport
AJO	Corona Municipal Airport
CN64	Desert Center Airport, Palm Desert
RIR	Flabob Airport, Riverside
F70	French Valley Airport
FUL	Fullerton Municipal Airport
WJF	General William J. Fox Airfield, Lancaster
HHR	Hawthorne Municipal Airport
HMT	Hemet-Ryan Airport
L26	Hesperia Airport

Airport Code	Airport Name
IPL	Imperial County Airport
TRM	Jacqueline Cochran Regional Airport, Thermal
SNA	John Wayne Orange County Airport
LGB	Long Beach Airport
LAX	Los Angeles International Airport
RIV	March Air Reserve Base (March Inland Port)
EED	Needles Airport
ONT	Ontario International Airport
OXR	Oxnard Airport
PSP	Palm Springs International Airport
PMD	Palmdale Regional Airport
L65	Perris Valley Airport
L12	Redlands Municipal Airport
RAL	Riverside Municipal Airport
SAS	Salton Sea Airport
SBD	Sam Bernardino International Airport
EMT	San Gabriel Valley Airport
SMO	Santa Monica Airport
SZP	Santa Paula Airport
VCV	Southern California Logistics Airport, Victorville
TNP	Twenty Nine Palms Airport
VNY	Van Nuys Airport
WHP	Whiteman Airport, Pacoima
L22	Yucca Valley Airport
TOA	Zamperini Field, Torrance

FIGURE 2 Market Share of Commercial Airports in 2012



SOCIO-ECONOMIC OVERVIEW

INTRODUCTION

Demand for air travel is derived from socioeconomic interactions between origin and destination markets. Local economic activities generate the need for air travel, while the personal wealth of the local population drives discretionary spending, such as leisure trips requiring air travel. Additionally, an ethnically diverse region home to a significant number of foreign-born residents, such as Southern California, generates demand for air travel internationally, as friends and relatives maintain close ties.

There is a proven close relationship between economic activity and annual traffic growth. This relationship is illustrated in **FIGURE 3**, which shows the passenger traffic growth in the United States between 1990 and 2013 compared to overall economic growth. As the figure illustrates, air traffic activity trends upward with positive economic growth, and trends downward with negative or flat source-country economic growth. Passenger traffic in Southern California also has a high correlation to economic activity in the local market and its major source markets.

Comparatively speaking, air transport is one of the market sectors with the longest product life cycles as a result of high capital investment costs. During these lengthy life cycles, the relevant economic, social and political environment will change considerably.

FIGURE 3 Relationship Between Air Travel and Economy

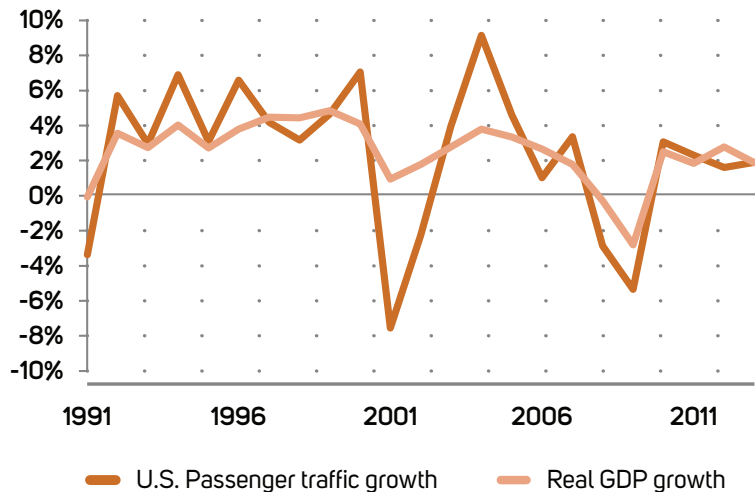
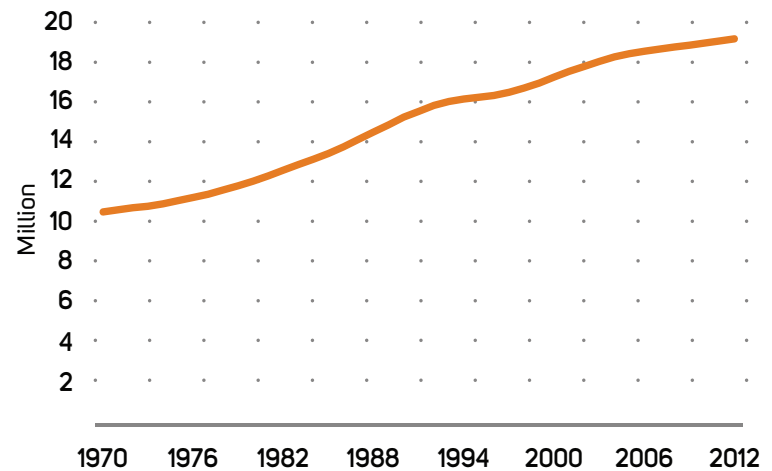
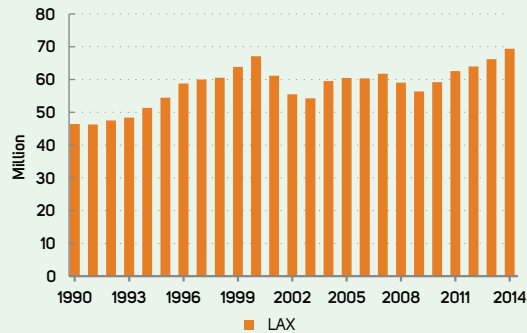


FIGURE 4 Historical Population Development in Southern California



AIRPORT PROFILES

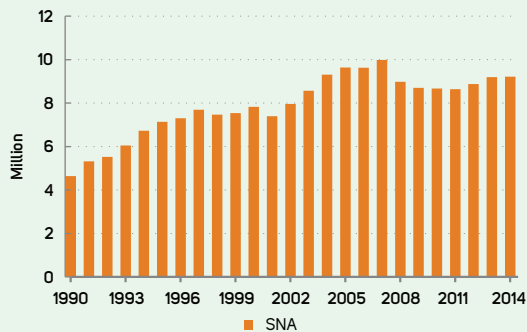


LOS ANGELES INTERNATIONAL AIRPORT

Following a decade of continuous growth in the nineties, passenger traffic at LAX is still recovering from the impact of subsequent exogenous shocks, including 9/11 and the global financial crisis. Passenger traffic in 2014 was up 6% compared to the previous year; the total of 70.66 million annual passengers was the first time the airport exceeded the previous high of 67.1 million attained in 2000.

Los Angeles International Airport is the primary airport serving the Greater Los Angeles Area and is a hub for the major US legacy carriers American Airlines, Delta, and United, in addition to Alaska Airlines and Virgin America.

Besides serving an extensive domestic network, LAX is also a key international gateway, with flights to six continents, and is also a major cargo airport.

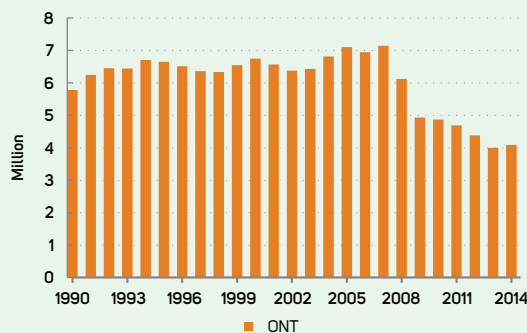


JOHN WAYNE AIRPORT

John Wayne Airport is located in unincorporated Orange County, near the cities of Santa Ana, Irvine, Newport Beach and Costa Mesa. The airport is the second busiest airport in the SCAG region.

Passenger traffic at the airport has been more resilient to exogenous shocks than the other airports in the area. Demand recovered quickly after 9/11; however, the global financial crisis negatively affected demand for air travel in Orange County. Total passenger traffic in 2014 was 9.2 million, below the high of 10.0 million in 2007.

In 2014, Southwest was the largest carrier operating at the airport, followed by United, American, Delta, Alaska Airlines, and US Airways. The air service pattern is mostly focused on cities in western United States as well as the main hubs of the legacy airlines.



LA/ONTARIO INTERNATIONAL AIRPORT

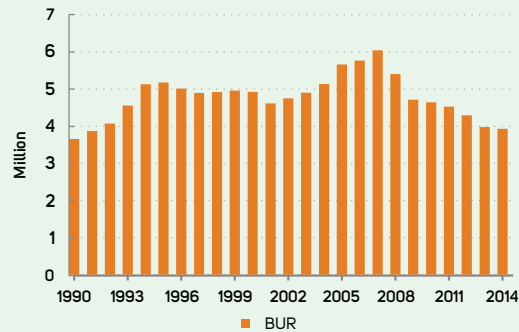
LA/Ontario International Airport is located in Ontario in San Bernardino County. Los Angeles World Airports (LAWA) owns and operates the airport today. LAWA has agreed to terms and conditions for the transfer of the airport in the coming months to a new airport sponsor, the Ontario International Airport Authority (OIAA), pending review and approval by the Federal Aviation Administration (FAA).

Following the global financial crisis, passenger traffic at the airport dropped sharply from 7.1 million in 2007 to just under 4 million in 2013. Passenger traffic increased by 3.4% between 2013 and 2014.

In 2014, Southwest was the largest carrier operating at the airport. The air service pattern is mostly focused on cities in western United States as well as the main hubs of the legacy airlines.

The airport is also a major cargo hub for UPS, facilitated by its geographic position, long runways, and relatively limited noise restrictions allowing for 24/7 operations.

AIRPORT PROFILES

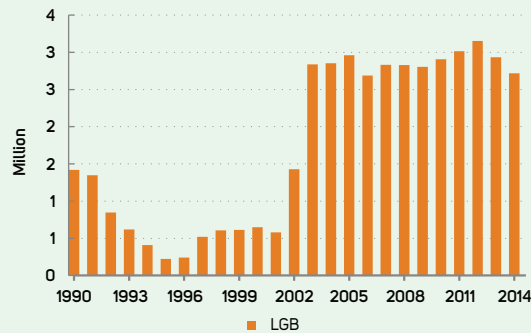


BURBANK BOB HOPE AIRPORT

Bob Hope Airport is located northwest of downtown Burbank in Los Angeles County, serving the northern part of the Greater Los Angeles Area.

In recent years, passenger traffic at the airport has significantly declined from 6.0 million passengers in 2007 to 3.9 million passengers in 2014.

Southwest is the largest airline operating at the airport, serving mainly cities in the western United States.

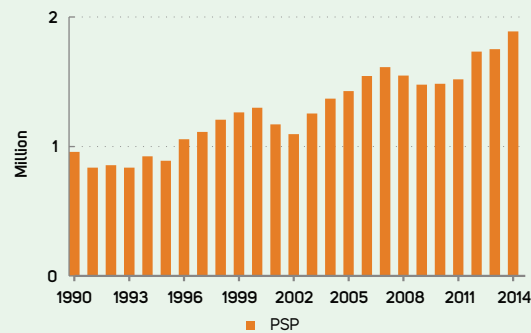


LONG BEACH AIRPORT

Long Beach Airport is located northeast of the city of Long Beach in Los Angeles County.

The arrival of low-cost carrier JetBlue in 2001 led to a rapid increase in air traffic, and solidified LGB's position as an alternative to LAX for flights to the East Coast.

Due to stringent noise restrictions, the number of daily slots is currently restricted to 41, of which JetBlue operates 31. As a result of the local noise compatibility ordinance, traffic levels have been relatively steady, hovering around 3 million annual passengers. It is anticipated that the City of Long Beach will soon allow an additional 9 commercial departures per day based on the terms of the ordinance (for a total of 50 daily commercial departures).



PALM SPRINGS INTERNATIONAL AIRPORT

Palm Springs International Airport is located in the desert resort city of Palm Springs in the Coachella Valley in Riverside County. The airport mainly caters to seasonal leisure travelers visiting the area during the winter.

Except for a few setbacks following the events of 9/11 as well as the global financial crisis, passenger traffic at the airport has increased steadily. In 2014 the airport handled 1.9 million passengers, which was a 9% increase compared to the previous year.

The main US carriers, such as United, Alaska, Southwest, and American all operate at PSP. Some carriers only provide service during the peak season.

AIRPORT PROFILES

IMPERIAL COUNTY AIRPORT

Imperial County Airport is located in the city of Imperial in Imperial County, approximately twelve miles north of the California-Mexico border. The airport provides limited scheduled air service and also serves the general aviation needs of the surrounding communities.

Imperial County Airport is currently part of the Essential Air Service (EAS) program through the United States Department of Transportation, providing the residents of Imperial County a connection to the national aviation system. Passenger traffic peaked in 2001, with approximately 30,000 annual passengers, before gradually decreasing following the events of 9/11. Traffic began rebounding in 2006 before declining again after the global financial crisis. The airport participates in the federal Essential Air Service (EAS) program, which subsidizes air service to eligible small community airports.

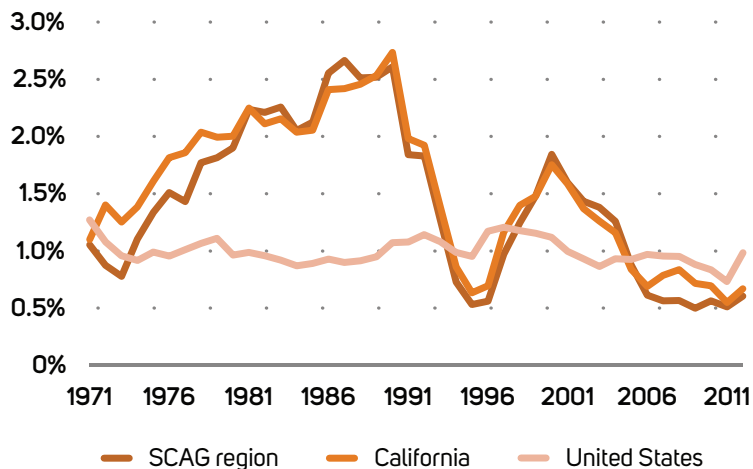
Such change affects the expected trends in traffic growth, and these market dynamics profoundly influence air carrier decisions on fleet and network expansion, which in turn affect airport developments. Given their relevance to air travel trends and developments, the following subsections highlight the socioeconomic conditions in the region.

POPULATION

The population of the SCAG region was about 18.2 million in 2012, as shown in **FIGURE 4**. Since 1970, population has increased at an average annual growth rate of 1.4 percent, although the average growth rate slowed down to 0.9 percent over the decade between 2002 and 2012. This rate of growth is not excessive, indicating that it is sustainable with appropriate investments in the economy. From 2013 to 2040, the population growth is projected to slow down even further to an average rate of 0.7 percent per year, which is consistent with the growth rates that have been experienced in recent years. A growing population drives the potential pool of travelers and is an indicator for future demand levels.

Historically, population growth in California as well as Southern California has outpaced national population growth, as illustrated in **FIGURE 5**. The diverse and large economies, proximity to the coast, and heavily-populated metropolitan areas have attracted a large share of immigrants from other states as well as other nations. Since 2004, however, the trend has reversed, and the country's overall population has increased at a faster rate than the population in the SCAG region.

FIGURE 5 Historical Population Development in Southern California, California, and the United States



ECONOMY

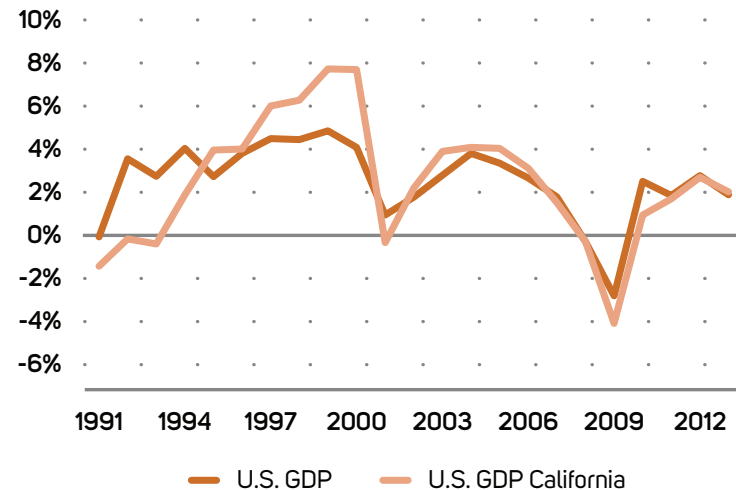
As shown in **FIGURE 6**, the economy of California has experienced a somewhat cyclical growth pattern over the past decades. Slow growth during the 1990s recession was followed by an accelerated growth leading to the peak of the dot-com bubble in 2000. During this phase, the growth of the Californian economy actually outpaced national economic growth. While the economy recovered following the dot-com bust in 2001, the financial crisis led to another contraction of the region's economic output. While the region took a very hard hit during the global financial crisis, overall growth in Southern California is pointing toward continued economic recovery and progress.

REGIONAL AIR PASSENGER DEMAND FORECAST

INTRODUCTION

Air travel is a derived demand. Demand for air transportation between origin and destination markets is derived from the socioeconomic interactions between these markets, shaped by carriers' networks and available airlift capacity. Generally, business/trade activity, tourism/visitor activity, and "visiting friends and relatives" (VFR) constitute the primary components of air travel at an airport.

FIGURE 6 Historical Development of California and the United States Gross Domestic Product in Real Terms



Dependable forecasting practice requires awareness of the uncertainties surrounding the forecasts. Considerable effort has been devoted to analyzing the factors affecting traffic activity at the airports in the SCAG region. However, as with any forecasts, there are uncertainties regarding these factors, such as the outlook for the local and world economies and the structure of the airline industry. A pragmatic and yet systematic approach has been used to produce a set of unbiased aviation activity forecasts for the region's airports.

As mentioned earlier, Southern California is a region with multiple airports that have overlapping catchment areas. Therefore, travelers to and from the region have the option to choose among several airports for their needs. Predicting future traffic levels at individual airports cannot be done in isolation and must consider the trends and dynamics occurring at other airports in the region. Since the catchment areas of the airports of San Diego, Carlsbad and Santa Barbara also overlap with the SCAG region, they have also been considered in the analysis.

To develop the projections of future activity, a forecast methodology has been adopted that blends a macro-economic forecast model relating historic passenger traffic to key socioeconomic variables for the entire SCAG region, with a traffic allocation model that allocates traffic across the individual airports based on factors that are known to drive a passenger's preference for a certain airport. The methodology is illustrated in **EXHIBIT 2**. For intra-California and short-haul domestic travel the model incorporates price and time competitiveness with other modes of travel, such as driving, conventional rail and High Speed Rail. The following sections elaborate upon the methodology used in

each step of the forecasting process. The resulting forecasts are presented after the discussion of the methodology.

DOMESTIC O&D TRAFFIC

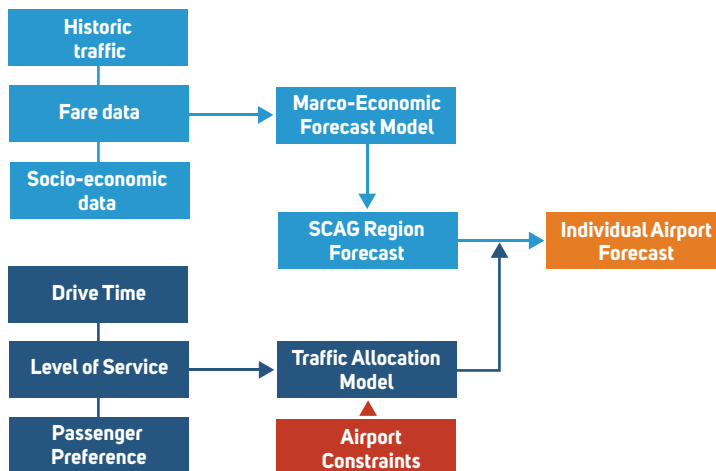
Recognizing that different market regions have different demand drivers and dynamics, passenger O&D markets are typically divided into different market segments. This can be done based on characteristics of the market, such as geography and length of flight. By analyzing historic O&D traffic levels, domestic air passenger traffic to the region was divided into three key domestic market segments.

- Intra-California;
- Short-haul; and
- Medium-Long haul

The forecasting team investigated linear and logarithmic regression models before settling on a log-log specification. Log-log transformed models are typically used in air traffic forecasting, because taking the natural logarithm of the variables improves the model fit, and it also allows the regression coefficients to be easily interpreted as an elasticity, e.g. a 1 percent change in GDP is associated with a proportional percentage change in passenger traffic.

The following sections elaborate on the forecast methodology that was used for each domestic market segment.

EXHIBIT 2 Forecast Methodology



INTRA-CALIFORNIA O&D TRAFFIC

To prepare the O&D passenger forecast for the Intra-California market segment the following approach was used:

1. Through an econometric modeling approach, the historic Intra-California O&D passenger traffic to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to the historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. Using the regression analysis, the Gross Regional Product of California (in real terms) and airfares proved to be the variables that best explain the development of Intra-California passenger traffic between 1990 and 2000. The regression analysis produced an R^2 value of 0.89, indicating that these variables are expected to serve as reliable

predictors of future traffic development. The tightened security measures post 9/11 significantly increased passenger processing times at airports throughout the country and forced travelers to show up at the airport considerably earlier than before. Especially on short routes within California, the impact of the increased processing times had a relatively large impact on the total trip time. Road transport became a viable alternative, and, consequently, demand for air travel within California declined. This development is also illustrated in **FIGURE 7**, which shows the fit of the values generated by the regression model in comparison with actual historic traffic levels. After the events of 9/11, intra-California O&D passenger traffic dropped significantly until bottoming out in 2003. While the change in passenger behavior post 9/11 could not be anticipated by the regression model, the values produced by the model continue to follow a similar trend as actual traffic, and the model therefore remains a reliable predictor of future intra-California traffic levels, albeit it at a higher level. The difference between the values produced by the regression model and the actual values can be interpreted as a fair representation of the amount of passenger traffic that switched to other modes of transport.

3. The final model for Intra-California O&D traffic can be described by the following equation:

$\text{Ln}(\text{Intra-California Traffic}) = c1 + c2 * \text{Ln}(\text{Real California GDP}) + c3 * \text{Ln}(\text{Real Intra-California Fares})$ where:

- Ln is the natural log of the variable
- Intra-California traffic is O&D traffic within California

- Real California GDP is the Gross Regional Product of California adjusted for inflation
- Real Intra-California Fares are the fares on Intra-California routes in real U.S. dollars
- c1, c2, and c3 are the estimated model parameters capturing the impact of various factors on Intra-California traffic growth

The econometric model describing intra-California traffic resulted in the following values for the dominant parameters, or elasticities:

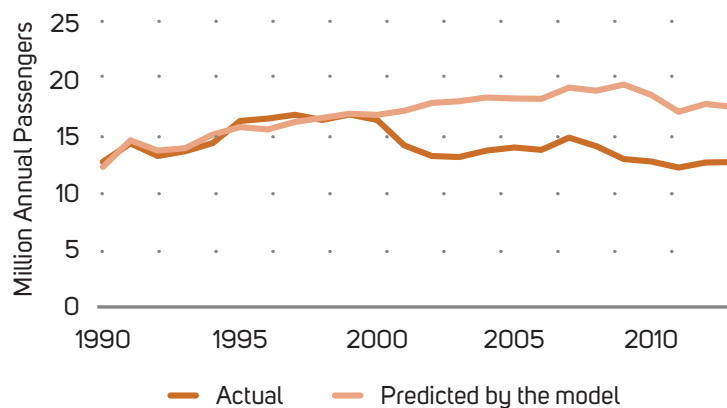
- GDP elasticity of 0.54
- Air Fare coefficient of -0.56

Considerable research (e.g., *Air Travel Demand Elasticities: Concepts, Issues and Measurement*, D. Gillen, W.G. Morrison and C. Stewart, 2002) has established a positive relationship between economic growth or income growth and air travel. In many cases, demand for air travel grows at a rate higher than that of the economy, so that each one-percent increase in GDP results in air traffic growth of 1 percent to 2 percent. However, as markets mature, GDP elasticity tends to decline – further GDP growth has a smaller impact on air travel growth. The United States tends to have relatively low elasticities between economic growth and air travel demand. Domestic U.S. air travel demand is often recognized to have an elasticity ratio to economic growth of 1 to 1. In contrast, a developing economy with travel to long-haul destinations may have elasticities exceeding 2 to 1. The regression results indicate a GDP parameter typical for a mature market such as within California: each one percent increase in GDP results in a 0.54 percent increase in traffic.

Research on air fare elasticities have produced values of between -0.2 and -2.0 (for example, see http://www.iata.org/whatwedo/Documents/economics/Intervistas_Elasticity_Study_2007.pdf). The fare elasticity estimates produced by the model fall within that range. Fare elasticities are affected by a range of factors, such as competition dynamics, income levels, and market maturity. The domestic model shows a moderate sensitivity to fare changes.

4. Using forecasts of the California Real Gross Domestic Product and a forecast of real air fares, future domestic forecast levels could be generated. Since 1945, airline yields and fares have declined on an almost continual basis. Between 1990 and 2008, U.S. system-wide yields declined by an average of 2.4 percent per annum. This decline has been the result of technological improvement, increasing load factors, and strong competition, particularly from low cost carriers. Much of this is the consequence of deregulation both within the U.S. and with international jurisdictions (e.g., open skies agreements). However, in recent years, yields in the U.S. have increased slightly, the result of high fuel prices and, more recently,

FIGURE 7 Goodness-of-fit Intra-California Traffic Model



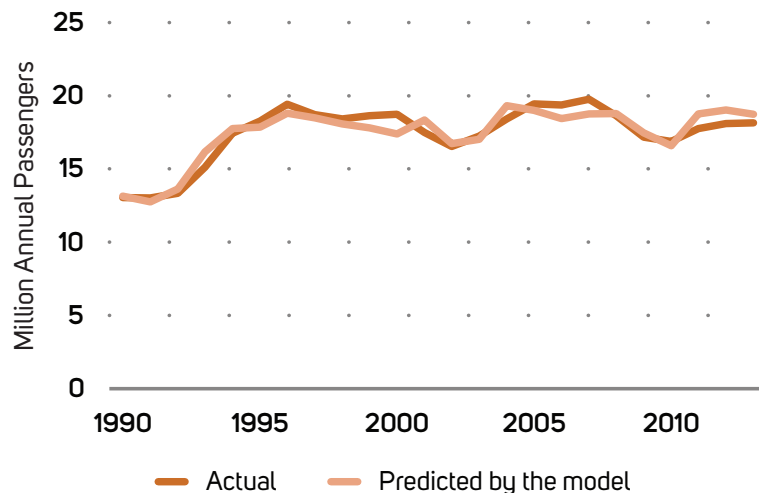
capacity restraint by U.S. carriers. It is assumed that these factors offset each other and air fares remain constant in real terms over the forecast period.

DOMESTIC SHORT-HAUL O&D TRAFFIC

To prepare the O&D passenger forecast for the domestic short-haul market segment the following approach was used:

1. Through an econometric modeling approach, the historic domestic short-haul O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The regression analysis identified the real Gross Regional Product of the short-haul markets in combination with fares as reliable predictors of short-haul domestic passenger traffic between 1990 and 2013. The regression analysis produced an R^2 value of 0.90. **FIGURE 8** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to short-haul domestic markets.
3. The final model for Domestic Short-Haul O&D traffic can be described by the following equation:

FIGURE 8 Goodness-of-fit Domestic Short-Haul Traffic Model



$\text{Ln}(\text{Domestic Short-Haul Traffic}) = c_1 + c_2 * \text{Ln}(\text{Real Domestic Short-Haul GDP}) + c_3 * \text{Ln}(\text{Real Domestic Short-Haul Fares}) + c_4 * \text{dummyGulf War} + c_5 * \text{dummy9/11} + c_6 * \text{dummyGlobal Financial Crisis}$ where:

- Ln is the natural log of the variable
- Domestic Short-Haul Traffic is O&D traffic to domestic short-haul markets
- Real Domestic Short-Haul GDP is the Gross Regional Product of domestic short-haul markets adjusted for inflation
- Real Domestic Short-Haul Fares are the fares to domestic short-haul markets in real U.S. dollars
- DummyGulf War is a binary variable that takes on the value 1 in 1991 and 1992 and is 0 otherwise to represent the temporary impact of the Gulf War on traffic;
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c_1 , c_2 , c_3 , c_4 , c_5 , and c_6 are the estimated model parameters capturing the impact of various factors on domestic short-haul traffic growth

The econometric model describing domestic short-haul traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.20
 - Air Fare coefficient of -0.70
4. Using forecasts of the Real Gross Regional Product of the short-haul markets and a forecast of real air fares, future forecast levels could be generated.

DOMESTIC MEDIUM-TO LONG-HAUL O&D TRAFFIC

To prepare the O&D passenger forecast for the domestic medium- to long-haul markets the following approach was used:

1. Through an econometric modeling approach, the historic domestic medium- to long-haul O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.

2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the combined medium- and long-haul markets, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.97. **FIGURE 9** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to domestic medium- to long-haul markets.
3. The final model for Medium- to Long-Haul Domestic O&D traffic can be described by the following equation:

$\text{Ln}(\text{Domestic Medium- to Long-Haul Traffic}) = c1 + c2 * \text{Ln}(\text{Real Domestic Medium- to Long-Haul GDP}) + c3 * \text{Ln}(\text{Real Domestic Medium- to Long-Haul Fares}) + c4 * \text{dummy9/11} + c5 * \text{dummyGlobal Financial Crisis}$ where:

- Ln is the natural log of the variable
- Domestic Medium- to Long-Haul Traffic is O&D traffic to domestic medium- to long-haul markets
- Real Domestic Medium- to Long-Haul GDP is the Gross Regional Product of domestic medium- to long-haul markets adjusted for inflation
- Real Domestic Medium- to Long-Haul Fares are the fares to domestic medium- to long-haul markets in real U.S. dollars

- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on domestic medium- to long-haul traffic growth

The econometric model describing domestic medium- to long-haul traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.65
 - Air Fare coefficient of -0.25
4. Using forecasts of the Real Gross Regional Product of the medium- to long-haul markets and a forecast of real air fares, future forecast levels could be generated.

INTERNATIONAL O&D TRAFFIC

Similar to the domestic O&D market, the international O&D market has also been divided into different market segments, based on the characteristics and dynamics of each market, such as geography and length of flight. By analyzing historic O&D traffic levels, air passenger traffic to the region was divided in terms of the key international market segments.

- Asia and Oceania
- Canada and Greenland
- Mexico, Central America and the Caribbean
- South America
- Trans-Atlantic (Africa, Europe and the Middle East)

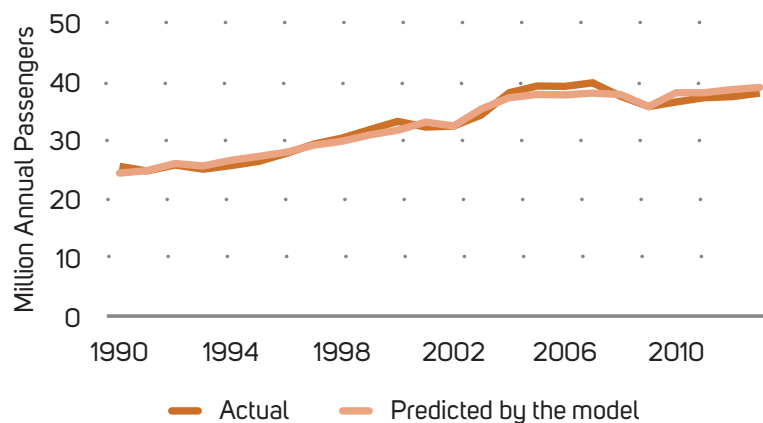
The following sections elaborate on the forecast methodology that was used for each international market segment.

ASIA/OCEANIA O&D MARKET

To prepare the O&D passenger forecast for the Asia/Oceania O&D market, the following approach was used:

1. Through an econometric modeling approach, the historic Asia/Oceania O&D passenger traffic development to the SCAG region airports, including the airports of

FIGURE 9 Goodness-of-fit Medium- to Long-Haul Domestic Traffic Model



San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.

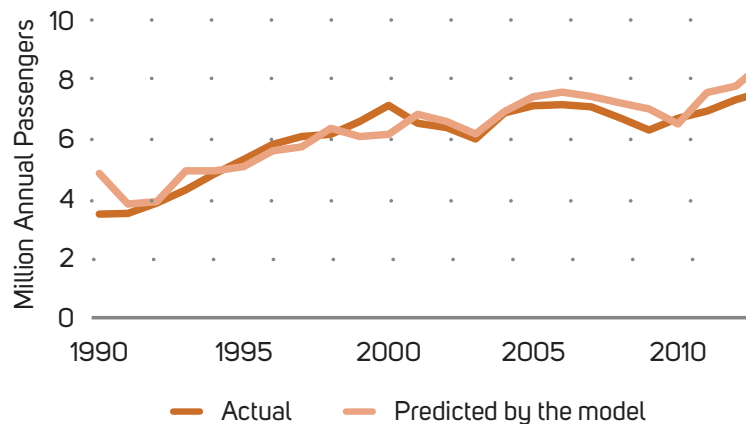
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of the Asia and Oceania markets, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.86. **FIGURE 10** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Asia and Oceania.
3. The final model for Asia/Oceania O&D traffic can be described by the following equation:

$\text{Ln(Asia/Oceania Traffic)} = c_1 + c_2 * \text{Ln(Real Asia/Oceania GDP)} + c_3 * \text{Ln(Real Asia/Oceania Fares)} + c_4 * \text{dummy9/11} + c_5 * \text{dummyGlobal Financial Crisis} + c_6 * \text{dummySARS}$ where:

- Ln is the natural log of the variable
- Domestic Asia/Oceania Traffic is O&D traffic to Asia/Oceania
- Real Asia/Oceania GDP is the Gross Domestic Product of Asia/Oceania adjusted for inflation
- Real Asia/Oceania Fares are the fares to Asia and Oceania markets in real U.S. dollars

- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
 - DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
 - DummySARS is a binary variable that takes on the value 1 in 2003 and is 0 otherwise to reflect the impact of SARS (Severe Acute Respiratory Syndrome) on traffic;
 - $c_1, c_2, c_3, c_4, c_5,$ and c_6 are the estimated model parameters capturing the impact of various factors on Asia/Oceania traffic growth
 - The econometric model describing Asia/Oceania O&D traffic resulted in the following values for the dominant parameters, or elasticities:
 - GDP elasticity of 0.38
 - Air Fare coefficient of -0.96
4. Using forecasts of the Real Gross Domestic Product of Asia and Oceania and a forecast of real air fares, future forecast levels could be generated.

FIGURE 10 Goodness-of-fit Asia/Oceania Traffic Model



CANADA/GREENLAND O&D MARKET

To prepare the O&D passenger forecast for the Canada/Greenland O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Canada/Greenland O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the California, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.95. **FIGURE 11** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Canada and Greenland.
3. The final model for Canada/Greenland O&D traffic can be described by the following equation:

$\ln(\text{Canada/Greenland Traffic}) = c_1 + c_2 * \ln(\text{Real California GDP}) + c_3 * \ln(\text{Real Canada/Greenland Fares}) + c_4 * \text{dummy9/11} + c_5 * \text{dummyGlobal Financial Crisis}$ where:

- Ln is the natural log of the variable
- Domestic Canada/Greenland Traffic is O&D traffic to Canada/Greenland
- Real Canada/Greenland GDP is the Gross Domestic Product of California adjusted for inflation
- Real Canada/Greenland Fares are the fares to Canada and Greenland markets in real U.S. dollars
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c_1 , c_2 , c_3 , c_4 , and c_5 are the estimated model parameters capturing the impact of various factors on Canada/Greenland traffic growth

The econometric model describing Canada/Greenland O&D traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.54
- Air Fare coefficient of -0.91

4. Using forecasts of the Real Gross Domestic Product of Canada and Greenland and a forecast of real air fares, future forecast levels could be generated.

MEXICO/CENTRAL AMERICA/CARIBBEAN O&D MARKET

To prepare the O&D passenger forecast for the Mexico/Central America/Caribbean O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Mexico/Central America/Caribbean O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the California, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.93. **FIGURE 12** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic

FIGURE 11 Goodness-of-fit Canada/Greenland Traffic Model

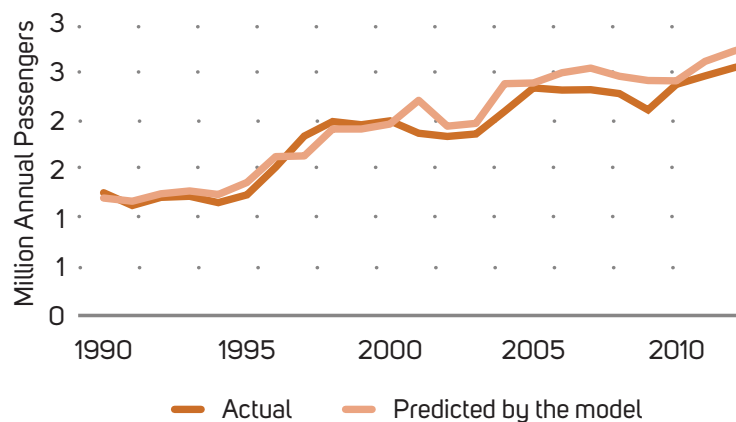
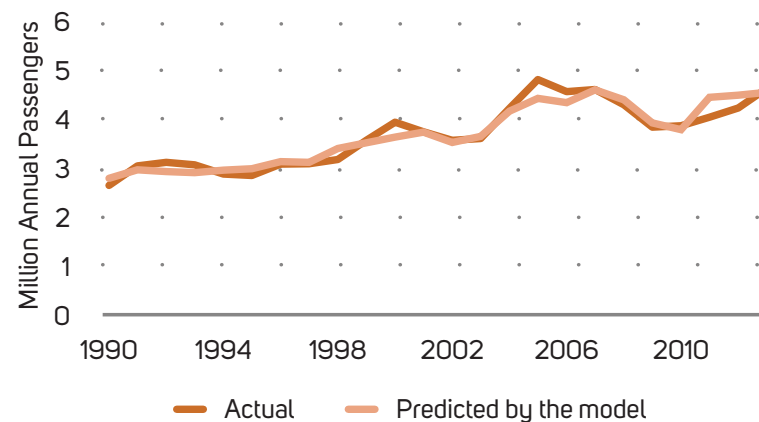


FIGURE 12 Goodness-of-fit Mexico/Central America/Caribbean Traffic Model



levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Mexico, Central America, and the Caribbean.

- The final model for Mexico/Central America/Caribbean O&D traffic can be described by the following equation:

$\text{Ln}(\text{Mexico/Central America/Caribbean Traffic}) = c1 + c2 * \text{Ln}(\text{Real California GDP}) + c3 * \text{Ln}(\text{Real Mexico/Central America/Caribbean Fares}) + c4 * \text{dummy9/11} + c5 * \text{dummyGlobal Financial Crisis}$ where:

- Ln is the natural log of the variable
- Domestic Mexico/Central America/Caribbean Traffic is O&D traffic to Mexico/Central America/Caribbean
- Real Mexico/Central America/Caribbean GDP is the Gross Domestic Product of California adjusted for inflation
- Real Mexico/Central America/Caribbean Fares are the fares to Canada and Greenland markets in real U.S. dollars
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;

- c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on Mexico/Central America/Caribbean traffic growth

The econometric model describing Mexico/Central America/Caribbean O&D traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.48
 - Air Fare coefficient of -0.64
- Using forecasts of the Real Gross Domestic Product of Mexico, Central America, and the Caribbean and a forecast of real air fares, future forecast levels could be generated.

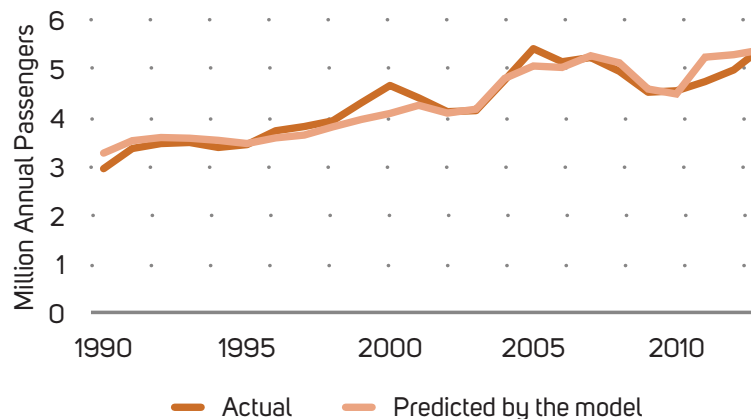
SOUTH AMERICA O&D MARKET

While O&D traffic to South America has shown robust growth rates over the past decades, the traffic volumes are still too modest to produce meaningful and reliable macro-economic models. Since a significant share of O&D traffic to South America flows through one of the hubs in Central America, such as Panama or Mexico City, O&D traffic to South America will be influenced by the available capacity to Mexico and Central America. The South America market is therefore combined with the Mexico/Central America/Caribbean market into an aggregate Latin America market segment.

To prepare the O&D passenger forecast for the South America O&D market the following approach was used:

- Through an econometric modeling approach, the historic Latin America O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
- A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of the Latin America countries, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.90. **FIGURE 13** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Latin America.
- The final model for Latin America O&D traffic can be described by the following equation:

FIGURE 13 Goodness-of-fit Latin America Traffic Model



$\text{Ln}(\text{Latin America Traffic}) = c1 + c2 * \text{Ln}(\text{Real Latin America GDP}) + c3 * \text{Ln}(\text{Real Latin America Fares}) + c4 * \text{dummy9/11} + c5 * \text{dummyGlobal Financial Crisis}$ where:

- Ln is the natural log of the variable
- Domestic Latin America Traffic is O&D traffic to Latin America
- Real Latin America GDP is the Gross Domestic Product of the Latin American countries adjusted for inflation
- Real Latin America Fares are the fares to Canada and Greenland markets in real U.S. dollars
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on Latin America traffic growth

The econometric model describing Latin America O&D traffic resulted in the following values for the dominant parameters, or elasticities:

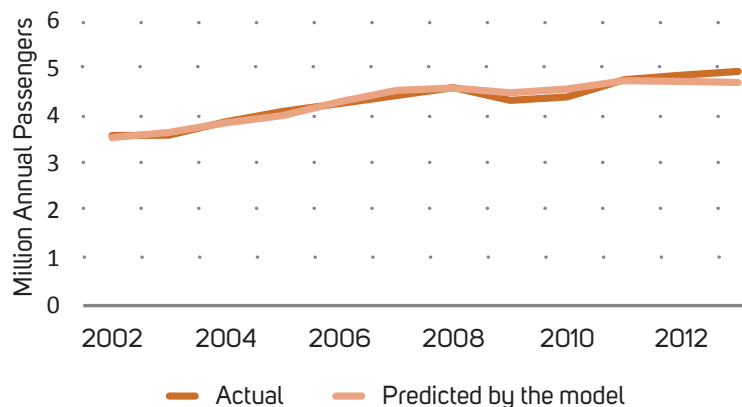
- GDP elasticity of 0.46
 - Air Fare coefficient of -0.54
4. Using forecasts of the Real Gross Domestic Product of Mexico, Central America and the Caribbean and a forecast of real air fares, future forecast levels could be generated.
 5. Apply the growth rates of the resulting Latin America traffic model to the actual South America O&D traffic levels

TRANS-ATLANTIC O&D MARKET

To prepare the O&D passenger forecast for the Trans-Atlantic O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Trans-Atlantic O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of Europe, in combination with fares, show the best fit with the historic passenger traffic development between 2002 and 2013. The regression analysis produced an R² value of 0.94. **FIGURE 14** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to the Trans-Atlantic markets.
3. The final model for Trans-Atlantic O&D traffic can be described by the following equation: $\text{Ln}(\text{Trans-Atlantic Traffic}) = c1 + c2 * \text{Ln}(\text{Real Europe GDP}) + c3 * \text{Ln}(\text{Real Trans-Atlantic Fares})$ where:
 - Ln is the natural log of the variable
 - Domestic Trans-Atlantic Traffic is O&D traffic to Africa, Europe and the Middle East
 - Real Trans-Atlantic GDP is the Gross Domestic Product of Europe adjusted for inflation
 - Real Trans-Atlantic Fares are the fares to Africa, Europe, and the Middle East markets in real U.S. dollars
 - c1, c2, and c3 the estimated model parameters capturing the impact of various factors on Trans-Atlantic traffic growth

FIGURE 14 Goodness-of-fit Trans-Atlantic Traffic Model



The econometric model describing Trans-Atlantic O&D traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 2.28
- Air Fare coefficient of -0.20

As the Trans-Atlantic market matures and gradually reaches saturation, the GDP parameter will decline to a value of 1.0 in 2040 reflecting the maturity of the local air transport market. As the forecast years progress, gradually decreasing elasticities of demand were therefore applied so that the long-term forecast accurately reflects the growing maturity of the Trans-Atlantic market. Finally, after applying the elasticities to generate passenger forecasts, the forecasts were critically reviewed for reasonableness and validated against the projections of independent industry regional forecasts, such as those prepared by Boeing and Airbus. Based on these comparisons, adjustments to the year-over-year passenger growth rates were made as necessary.

- Using forecasts of the Real Gross Domestic Product of Europe and a forecast of real air fares, future forecast levels could be generated.

REGIONAL AIR PASSENGER DEMAND FORECAST RESULTS

Based on the methodology described above, forecast O&D passenger demand in the SCAG region is forecast to increase from 72.6 MAP in 2013 to 112.2 MAP in 2040. This rate of

growth is equivalent to a compound annual growth rate of 1.6 percent. As shown in **FIGURE 15**, the U.S. domestic market remains the largest segment of demand, constituting nearly 70 percent of the market in 2040. Despite the continued dominance of the U.S. market, the demand for international travel to and from the region increases at a slightly higher rate over the forecast period.

Forecast total enplaned and deplaned passenger demand in the SCAG region is forecast to increase from 88.0 MAP in 2013 to 136.2 MAP in 2040. As shown in **FIGURE 16**, the share of connecting passengers is forecast to remain stable at about 17 percent. The forecast of 136.2 million E/D passengers and 112.2 million O&D passengers by 2040 represents a slower growth rate than anticipated in previous RTP documents. Below are the forecasts of total E/D passengers from the previous 5 RTPs:

- 1998 RTP—157.4 MAP in 2020
- 2001 RTP—167 MAP in 2025
- 2004 RTP—170 MAP in 2030
- 2008 RTP—165.3 MAP in 2035
- 2012-2035 RTP/SCS—145.9 MAP in 2035 (Baseline Scenario)

Through 2014, actual air passenger demand has been considerably below the trend lines predicted by prior forecasts. The declines in air travel resulting from the terrorist attacks of 2001, the bursting of the tech bubble in 2001 and the global financial crisis of 2007-2008,

FIGURE 15 Forecast O&D Passenger Demand

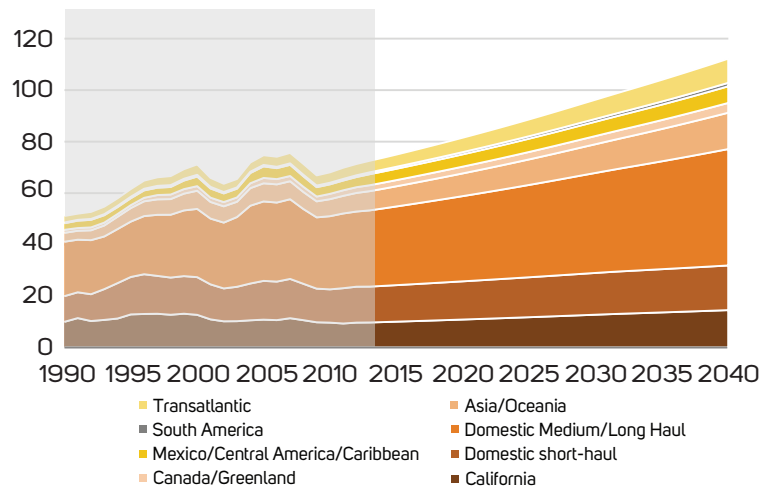
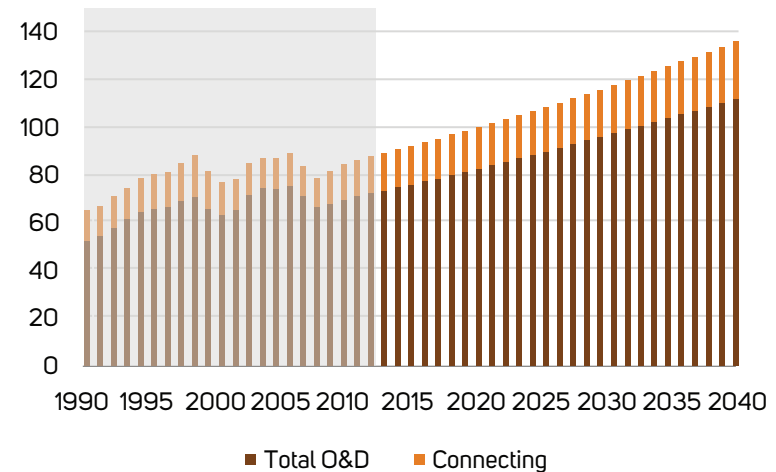


FIGURE 16 Forecast Total Enplaned and Deplaned Passengers



and the ensuing recessions could not have been forecast. Although annual growth in air travel may exceed the currently forecast rate of 1.6 percent in some of the years ahead, there will almost certainly be other worldwide economic and geopolitical events between now and 2040 that will temper the overall growth rate. The forecast average growth in air travel of 1.6 percent per year is based on the same regional socioeconomic forecasts used elsewhere in this RTP/SCS.

AIRPORT DEMAND FORECASTS

The previous sections described the methodology used to forecast passenger traffic to the SCAG region as a whole. In the next step, this regional air passenger traffic has to be allocated to the individual airports in the SCAG region. The air passenger demand handled by each airport in the region depends on passengers' choices regarding which airport to use, as well as physical and policy constraints that may limit an airport's ability to accommodate the demand. As discussed below, passengers' choices regarding which airport to use are themselves constrained by airlines' decisions concerning which airports to serve. The following subsections discuss these factors and the resulting forecast passenger demand at each airport in the region.

AIR TRAFFIC ALLOCATION MODEL

A traveler's decision to use a particular airport to begin or end a journey depends on a number of factors. The drive time required to reach the airport, the level of air service in terms of the number of frequencies and destinations that are offered, the airline portfolio, as well as other less quantifiable factors, such as convenience and past experiences, also influence the passenger's choice.

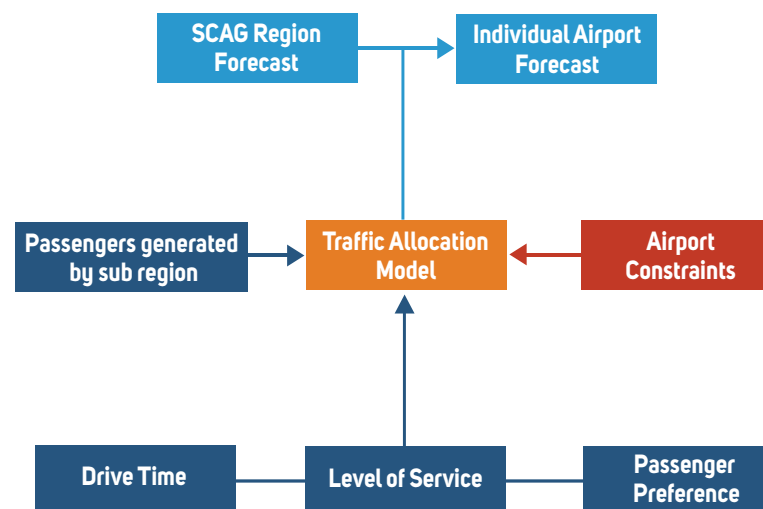
The methodology to allocation traffic across the individual airports is presented in [EXHIBIT 3](#). Before traffic can be allocated across the various airports, an assessment must be made concerning how much passenger traffic each subregion within the SCAG region generates. For each of the subregions, an estimate has been made of what share it generated of the total air passenger traffic in the region in 2012. The traffic-generating ability of each subregion can be expressed through a wealth-, or income-adjusted population size, where the population size of each region is either discounted or increased by the ratio between the average household income of that particular subregion divided by the average household income of the entire region. The amount of passenger traffic handled by all the airports in the region is then allocated proportionally based on the wealth-adjusted population calculated for each subregion.

With the amount of traffic generated by each subregion estimated, the next step is to allocate traffic across the various airports. As mentioned earlier, this is primarily a function of access time, level of airline service, and general passenger preferences.

These factors are discussed below:

- **DRIVE TIME:** Access time to an airport is an important factor driving the decision of a traveler to use a particular airport; to minimize total trip time, people typically have a preference for nearby airports. By using geographic information system software, the size of the population living within a certain drive time of the airport can be calculated. For each airport in the region, the population size within a 30-minute, 60-minute, and 90-minute drive time has been calculated. The results are compiled into a single catchment area population size, in which the number of people living within a 60-minute and 90-minute drive are discounted to reflect the fact that the attractiveness of an airport decreases with drive time. Based on the total number of people living in the overall catchment area, each airport receives a score to represent its attractiveness to travelers from each sub region in terms of drive time.
- **LEVEL OF AIRLINE SERVICE:** Another important criterion influencing a passenger's choice is the level of service that is offered at the particular airport. This is mainly determined by the airline and destination portfolio as well as the number of frequencies that are offered. Based upon these factors, each airport received a level of service score.
- **PASSENGER PREFERENCE:** In addition to access time and level of service, the passenger's choice to use a certain airport is also driven by less quantifiable and subjective factors, such as past experiences and perceived convenience.

EXHIBIT 3 Air Traffic Allocation Model



For airports with existing service passenger preference was based on historic passenger enplanements. These factors are combined into an overall passenger preference score that represent the attractiveness of each airport to travelers from each sub region.

The individual scores of each decision factor are combined into an overall score for each airport. Based on the overall score that each airport received for a particular airport, the amount of traffic that each region generates is allocated proportionally to each airport. The airport scores are calibrated until the outcome for each airport matches the actual passenger numbers of 2012. Finally, the results are validated by comparing them with passenger surveys, where available, of the origin of a sample set of passengers. By applying this allocation mechanism to the passenger forecast developed for the entire region, passenger traffic can be distributed over the individual airports through 2040.

The resulting allocations represent the unconstrained demand case, i.e., where passenger traffic at each airport can develop unimpeded and is not hindered by any physical capacity constraints or policy constraints. In reality, however, a number of airports in the region will face capacity constraints within the forecast horizon. Since there are a number of different paths along which airport development might proceed as a result of different constraints, the capacity restrictions are input to the scenario development described in the next section.

CAPACITY CONSTRAINTS

Four of the commercial airports in urban areas of the region face physical or policy constraints that may limit their capacity to accommodate increases in demand by 2040. Therefore, these constraints were analyzed to develop a range of plausible scenarios for the development of air traffic allocation in the region. The airports at which constraints were analyzed are as follows:

- Burbank Bob Hope Airport
- Los Angeles International Airport
- Long Beach Airport
- John Wayne Airport

At each airport, planning-level analyses of the capacities of the airfield and the terminals were conducted. The long-term configurations of the airfield and terminal at each airport were identified from Airport Master Plans and similar studies. Policy constraints were also reviewed. The overall airport capacity is the minimum of the constraints imposed by the airfield, the terminal, and policy considerations.

The following methodologies were used for the review of the airfield and terminal capacity limits:

AIRFIELD CAPACITY: Based on the ultimate airport layout plan from each airport with the feasible ultimate runway configuration, the hourly capacity and annual service volume (ASV) of the airfield were estimated in terms of aircraft operations utilizing processes and formulas prescribed in FAA Advisory Circular 150/5060-5, "Airport Capacity and Delay." The percentage of commercial operations, load factor and seating capacity were then estimated from historical data and anticipated future trends. The ASV, percentage of commercial operations, and occupied seats per plane yield the estimated maximum annual passenger volume.

TERMINAL CAPACITY: Based on the ultimate airport layout plan from each airport, the feasible ultimate terminal gate (active and remote) configuration was identified. Historic gate utilization data was analyzed (e.g., design day schedule and gate chart, average number of turns per gate, fleet mix, seating capacity) to estimate the maximum gate capacity by maximizing the usage of each gate in the ultimate terminal layout plan.

A series of sensitivity analyses were conducted around the airfield and terminal capacities. In these sensitivity analyses, input assumptions were varied to develop a range of possible capacity limits for each airport.

The following sections summarize the analysis at each of the four constrained urban airports.

BURBANK BOB HOPE AIRPORT

Burbank Airport staff reported that the airport's airfield was limited to a practical capacity of 50 operations per hour based on the runway configuration and airspace conflicts with Van Nuys Airport to the west. In recent years, 50 percent of operations have been commercial operations, 75 percent of which have been scheduled air carriers. Based on historic load factors, these conditions yield an airfield capacity of approximately 7.3 MAP. Sensitivity analyses varying the mix of operations and load factors produced some scenarios with higher ASV and airfield capacity, but 7.3 MAP was the most reasonable estimate of airfield capacity based on their knowledge of the operations of the airport.

The existing airport terminal includes 14 air carrier gates. A proposed replacement terminal now in the planning stages would also have 14 gates. All 14 gates of the existing and proposed replacement terminals are designated for airplane design group (ADG) III aircraft, such as a Boeing 737. Since the airport uses ramps and stairways to load from the front and the back of aircraft, airport staff indicated that each gate can handle up to 15 arrivals and departures per day. Based on the anticipated use of larger aircraft within ADG III in the future, the 14-gate terminal arrangement would have a maximum capacity of approximately 12 MAP.

Burbank Airport currently imposes a voluntary nighttime curfew. However, it is not legally

enforceable and does not affect the overall capacity of the airport. Therefore, the overall capacity of Burbank Airport is 7.3 MAP.

LOS ANGELES INTERNATIONAL AIRPORT (LAX)

LAX has a complex runway system that can be utilized in several alternative configurations. The runway system consists of two sets of dual parallel runways. The north runway complex consists of Runways 6L-24R (8,925 feet long and 150 feet wide), and 6R-24L (10,285 feet long and 150 feet wide). There is 700 feet runway centerline-to-centerline separation between the north complex runways. The close separation of the two parallel north runways precludes independent operations during weather conditions where cloud ceilings are less than 1,000 feet and visibility is less than 3 miles. Each end of Runways 6R-24L and 6L-24R is equipped with Category I instrument landing systems. Runway 6R-24L is primarily used for departing aircraft, and Runway 6L-24R is primarily used for arriving aircraft.

The south runway complex consists of Runways 7L-25R (12,091 feet long and 150 feet wide), and 7R-25L (11,095 feet long and 200 feet wide). The separation between these two runways is 800 feet. Each end of Runway 7L-25R and Runway 7R is equipped with Category I instrument landing systems. Runway 25L is equipped with a Category IIIB instrument landing system. Runway 7L-25R is used primarily for departing aircraft. Runway 7R-25L is used primarily for arriving aircraft. The separation between runway 6R-24L and runway 7L-25R is more than 4,500 feet, which allows for independent operations.

The LAX airfield capacity was estimated based on the runway configuration as described in the LAX Specific Plan Amendment Study (SPAS), which identified four basic runway operating configurations:

- Visual flight rules (VFR) with visual approaches – West Flow (currently occurs 69.2 percent of the time)
- VFR with simultaneous instrument landing (ILS) approaches – West Flow (occurs 24.6 percent of the time)
- Instrument meteorological conditions (IMC)/Instrument flight rules (IFR) with instrument approaches – West Flow (occurs 4.1 percent of the time)
- VFR with simultaneous ILS approaches – East Flow (occurs 2.1 percent of the time)

The analysis of LAX's airfield capacity included estimation of hourly capacity and ASV from six sensitivity tests that varied in their assumptions about the percentage of time that the runway system is operated in each of the configurations described above, and based on airside simulations from previous studies as well as the FAA Airport Capacity Benchmark Report 2004. The range of sensitivity tests was then applied to three scenarios that varied

in terms of the percentage of aircraft operations that would be by scheduled carriers, commuter carriers, and charter carriers, using aircraft of different sizes and with varying load factors. Each scenario was then subjected to six sensitivity tests that varied in their assumptions about the percentage of time that the runway system is operated in each of the configurations described above. The scenarios and sensitivity tests yielded a range of airfield capacities from 82.9 MAP to 96.6 MAP. This range is not a projection of demand for a future year, but an estimate of how many passengers the airfield (according to approved plans) could accommodate.

The LAX Master Plan and SPAS include a limit of a total of 153 gates at all terminals at LAX. However, in different scenarios, some gates may be designed for different airplane design group classifications. In addition, gates that are used for larger design groups will be able to handle fewer arrivals and departures each day. Therefore, a variety of terminal configurations were analyzed that varied with regard to their assumptions about the distribution of gate designs. The resulting estimates of the overall terminal capacity range from 85 to 104 MAP.

LAX is subject to a court sanctioned settlement agreement until 2020. Consistent with that settlement agreement, the SPAS was prepared to “plan for the modernization and improvement of LAX in a manner that is designed for a practical capacity of 78.9” MAP. After 2020, barring further court action, there is no enforceable cap on the number of gates or total annual passenger volume at LAX. Therefore, the capacity of LAX is in the range of 82.9 MAP to 96.6 MAP, limited by the airfield, based on the runway configuration described above and as in the SPAS. Alternative runway configurations (e.g., Alternate A or B in the LAX Master Plan) could yield higher airfield capacities.

LONG BEACH AIRPORT

Long Beach Airport has two sets of parallel runways forming a square and a fifth, diagonal runway crossing all four of the other runways. However, only the diagonal runway (runway 12/30) is used for commercial operations. Therefore, the estimate of airfield capacity in terms of annual passenger volume was based on a one-runway system for commercial operations. A series of scenarios crossed with sensitivity tests varying in assumptions about fleet mix and runway operations was conducted for Long Beach Airport, similar to the analyses conducted for the other airports.

Long Beach Airport, however, is subject to a noise compatibility ordinance that in practice limits the airport to 41 commercial and 25 commuter departures per day. (The 41 commercial flight limit may only be exceeded if the City of Long Beach determines that the additional flights will not exceed the “noise budget” limits based on the baseline year of 1989-90.) A commuter flight is defined as one completed by an airplane with a maximum take-off weight of less than 75,000 pounds. Based on the anticipated use of larger aircraft within

ADG III in the future (having an average of 162 seats) and current load factors, 41 commercial flights could potentially accommodate 4.0 MAP. Commuter service with a typical regional jet having 66 seats could accommodate another 1.0 MAP, at current load factors. Therefore, the noise compatibility ordinance imposes a practical limit of 5.0 MAP at Long Beach Airport. This limit is also below the capacity of the airport's terminal and airfield. It is anticipated that the City of Long Beach will soon allow an additional 9 commercial departures per day based on the terms of the ordinance (for a total of 50 daily commercial departures). If the additional departures are able to be utilized the assumptions and capacity analysis results may need to be updated for Long Beach Airport.

JOHN WAYNE AIRPORT

The runway system at John Wayne Airport consists of two parallel runways. The primary runway 2L/20R is 5,701 feet long, while the secondary runway 2R-20L is only 2,887 feet long. The secondary runway is not equipped for instrument approach procedures. The centerlines of the runways are separated by 500 feet, which does not allow for operation of simultaneous arrivals and departures under visual flight rules (VFR). The short secondary runway offers some operational benefits for smaller aircraft that enhances capacity under VFR conditions. During periods of instrument flight rule (IFR), operations are basically limited to the primary runway, on which the airlines operate.

As with the other airports, a series of scenarios crossed with sensitivity tests varying in assumptions about fleet mix and runway operations was conducted for John Wayne Airport, similar to the analyses conducted for the other airports. The scenarios varied with regard to the percentage of flight operations assumed to be conducted by commercial carriers (from 35 percent to 55 percent). The sensitivity tests varied primarily in the percentage of time that it is assumed the airport can operate under VFR conditions (from 53 percent to 95 percent).

TABLE 2 Airport Capacity Constraints (MAP, Million Annual Passengers)

Airport	Constraint	Source of Constraint
BUR	7.3	Airfield
LAX	82.9 – 96.6	Airfield
LGB	5.0	Noise compatibility ordinance
SNA	12.5	Settlement agreement adopted by Board of Supervisors

The results of the analyses suggest a capacity of the airfield in the range of 9.6 to 18.7 MAP. However, it should be noted that the airport has handled more than 9.6 MAP in the past.

The existing terminal includes twenty air carrier gates with passenger loading bridges and six ground loading gates for commuter aircraft. Thirteen of the twenty gates with passenger loading bridges are ADG IV gates designed to accommodate the Boeing 757, and seven are ADG III gates. While the Boeing 757 is no longer being produced and will likely be retired from airline fleets in the coming years the next versions of typical ADG III aircraft, such as the Boeing 737 MAX 9 and the Airbus A321neo are planned to have approximately 185 seats, comparable with today's typical ADG IV aircraft. Based on the estimated maximum number of operations per gate, average seat capacity for different ADG, and load factors, the existing terminal would have a capacity of approximately 16 MAP.

John Wayne Airport is currently subject to a court sanctioned settlement agreement. The agreement limits the airport to 12.5 MAP (subject to certain conditions) and remains in effect through 2030. However, the Orange County Board of Supervisors has adopted the limit imposed by the settlement agreement, so further action by the Board of Supervisors would be required to modify this limit, even after 2030. Therefore, the limit of 12.5 MAP at John Wayne Airport is considered to extend through the analysis period of the 2016-2040 RTP/SCS. **TABLE 2** summarizes the capacity constraints at the four constrained urban airports.

FORECAST AIR PASSENGER ALLOCATION SCENARIOS

Since there are a number of different paths along which airport development in the region might proceed, air passenger demand allocations were developed for the region's airports under several three scenarios representing different conditions: a scenario with no constraints on airport capacity, a scenario with a relatively high degree of regionalization of air travel demand, and a scenario with a relatively low degree of regionalization of demand sets of constraints. All airport allocation scenarios incorporate the overall forecast regional air passenger demand of 136.2 MAP in 2040; they differ with respect to how the total demand is spread across the region's airports. The initial scenario represents the unconstrained demand case, i.e., where passenger traffic at the airport can develop unimpeded and is not hindered by any physical capacity constraints or policy constraints. This scenario constitutes a future baseline from which alternative scenarios incorporating various constraints can be developed. The airport allocations in the unconstrained scenario are shown in the third column of **TABLE 3**.

In the unconstrained scenario, the 2040 demand at Los Angeles International Airport and John Wayne Airport exceeds the identified capacities of those airports, and the demand at Long Beach Airport is at the airport's identified capacity. Therefore, since the identified capacity of LAX spans a large range, two alternative scenarios were analyzed that differ

with respect to the share of demand that is shifted to other airports in the region. In the “Less Regionalization” scenario, LAX is assumed to operate at the high end of its identified capacity, and all other airports can accommodate up to their identified capacities. In addition, it is assumed that all airports in the region capable of handling passenger traffic identify a market niche of at least 200,000 annual passengers (0.2 MAP). The airport allocations in the “Less Regionalization” scenario are shown in the fourth column of **TABLE 3**.

In the “More Regionalization” scenario, LAX is assumed to operate at the low end of its identified capacity, and all other airports can accommodate up to their identified capacities. In addition, it is again assumed that all airports in the region capable of handling passenger traffic identify a market niche of at least 0.2 MAP. The airport allocations in the “More Regionalization” scenario are shown in the last column of **TABLE 3**.

While the “Less Regionalization” and “More Regionalization” scenarios shown in Table 3 were developed based on a range of physical capacities for LAX, many other factors will determine what level of demand each airport in the region will actually serve in 2040. Actions taken by policy makers at multiple levels in the SCAG region can influence the direction of the development of the region’s aviation infrastructure. SCAG’s Transportation

Committee was presented with the Urbanized and Constrained Airport Capacity Analysis,¹ reviewed various scenarios and adopted the forecast ranges shown in the second column of **TABLE 3** on August 6, 2015. In addition, the Transportation Committee approved the total regional demand of 136.2 MAP which represents the middle of the range for the airports that are assigned ranges. The high end of the range represents approximately a 10 percent increase to 149 MAP; the low end of the range represents a 10 percent decrease to 123 MAP.

One of the factors that will influence the direction of the development of the region’s aviation infrastructure is investment in ground access infrastructure, which is discussed in the following section.

AIRPORT GROUND ACCESS

The ground access network serving the region’s airports is critical to both the aviation system and the ground transportation system. Passengers’ choice of airports is based in part on the travel time to the airport and the convenience of access, so facilitating airport access is essential to the efficient functioning of the aviation system. In addition, airport related ground trips can contribute to local congestion in the vicinity of the airports.

TABLE 3 2040 Airport Demand Forecast Scenarios (MAP, Million Annual Passengers)

Airport	Adopted	Unconstrained	Less Regionalization	More Regionalization
Total	136.2	136.2	136.2	136.2
BUR	7.3	6.3	7.3	7.3
IPL	0.2	0.2	0.2	0.2
LAX	82.9 - 96.6	100.7	96.6	82.9
LGB	5.0	5.0	5.0	5.0
ONT	11.0 -19.0	7.2	10.1	20.0
OXR	0.2	—	0.2	0.2
PMD	0.5 - 2.5	—	0.5	2.5
PSP	3.7	3.0	3.2	3.7
RIV	0.2	—	0.2	0.2
SBD	0.2 - 1.5	—	0.2	1.5
SNA	12.5	13.8	12.5	12.5
VCV	0.2	—	0.2	0.2

In 2012, more than 200,000 air passengers arrived or departed from the region's airports each day. By 2040, this number is expected to increase to more than 330,000. About half of all air passengers in the region are picked up or dropped off at the airport by a friend or relative. Each end of these pick-up/drop-off air trips results in two ground trips: one to the airport followed by one returning from the airport. Therefore, encouraging the use of transit or other shared-ride modes of transportation to the region's airports is especially effective in reducing automobile trips.

SCAG and its regional partners have brought a new focus on improving ground access to the region's airports in recent years. In July 2012, the Metro Board directed its staff to develop a Regional Airport Connectivity Plan (RACP) that addresses transit connections to five Southern California airports: Burbank Bob Hope (BUR), Long Beach (LGB), LA/Ontario International (ONT), Los Angeles International (LAX) and LA/Palmdale Regional (PMD). The RACP was completed in January 2013. In November 2014, San Bernardino Association of Governments (SANBAG) completed its Ontario Airport Rail Access Study. SCAG is currently initiating an L.A. and San Bernardino Inter-County Transit and Rail Connectivity Study, which will continue these prior planning efforts undertaken by Metro and SANBAG.

Airport operators have also undertaken their own initiatives, ranging from planning through implementation, to improve ground access at their facilities. The City of Burbank and the Burbank-Glendale-Pasadena Airport Authority conducted the Bob Hope Airport Area Ground Transportation and Land Use Study to analyze potential transportation and related land use development in the Bob Hope Airport area.

Los Angeles World Airports (LAWA) has been working closely with Metro to improve transit access to LAX. The agency is currently in the environmental review phase of the LAX Landside Access Modernization Program, a series of improvements including an Automated People Mover, a consolidated rental car facility, and two intermodal transportation facilities, one of which will provide direct access to the Metro Crenshaw Line, which is currently under construction.

To continue the current high level of airport ground access planning underway in the region, on October 8, 2015, SCAG's Transportation Committee adopted a conceptual framework for regional aviation ground access to support these ongoing efforts, based on the following principles:

- Advance regionalization of air travel demand
- Continue to support regional and inter-regional projects that facilitate airport ground access (e.g., High-Speed Train, High Desert Corridor)
- Support on-going local planning efforts by
 - Airport operators

- County Transportation Commissions
- Local jurisdictions
- Encourage development and use of transit access to the region's airports
- Encourage use of modes with high average vehicle occupancy (AVO)
- Discourage use of modes that require "deadhead" trips to/from airports (a deadhead trip is a vehicle trip with no traveling passenger in the vehicle, such as when a parent drives an otherwise empty car to an airport to pick up a college student arriving by air for Thanksgiving vacation.)

The following sections describe the recent and planned ground access studies and improvements at each of the region's airports.

BURBANK AIRPORT (BUR)

Burbank Airport is located on Hollywood Way in the City of Burbank, south and west of Interstate 5. Passenger access to the terminals is currently primarily via Hollywood Way at Thornton Avenue and secondarily via Empire Avenue, west of Hollywood Way. The airport is currently preparing an Environmental Impact Report for the development of a replacement terminal. Vehicular access is expected to remain via Hollywood Way, although it may be relocated to a different location along the roadway. An arterial roadway network surrounds the airport, providing connections from residential areas and to destinations throughout Burbank, North Hollywood, Los Angeles and beyond. The Metrolink Ventura line tracks are located immediately south of the airport, and the Antelope Valley line tracks are located immediately north of the airport. The California High Speed Rail Authority is also planning for a station at Burbank Airport in the future.

Regional freeway access to Burbank Airport is primarily provided by I-5 and SR 134. Regional traffic from the north uses the Hollywood Way interchange on I-5. The I-5 North Improvement Project, currently under construction, will improve regional access from the south with the construction of a new interchange at Empire Avenue.

Burbank Airport is the only airport in the region with a direct rail-to-terminal connection, via the recently completed Regional Intermodal Transportation Center (RITC). The RITC is located on airport property just northwest of the Hollywood Way/Empire Avenue intersection. An elevated moving walkway transports people between the RITC and the airport terminals. The RITC serves multiple modes, including public parking, a consolidated rental car facility, regional bus service and bicycles, as well as commuter rail at the Metrolink Ventura line station. A pedestrian bridge connecting the Metrolink station to the RITC that is currently in design will further facilitate access between the train station and the airport. In addition, a second rail station is currently planned on the Metrolink Antelope Valley line.

TABLE 4 BUR Ground Access Projects

BUR Ground Access Projects
Recently Completed Ground Access Projects
Regional Intermodal Transportation Center (Empire Area Transit Center)
Install traffic signal at North Avon Street and Empire Avenue
Ground Access Projects Currently Under Construction (or in Design)
I-5 Empire Project
I-5 North Improvement Project: Add HOV lanes on I-5 (from SR-134 to SR-170)
New Antelope Valley Metrolink Line Station at Hollywood Way/San Fernando Road
Burbank Bob Hope Airport Station Pedestrian Grade Separation and Regional Intermodal Transportation Center Connection
Recent and On-going Ground Access Studies
Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link Feasibility Study
Vanowen/Empire/Clybourn Railroad Crossing Grade Separation Study Project
BUR Terminal Upgrade Environmental Impact Analysis
2016 RTP Ground Access Projects
1120004: Metro Red Line Extension to BUR
LA000358: Route 5 from Route 134 to Route 170, add HOV lanes.
2015 FTIP Ground Access Projects
LA000358: I-5 North Improvement Project: Route 5 from Route 134 to Route 170, add HOV lanes.
LAE0726: Vanowen/Empire/Clybourn Railroad Crossing Grade Separation Study Project
LA000789: Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link Feasibility Study

TABLE 4 BUR Ground Access Projects: Continued

BUR Ground Access Projects
LA000789A: Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link
LAE0396: Construction of Empire Area Transit Center near BUR
LA0G1049: Burbank Bob Hope Airport Station Pedestrian Grade Separation and Regional Intermodal Transportation Center Connection
LAF5701: Burbank Traveler Information and Wayfinding System

BurbankBus has recently begun operating all-day bus service between the North Hollywood Metro Red Line Station and the airport, utilizing the RITC. The North Hollywood Station provides connections to the Metro rail system via the Red Line to Union Station and the Metro Orange Line, a dedicated BRT right-of-way servicing the San Fernando Valley.

TABLE 4 provides a detailed list of the ground access improvements at Burbank Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

IMPERIAL COUNTY AIRPORT (IPL)

Imperial County Airport is located on Airport Road at Imperial Avenue (State Route 86), which is one of the main north-south throughways in the area. Regional highway access from the east and west utilizes I-8, which is located four miles to the south. Currently, one rental car company offers services at the airport terminal. There is no public transit service to the airport, although a private company operates an on-demand shuttle bus from the surrounding area.

TABLE 5 IPL Ground Access Projects

IPL Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
6120002: Reconstruct I-8 interchange at Imperial Avenue
2015 FTIP Ground Access Projects
0515: Reconstruct I-8 interchange at Imperial Avenue

TABLE 5 provides a detailed list of the ground access improvements at Imperial County Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

LOS ANGELES INTERNATIONAL AIRPORT (LAX)

Los Angeles International Airport (LAX) is located in southwestern Los Angeles County in the neighborhood of Westchester. Regional freeway access is provided by I-405 to the east and I-105 to the south. Vehicles arriving from the north and south utilize I-405 or Sepulveda Boulevard, and drivers arriving from the east use I-105 or Century Boulevard. World Way is the internal circulation roadway around the passenger terminals and has a lower level for arriving passengers and an upper level for departing passengers.

LAX is owned and operated by Los Angeles World Airports (LAWA), a proprietary department of the City of Los Angeles. LAWA operates LAX FlyAway, which provides non-stop bus service between each of the LAX terminals and seven locations: Van Nuys Airport, Union Station, Westwood, Hollywood, Santa Monica, Orange Line and Long Beach. In 2013, ridership on the two most used FlyAway routes, Van Nuys and Union Station, was 890,740 and 508,019 passengers, respectively. For longer distance bus travel from the airport, numerous private operators provide regularly scheduled bus service to LAX from the Antelope Valley, Bakersfield, the Central Coast, Santa Barbara and Ventura County. Two private shared-ride shuttle services are authorized to operate at LAX and serve the entire SCAG region.

LAX operates three shuttle routes on World Way. Route A circulates around the airport to provide passengers connections between terminals. Routes C and G have a stop within the central terminal area, with Route C connecting to the LAX-operated parking Lot C at the intersection of 96th Street and Sepulveda Boulevard, and Route G transporting passengers to and from the Metro Green Line Aviation Station. In addition to the LAX-operated Lot C, many other parking lots and structures are available in the surrounding neighborhood, and many hotels in the area and privately operated parking lots offer their customers courtesy shuttles to and from the passenger terminals.

Public bus services operated by Metro, Culver City Bus Lines, Santa Monica Big Blue Bus and Torrance Transit are available at the Metro Bus Center by connecting in Lot C using the LAX Shuttle Route C and to connect to their respective coverage areas. The Metro Green Line Aviation Station is the nearest urban rail line, nearly two miles to the southeast of the terminals and accessible using the LAX Shuttle Route G.

All rental car facilities are currently located off-site and are provided by about 40 companies.

TABLE 6 LAX Ground Access Projects

LAX Ground Access Projects
Recently Completed Ground Access Projects
Widen Arbor Vitae Street (Airport Boulevard to La Cienega Boulevard)
I-405 Sepulveda Pass Improvements Project
Additional LAX FlyAway Service from Santa Monica, Hollywood, Orange Line and Long Beach
Ground Access Projects Currently Under Construction (or in Design)
Crenshaw/LAX Transit Corridor Project and expansion of regional rail connectivity (Expo/Green Lines)
Recent and On-going Ground Access Studies
I-105: Study report for interchange improvements at LAX Airport
LAX Landside Access Modernization Program
LAX Consolidated Rental Car Center (CONRAC) and long-term parking in Manchester Square
Intermodal Transportation Facility (ITF) in the vicinity of Lot C
Specific Plan Amendment Study
LAX Airport Metro Connector
Coastal Corridor Study
Green Line Extension to LAX
South Bay Metro Green Line Extension
Century Corridor Streetscape Plan

LAX Ground Access Projects
2016 RTP Ground Access Projects
1TR1020: New airport bus division (capital costs only)
1122003: Consolidated Rental Car Facility (ConRAC)
1122002: Intermodal Transportation Facilities (ITFs)
1122001: Automated People Mover System (APM)
1TR0101: New Light Rail Station & Consolidated Bus facilities
LAOD198: Crenshaw/LAX Transit Corridor Project
LAOD332: I-405 from La Tijera Boulevard to Jefferson Boulevard, add auxiliary lanes
2015 FTIP Ground Access Projects
LAOD332: I-405 from La Tijera Boulevard to Jefferson Boulevard, add auxiliary lanes
LAE3764: ITS and intersection improvements in and near LAX Airport
LAOF073: Projects within and near LAX to eliminate traffic bottlenecks
LAOG1161: Crenshaw/LAX accommodations near 96th Street/Aviation Boulevard
LAOG1162: Airport Metro Connector
LAOF073: Projects within and near LAX Airport to eliminate traffic bottlenecks

Eleven of these companies are permitted to operate courtesy shuttles between the terminals and their facilities. Taxicabs are available curbside at each terminal outside the baggage claim area at the yellow taxi signs. In December, 2015 LAX began to allow Transportation Networking Companies (TNC's) such as Uber and Lyft to pick up and drop off passengers at designated points at the airport.

In December 2014, LAWA's Board of Airport Commissioners approved a plan to overhaul and modernize LAX's ground access and transportation connections for arriving and departing passengers. The approved program includes the LAX Train (Automated People Mover System), Intermodal Transportation Facilities (ITF), Consolidated Rent-A-Car Center (CONRAC), central terminal area improvements, and connection with the Metro Crenshaw Line, which is under construction. The CONRAC will consolidate the numerous off-site rental car facilities in the surrounding area into one convenient location 1.5-miles east of LAX and adjacent to I-405 for convenient regional highway access. Two ITFs are included in the program offering airport travelers locations for parking, passenger pick-up and drop off, and flight check-in outside the terminal and away from the congested World Way roadway within LAX. The eastern ITF will include Metro facilities to connect with Metro's planned 96th Street/Aviation Boulevard Station serving the under-construction Metro Crenshaw/LAX Transit Project and existing Metro Green Line as well as a bus plaza for Metro and municipal buses. The LAX Train will be an elevated automated people mover system with six stations connecting the CONRAC, both ITFs, and Metro facilities to the LAX passenger terminals by connecting into an upgraded central terminal area. The environmental review process for this project began in 2015 and construction is expected to begin in 2017.

TABLE 6 provides a detailed list of the ground access improvements at LAX completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

LONG BEACH AIRPORT (LGB)

Long Beach Airport (LGB) is located on Lakewood Boulevard north of I-405 in the City of Long Beach. The airport has one terminal building with two concourses (north and south) and eleven total gates. In December 2012, construction was completed on renovations to the terminal to expand and modernize its amenities and plan for an expected increased passenger demand.

Regional automobile traffic arrives via I-405 and Lakewood Boulevard. Donald Douglas Drive is an internal airport roadway that circles the Airport Ground Transportation Center and provides access to the terminals. The Airport Ground Transportation Center includes

TABLE 7 LGB Ground Access Projects

LGB Ground Access Projects
Recently Completed Ground Access Projects
Long Beach Airport Access: Spring Street and Lakewood Boulevard tunnel improvements
Long Beach Airport Terminal Area Improvement Project
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
None
2015 FTIP Ground Access Projects
None

a recently completed five-story parking garage with over 5,000 spaces and also houses six rental car companies. A taxi stand is located on Donald Douglas Drive just outside the terminal. In addition, 28 shuttle providers are currently authorized to pick passengers up on airport property.

Transit access is provided by bus on Long Beach Transit Authority's Routes 102, 104, 111 and 176 utilizing the Airport Ground Transportation Center.

TABLE 7 provides a detailed list of the ground access improvements at Long Beach Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

ONTARIO INTERNATIONAL AIRPORT (ONT)

Ontario International Airport is located just south of I-10 in the City of Ontario, about 35 miles east of downtown Los Angeles. Two passenger terminal buildings are located along the northern side of the airport along Terminal Way. Los Angeles World Airports (LAWA) owns and operates the airport today. LAWA has agreed to terms and conditions for the transfer of the airport in the coming months to a new airport sponsor, the Ontario International Airport Authority (OIAA), pending review and approval by the Federal Aviation Administration (FAA).

The airport is located between two major east-west highway corridors within the SCAG region, I-10 and SR 60. Regional access is generally provided by these freeways, with regional north-south access provided by I-15 about two miles to the east. The Archibald Avenue interchange on I-10 is the primary access point to Terminal Way, which circles a large surface parking lot and provides drop-off/pick-up access to the passenger terminals. Additional private airport parking is provided on Airport Drive, just east of the airport.

A Consolidated Rental Car Facility (ConRAC) is located in the northeast corner of the airport, near the intersection of Airport Drive and Haven Avenue, and serves eight on-airport rental car companies. Three additional off-airport rental car companies also serve the airport. A courtesy shuttle operated by the airport provides service between the passenger terminals, the long-term parking lot, and the ConRAC. Taxicab service can be picked up curbside outside the baggage claim area. A private shared-ride shuttle operator offers door-to-door shared-ride services from the terminals on both an advanced reservation and walk up basis.

Two bus routes operated by OmniTrans have stops that serve the airport. Routes 81 and 82 have stops at the intersection of Airport Drive and Haven Avenue, where passengers can transfer to the airport courtesy shuttle to be transported to the terminals.

No direct rail service currently operates to the airport. The East Ontario Metrolink Station, which serves the Metrolink Riverside Line, is located about two miles southeast of the airport terminals, but no direct transit connection is currently provided to the terminals. The California High Speed Rail Authority is also planning to have a station at Ontario International Airport.

The 2014 SANBAG Ontario Airport Rail Access Study examined six alternatives to connect Ontario Airport to the regional rail system. One of these alternatives is the Metro Gold Line Foothill Extension Phase 2C that would extend the eastern terminus of the Metro Gold Line to the airport. Phase 2B to Montclair is included in the Financially Constrained Project list in this RTP/SCS, but Phase 2C is currently not funded. A direct shuttle bus connection from the Rancho Cucamonga Metrolink Station is included in the project list for 2020, and a rail connection from Metrolink to the airport is included for 2040.

TABLE 8 ONT Ground Access Projects

ONT Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
North Vineyard Avenue Railroad Grade Separation at Holt Boulevard
Construct a Grade Separation at Milliken/Union Pacific LA Line
Recent and On-going Ground Access Studies
SANBAG Ontario Airport Rail Access Study
Gold Line LRT Foothill Extension
2016 RTP Ground Access Projects
4160023: Widen Archibald Avenue from Inland Empire Boulevard for 4 to 6 lanes
4160035: Widen Guasti Road from Holt Boulevard to Archibald Avenue from 2 to 4 lanes
4160063: Widen State Street from Bon View Avenue to Grove Avenue from 2 to 4 lanes
4120145: Spot widen Airport Drive from Rochester Avenue to Etiwanda Avenue from 2 to 4 lanes
200804: South Archibald Avenue grade separation (at Mission Boulevard).
4G0104/4G0112: Widen grade separation @ UPRR Alhambra/Los Angeles Lines from 2 to 4 lanes
4A07325: Construct bridge on Holt Boulevard over West Cucamonga Creek and widen from 4 to 6 lanes
4A01203: Widen Francis Street from Benson Avenue to Campus Avenue from 2 to 4 lanes
4A01210: Widen Holt Boulevard from Benson Avenue to Vineyard Avenue from 2 to 4 lanes
4A07327: Construct bridge on Holt Boulevard over Cucamonga Creek-and widen from 4 to 6 lanes
4A01213: Widen Jurupa Street from Turner Avenue to Hofer Ranch Road from 2 to 6 lanes

TABLE 8 ONT Ground Access Projects: Continued

ONT Ground Access Projects
4A07233: Widen Mission Boulevard from Benson to Milliken Avenue from 4 to 6 lanes
4A07317: Construct bridge on Mission Boulevard over Cucamonga Creek and widen from 4 to 6 lanes
4A07215: Construct bridge on Mission Boulevard over West Cucamonga Creek and widen from 4 to 6 lanes
4A07266: Widen Philadelphia Street from Campus Avenue to 750' e/o Grove Avenue from 2 to 4 lanes
4A07138: Widen Philadelphia Street from Vineyard Avenue to Cucamonga Creek from 2 to 4 lanes, including bridge over Cucamonga Creek
4A07267: Construct bridge on Riverside Drive over Cucamonga Creek and widen from 4 to 6 lanes
4A01222: Widen Vineyard Avenue from 4th Street to I-10 from 4 to 6 lanes
2002160-2002160: I-10 at Grove Avenue interchange and Grove Avenue corridor
4160002: Widen Interchange for I-10 @ Vineyard Avenue from 4 to 6 lanes, widen on/off ramps from 2 to 4 lanes
200803: I-10 at Vineyard Avenue interchange: widening from 4-6 lanes and widen on and off ramps to two lanes, intersection improvements and enhance existing landscaping
200602-200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200604: SR 60 at Grove Avenue interchange reconstruction and Grove Avenue +/-300 ft. n/s of SR 60-widen from 4-6 lanes
4M07017: SR 60 at Archibald Avenue widen on and off ramps (2-3 lanes each way)
416009: Interchange reconstruction for SR 60 at Grove Avenue
4160010: Interchange reconstruction for SR 60 at Vineyard Avenue
4122002: Double tracking of Metrolink San Bernardino Line between CP Central and CP Archibald in San Bernardino County
4160048: Direct Shuttle bus connection from Rancho Cucamonga Metrolink Station to Ontario Airport
4160049: Passenger Rail Service from San Bernardino to Metrolink Line to Ontario Airport
4120004-20159902: I-10 corridor express lane widening (phase 1)

ONT Ground Access Projects
4120005-20159903: I-10 corridor express lane widening (phase 2)
2015 FTIP Ground Access Projects
2002160: I-10 at Grove Avenue and 4th Street: relocate interchange from 4th Street to Grove Avenue. Widen the existing 4th Street undercrossing (2-4 lanes) to match rest of 4th Street. Concurrent project with Grove Avenue widening (20150201)
20150201: Grove Avenue Corridor: Widen Grove Avenue from I-10 to Airport Drive (4-6 lanes). Concurrent with I-10/Grove Avenue Interchange Project (2002160)
200803: I-10 at Vineyard Avenue interchange. Widen interchange from 4-6 lanes and widen on and off ramps to two lanes, intersection improvements and enhance existing landscaping.
200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200604: SR60 at Grove Avenue interchange reconstruction and Grove Avenue +/-300 ft. n/s of SR 60-widen from 4-6 lanes
201132: SR-60 at Archibald Avenue widen on and off ramps (2-3 lanes each way); add additional left turn pockets from Archibald to SR-60 on ramps (non-capacity enhancing along Archibald)
200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200805: North Vineyard Avenue grade separation - between Holt Boulevard and Airport Drive building railroad bridge flyover-no lanes added to arterials. The grade separation is at the UPRR Alhambra Line
200405: South Milliken Avenue grade separation - on Milliken from UPR to north of Mission Boulevard railroad grade separation-construct o/c/u/c at RR-realignment of STS to meet overcrossing & intersection improvements

TABLE 8 provides a detailed list of the ground access improvements at LA/Ontario International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

PALMDALE REGIONAL AIRPORT (PMD)

Palmdale Regional Airport is in the City of Palmdale, about 60 miles north of downtown Los Angeles. Since 2013, it has been managed by the Palmdale Airport Authority. The Airport Authority has the ability to use both Department of Defense owned runways. The passenger terminal is located at the southwest corner of the airport, on Avenue P.

Regional access to the airport is provided by SR 14, about three miles west of the airport. As Palmdale Airport currently has no scheduled commercial air service, there are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport.

The Palmdale Transportation Center, including the Palmdale Metrolink Station on the Metrolink Antelope Valley Line, is located about two miles southwest of the airport. The Transportation Center currently provides connections with the local public transit provider, Antelope Valley Transit Authority (AVTA). No AVTA routes currently serve the airport. The Palmdale Transportation Center is the proposed site of a future California High-Speed Rail station.

TABLE 9 provides a detailed list of the ground access improvements Palmdale Regional Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

OXNARD AIRPORT (OXR)

Oxnard Airport is located in the northwest part of the City of Oxnard in Ventura County. Regional highway access is from SR 1 to the north and south, or US 101 to the north and east. Ground access to the passenger terminal is provided by Fifth Street. No scheduled passenger service has been offered at the airport since 2010.

Four rental car companies operate from the airport terminal. Additionally, the Ventura County Airporter Shuttle operates eight daily roundtrips between OXR and LAX.

Gold Coast Transit is the municipal transit provider, and bus Route 19 has a stop on Fifth Street near the terminal. The Oxnard Transportation Center is located about two miles east

TABLE 9 PMD Ground Access Projects

PMD Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
Rancho Vista Boulevard grade separation
Recent and On-going Ground Access Studies
Transit Oriented Development Project near Palmdale Transit Center
Avenue Q Feasibility Study
High Desert Corridor/P-8 Freeway
2016 RTP Ground Access Projects
LA962212: Route 138: In Palmdale @ Avenue P-8 from Route 14 to 100th Street - Acquisition of ROW for future Route 138
1TDL04: Expansion and Improvement to existing Transit Center in the City of Palmdale
2015 FTIP Ground Access Projects
LAF3403: Palmdale Transportation Center - Platform Extension
LA06897: SR 138/14: Widening from Rancho Vista Boulevard (RVB) to Palmdale Boulevard
LAF1104: Rancho Vista Boulevard (RVB) Grade Separation at Sierra Highway/UPRR/Metrolink RR Crossing
LAF1104B: Phase 2-Construct a railroad grade separation of Rancho Vista Boulevard at both Sierra Highway and the double-track at-grade crossing of the Southern California Regional Rail Authority (SCRRA) Metro-link and Union Pacific Railroad (UPRR) tracks

of the airport and provides connections to additional Gold Coast Transit routes, as well as rail connections to Amtrak’s Coast Starlight and Pacific Surfliner Routes, as well as Metrolink’s Ventura County Line.

There are no recently planned or completed ground access projects at Oxnard Airport.

MARCH AIR RESERVE BASE (RIV)

March Air Reserve Base (RIV) is operated as a public-use airport under a Joint Use Agreement with the Air Force. It is located in unincorporated Riverside County between the cities of Riverside and Moreno Valley. A passenger terminal opened in 2013 to accommodate general aviation activities. Parking lots are located adjacent to the operations control tower and the passenger terminal. Currently, no on-site facilities for rental cars, taxicabs or shuttle services exist.

Regional access is provided by I-215, which runs in a north-south alignment directly west of the airport, and SR 60, which runs in an east-west alignment north of the airport. Ground access to airport facilities is provided by Cactus Avenue. Recent and planned improvements to Heacock Street and Harley Knox Boulevard will facilitate ground access to the airport, particularly for trucks.

The Moreno Valley/March Field Station on the Perris Valley Line extension of the Metrolink 91 Line is located near the entrance to the airport. Rail service is anticipated to begin in late 2015.

TABLE 10 provides a detailed list of the ground access improvements March Air Reserve

TABLE 10 RIV Ground Access Projects

RIV Ground Access Projects
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
3A01WT049A: In the City of Moreno Valley - Widen Alessandro Boulevard between I-215 and Frederick Street from 4 to 6 lanes.
RIV071240-RIV071240: In the City of Moreno Valley - east bound Cactus Avenue widening between Veterans Way & Heacock Street

TABLE 10 RIV Ground Access Projects: Continued

I-215 North Project (Phase 3 of 3): Add HOV lane in each direction and WB auxiliary lane
3A04WT054: In the City of Moreno Valley - widen Heacock Street between Cactus Avenue and San Michele Road
3160037: Widen Heacock Street between Heacock Bridge Lateral A and Cactus Avenue
3A0801: In the City of Moreno Valley - Widen Heacock Street between San Michele Road and Harley Knox Boulevard
3A04WT068: Widen San Michele Road between Heacock Street and Indian Avenue
3M04WT017: Widen/reconstruct Heacock interchange, ramps, and channelization improvements.
RIV050533-RIV050533: At I-215/Cactus Avenue interchange
2015 FTIP Ground Access Projects
RIV080905: In the City Of Moreno Valley - Widen Alessandro Boulevard between I-215 and Frederick Steet
RIV071240: In the City Of Moreno Valley – E/B Cactus Avenue Widening between Veterans Way & Heacock Street
RIV080910: In the City of Moreno Valley - Widen Heacock Street between Cactus Avenue and San Michele Road
RIV080911: In the City Of Moreno Valley - Widen Heacock Street between San Michele Road and Harley Knox Boulevard
RIV050533: At I-215/Cactus Avenue Interchange: widen interchange
Recently Completed Ground Access Projects
I-215/Van Buren Boulevard Interchange Improvements
Ground Access Projects Currently Under Construction (or in Design)
Perris Valley Metrolink extension, including a March Field Station
Harley Knox Boulevard Improvements

Base completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

PALM SPRINGS INTERNATIONAL AIRPORT (PSP)

Palm Springs International Airport is located in the Coachella Valley, in the City of Palm Springs. The passenger terminal is located at the end of Tahquitz Canyon Way in the southwest portion of the airport and consists of two concourses with a total of 17 gates.

Regional access is provided by I-10, about four miles north of the airport. Kirk Douglas Road is the internal airport roadway that circles the on-site surface parking lots and provides access to the terminals. Taxicabs, private transportation companies, and public shared-shuttle companies, and can be picked up on the north side of the terminal adjacent to rental car facilities.

Transit access is provided by municipal bus provider Sunline’s SunBus Route 24, which stops just outside the airport at the Kirk Douglas Way/El Cielo Road/Tahquitz Canyon Way intersection. Regional bus connections include the Morongo Basin Transit Authority’s Routes 12 and 15.

TABLE 11 PSP Ground Access Projects

PSP Ground Access Projects
Recently Completed Ground Access Projects
Upgrade I-10/Gene Autry Trail interchange ramps to a 2-lane configuration. Modify Gene Autry Trail from 2 to 6 lanes (from I-10 interchange to Salvia Rd.)
Upgrade I-10/Date Palm interchange ramps to a 2-lane configuration
Widen Indian Canyon Drive to a 6-lane configuration (from Union Pacific Rail Road to I-10)
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None

TABLE 11 PSP Ground Access Projects: Continued

PSP Ground Access Projects
2016 RTP Ground Access Projects
3A07100-RIV110124: In the Coachella Valley in the City of Palm Springs - Ramon Road widening between San Luis Rey Drive & Landau Boulevard
3A07004: Gene Autry Trail, new bridge to replace existing low water crossing at Whitewater River.
3A07018A: Landau Boulevard, construct new 6-lane road between Vista Chino and I-10, including overcrossing at Whitewater River
3A01CV078: Widen Ramon Road from 4 to 6 lanes between Gene Autry Rail and White water River
3A07005: Widen Ramon Road from 4 to 6 lanes between S. Indian Canyon to Sunrise Way, including Baristo Storm Channel crossing)
3A07145: Widen Ramon Road from 4 to 6 lanes between S. Palm Canyon Dr to S. Indian Canyon Drive
RIV031205: In the City of Palm Springs - widen Ramon Road from 4 to 6 lanes
3M0722: On I-10, Construct new 6-lane mixed flow, partial cloverleaf IC with auxiliary lanes and 4 two lane ramps plus 6 lane grade separation bridge over UPRR between Palm Drive ICDr Interchange and Date Palm Drive Interchange
3TR04C: Implement Bus Rapid Service/BRT on Highway 111
3TC04TR3: Construct 3 transit centers (west, central, and east valley) in Coachella Valley
2015 FTIP Ground Access Projects
RIV110124: In the Coachella Valley in the City of Palm Springs - Ramon Road Widening between San Luis Rey Drive & Landau Boulevard
RIV031205: In the City of Palm Springs - widen Ramon Road from 4 to 6 lanes
RIV041021: Bus rapid transit (BRT) enhancements

TABLE 11 provides a detailed list of the ground access improvements Palm Springs International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

SAN BERNARDINO INTERNATIONAL AIRPORT (SBD)

San Bernardino International Airport (SBD) is located in the City of San Bernardino. The airport has domestic and international passenger terminals on the northwestern portion of the property but does not currently have scheduled passenger service. The international terminal has Federal Inspection Service (FIS) facilities. I-10 provides regional access from the east and west, and I-215 provides regional access from the north and south. SR 210 provides additional access from the northwest. Recent and ongoing improvements to I-215 through downtown San Bernardino and to the Tippecanoe Avenue interchange on I-10 have improved ground access to the airport. Local access to the airport facilities is provided by Tippecanoe Avenue and Third Street.

OmniTrans is the municipal public transit provider in San Bernardino County. Its Route 8 has a stop on Harry Shepard Boulevard at Del Rosa Drive, a quarter-mile from the terminal building entrances. There are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport.

TABLE 12 SBD Ground Access Projects

SBD Ground Access Projects
Recently Completed Ground Access Projects
Construct a truck traffic access road to SBD Air Cargo Terminal at Perimeter Road
Construct a 4-lane bridge on Mountain View Avenue over the Santa Ana River
Ground Access Projects Currently Under Construction (or in Design)
Upgrade 5th St to a 4-lane major arterial and improve capacity at intersections
Tippecanoe Ave/Anderson Street Interchange with I-10 (Phase 2)

TABLE 12 SBD Ground Access Projects: Continued

SBD Ground Access Projects
Recent and On-going Ground Access Studies
Redlands Passenger Rail Project will have a station on Tippecanoe Avenue
Improve 3rd St near SBD
2016 RTP Ground Access Projects
200213: Widen 3rd St. from Palm Ave. to 5th St.
200852: Del Rosa Drive From 5th Street to 6th Street-Widen from 2 to 4 Lanes
4A07142: Tippecanoe Avenue From 3rd Street To 5th Street - Widen from 2-4 Lanes
SBD55031: Alabama Street From 3rd Street To South City Limits
4M01003-2011154: SR 210 At 5th St/Greenspot Rd; On and Off Ramps Widening; Add Lanes
200419: Alabama St widening - widen from 2-4 lanes from north city limits to 3,000 ft. north Palmetto
4A01237: Widen Alabama St from 2 to 4 lanes
4A07017: Widen Alabama St from Lugonia Ave to Barton Rd from 4 to 6 lanes
4A07042: Widen Alabama St from North Redlands City Limits to Palmetto Ave from 2 to 4 lanes
4A07184: Widen California St from Redlands Blvd to Palmetto Ave from 5 to 6 lanes
4A07255: Widen Lugonia Ave from California St to Tennessee St from 2 to 4 lanes
4A01246: Widen Lugonia Ave from Tennessee St to Orange St from 2 to 4 lanes
4A07154: Widen Palmetto Ave from California St to Alabama St from 2 to 4 lanes

TABLE 12 SBD Ground Access Projects: Continued

SBD Ground Access Projects
4A01281: Widen San Bernardino Ave from Alabama St to California St from 2 to 4 lanes
200609: Mt. View Widening/Extension Project- Widen S/B From 2-4 lanes- from Coulston to Riverview
4A07119: 5th Street from Sterling Ave to Victoria Ave Widen from 2-4 lanes
4OM0701-201184: Sterling Ave from 3rd Street to 5th Street - Widen from 2-4 lanes
SBD41317: Mountain View Ave bridge at Mission Creek Channel - Widen roadway
4A07230: Widen 5th St from Pedley Rd to Tippecanoe Ave from 2 to 4 lanes
4A07292: Widen 5th St from Warm Creek (0.3 mi. east of Waterman) to Pedley Ave from 2 to 4 lanes
4A07081: Widen Coulston Ave Av from Tippecanoe Ave to Mountain View Ave from 2 to 4 lanes
4A07380: Widen Del Rosa Ave from Del Rosa Dr to San Bernardino City Limits from 2 to 4 lanes
4A07135: Widen Rialto Ave Av from Lena Rd to Tippecanoe Ave Av from 2 to 4 lanes
4A07178: Widen Rialto Ave from Sierra Way to Waterman Ave from 2 to 4 lanes
4A07152: Widen Tippecanoe Ave from Mill St to Harriman from 4 to 6 lanes
44810: I-10 Tippecanoe reconfigure Interchange and local road Improvements/Modifications
2015 FTIP Ground Access Projects
200213: On 3rd St. from Palm Ave. to 5th St. - Widen 3rd St. e/o Palm Ave. from 2 to 3 lanes
201180: Del Rosa Drive from 5th Street to 6th Street-Widen from 2 to 4 lanes
201182: Tippecanoe Avenue from 3rd Street to 5th Street - Widen from 2-4 lanes
SBD55031: Alabama Street From 3rd Street To South City Limits - Widen From 2 To 3 S/B Lanes
2011154: SR 210 at 5th St/Greenspot Rd; On and off ramps widening; Add Lanes
201183: 5TH ST FROM TIPPECANOE AVE TO DEL ROSA DR – WIDEN FROM 2-4 LANES

TABLE 12 provides a detailed list of the ground access improvements San Bernardino International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

JOHN WAYNE ORANGE COUNTY AIRPORT (SNA)

John Wayne Orange County Airport is located in unincorporated Orange County, near the cities of Santa Ana, Irvine, Newport Beach and Costa Mesa. Three terminal buildings are located just off MacArthur Boulevard in the northeast corner of the airport along Airport Way.

John Wayne Airport sits in between multiple major highways, including I-405 to the north, SR 55 to the west and SR 73 to the south, that provide regional access to the airport. MacArthur Boulevard in Irvine connects directly to the airport facilities. Airport Way operates as the circulating roadway between the three terminals and other airport passenger facilities. Several parking garages are available in the main terminal area. An additional off-site parking lot is located on Main Street in Irvine, with a free shuttle to the terminal.

Most of the ground transportation facilities are located in the Ground Transportation Center (GTC), on the lower concourse level on Airport Way in the middle of the terminal buildings. The GTC contains transfers to buses, shuttles, taxicabs and eight on-site rental car providers. An additional fifteen off-site rental car companies are authorized to pick up passengers from the terminal and shuttle them to each company's personal facilities. As a major destination in the area, the Disneyland Resort operates an express shuttle for passengers that can be picked up at the GTC.

The local public transit service providers are the Orange County Transportation Authority (OCTA) and City of Irvine's Irvine Shuttle (iShuttle). OCTA bus Routes 76 and 212 directly serve the airport with a stop at the GTC on the lower level. The iShuttle's Route A operates between the GTC and the Tustin Metrolink Station about five miles to the northeast. The Tustin Metrolink Station provides connections with trains on both the Orange County and Inland Empire Metrolink lines, as well as other OCTA bus routes and iShuttle Route B.

TABLE 13 SNA Ground Access Projects

SNA Ground Access Projects	
Recently Completed Ground Access Projects	
Add 1 northbound ramp and westbound right-turn lane on Paularino at SR-55	
Ground Access Projects Currently Under Construction (or in Design)	
None	
2016 RTP Ground Access Projects	
ORA016: Paularino Avenue (SR-55 northbound frontage road at Paularino Avenue) in Costa Mesa	
2M0733: On SR-55, add 1 mixed flow lane each direction and fix chokepoints from I-405 to I-5	
2H0706: On SR-73, add HOV connector between I-405 and SR-73	
2H0707: On SR-73, add 1 HOV lane each direction from MacArthur to I-405	
ORA030605-ORA030605: I-405 from SR-73 to I-605. Add 1 mixed flow lane in each direction	
ORA030605-ORA030605A: I-405 from SR-73 to I-605. Convert existing HOV to HOT.	
2M0728: Add 1 MF lane each direction from I-5 to SR-55 and add southbound auxiliary lanes from 133 to Irvine Center Drive	
2015 FTIP Ground Access Projects	
ORA015: Baker Street and SR-55; northbound & southbound frontage road improvements	
ORA016: Paularino Avenue (SR-55 northbound frontage road at Paularino Avenue) Costa Mesa intersection improvement	
ORA017: Paularino Avenue (SR-55 southbound frontage road in Costa Mesa), Intersection improvement add southbound right-turn lane.	
ORA100511: SR-55 widening between I-405 and I-5 - add 1 mixed flow lane each direction and fix chokepoints from I-405 to I-5	
ORA030605: I-405 from SR-73 to I-605. Add 1 MF lane in each direction	
ORA030605A: I-405 from SR-73 to I-605. Convert existing HOV to HOT	
ORA131304: I-405(I-5 to SR-55)-Add 1 MF lane each direction from I-5 to SR-55 and improve merging	

TABLE 13 provides a detailed list of the ground access improvements John Wayne Orange County Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

SOUTHERN CALIFORNIA LOGISTICS AIRPORT (VCV)

Southern California Logistics Airport is located in the City of Victorville in San Bernardino County, about 20 miles north of the city of San Bernardino. Regional access to the airport is provided by US 395 and I-15. Direct access to airport facilities is available from Phantom Way at Worley Boulevard/George Boulevard.

As the airport currently has no scheduled passenger air service, there are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport. Victor Valley Transit bus Route 32 has a stop just outside the airport at the Phantom Way/George Boulevard intersection.

The proposed High Desert Corridor project is currently in the environmental review stage. When constructed, it will provide a new multipurpose east-west corridor between SR 14 and SR 18 and greatly improve ground connections from the airport to the regional highway system.

There are no recently planned or completed ground access projects at Southern California Logistics Airport.

TECHNICAL AND POLICY COMMITTEE REVIEW

The development of the regional and airport forecasts was reviewed by technical and policy committees throughout the preparation of the 2016 RTP/SCS. In addition, airport operators were consulted regarding the operations of their airports. **TABLE 14** lists the dates of committee meetings and the actions taken at each.

TABLE 14 Lists the dates of committee meetings and the actions taken at each

Date	Committee	Agenda/Action
8/28/14	Aviation Technical Advisory Committee	Data request to airport operators
3/13/15	Aviation Technical Advisory Committee	Review of airport capacity constraints methodology and results
4/23/15	Aviation Technical Advisory Committee	Review of overall regional passenger demand forecast methodology and results
6/4/15	Transportation Committee	Approval of overall regional passenger demand forecast
6/25/15	Aviation Technical Advisory Committee	Review of ground access modeling methodology
7/2/15	Transportation Committee	Initial airport forecasts agendized but not presented
7/23/15	Transportation Committee	Presentation of initial airport forecasts; no action taken
8/6/15	Transportation Committee	Approval of individual airport demand forecasts
10/8/15	Transportation Committee	Approval of cargo forecasts and of ground access strategies

NOTES

¹ Southern California Association of Governments. August 2015. Regional Aviation Forecast: Analysis of Airport Capacity Constraints Technical Memorandum. Prepared by: AECOM.



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2016
2040 RTPSCS

APPENDIX

TRANSPORTATION SYSTEM | AVIATION AND AIRPORT
GROUND ACCESS

ADOPTED | APRIL 2016

WWW.SCAGRTPSCS.NET

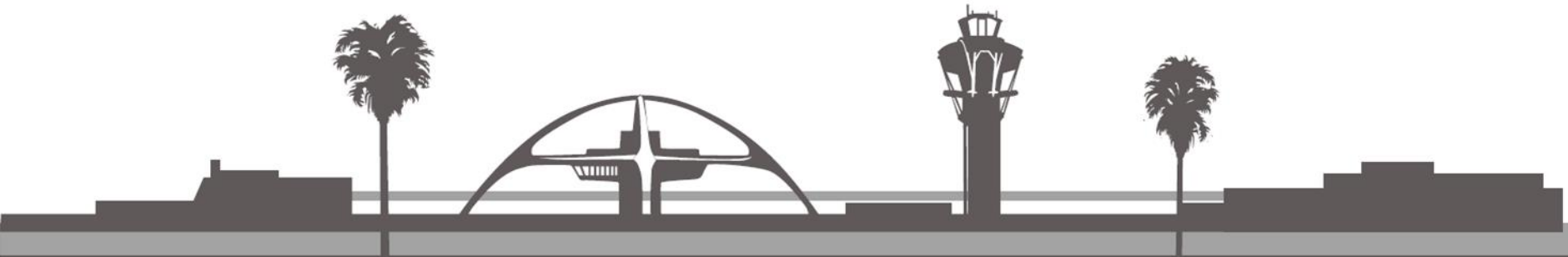
EXHIBIT

13

Los Angeles International Airport

LAX – Runway 7L-25R Shift Study

El Segundo Briefing
January 29th, 2015

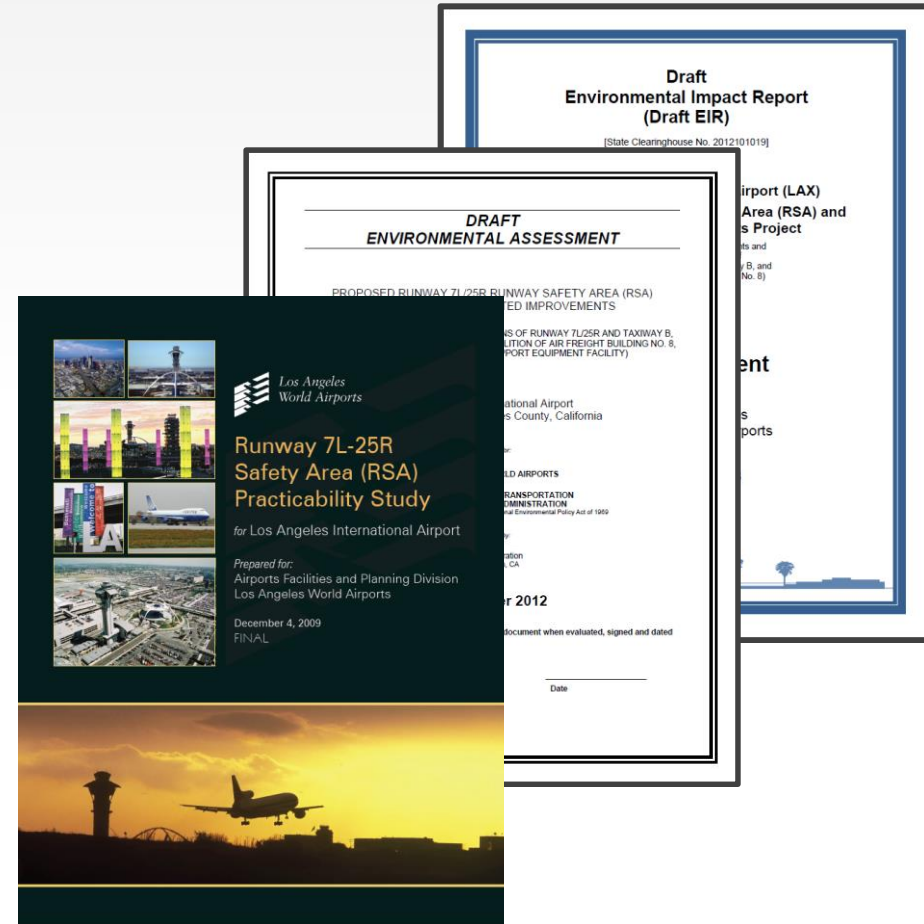


2 Meeting Agenda

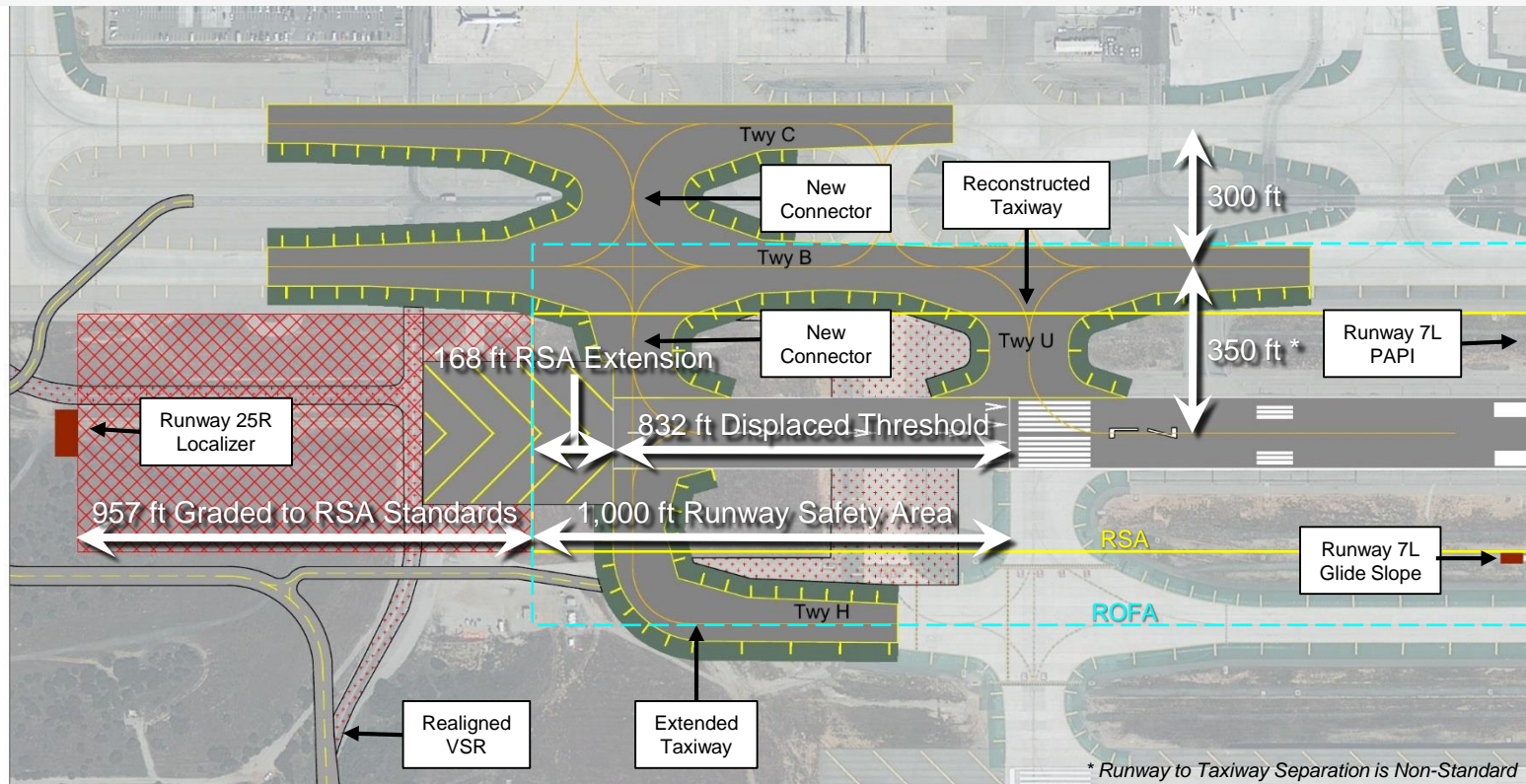
- Project Background
- Shift Study Analysis
 - LAX Operational Impacts
 - Obstructions Analysis
 - VOR Discussion
- Discussion

3 Project Background

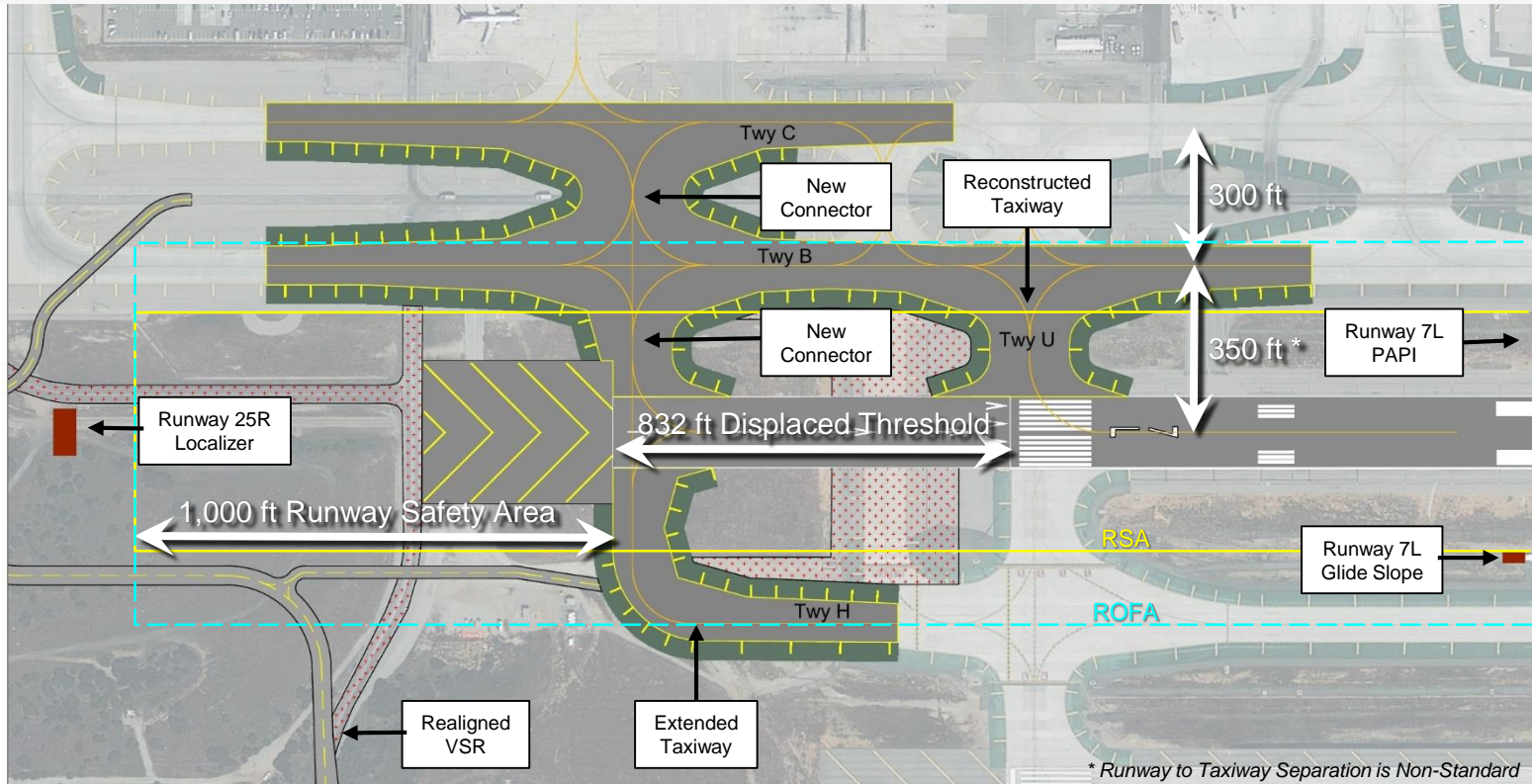
- Origin of “shift” concept is the 2009 RSA Practicability Study
- Carried into 2012 NEPA and 2013 CEQA analyses
- Operational impacts evaluated in this study



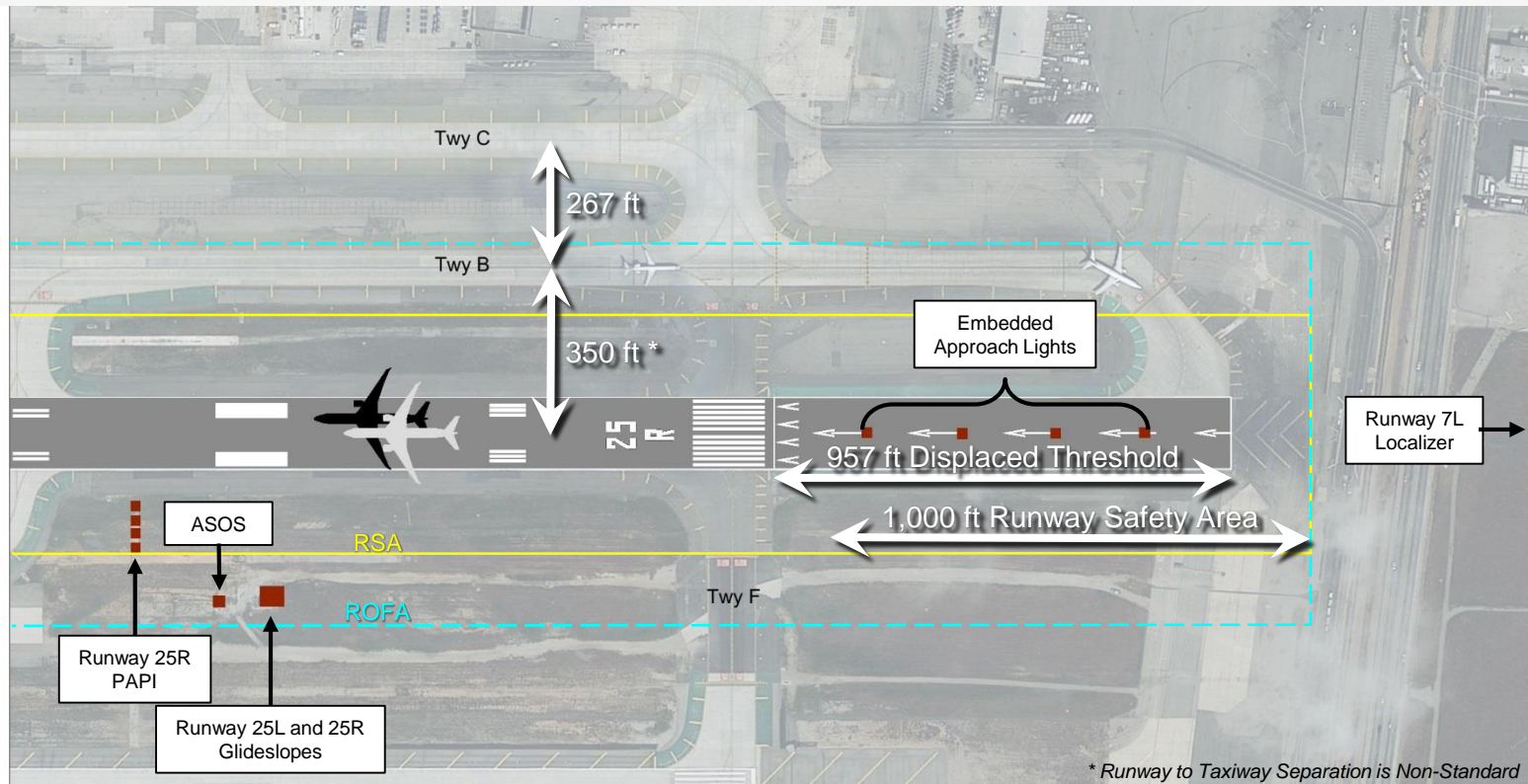
Approved Alternative West End Geometry



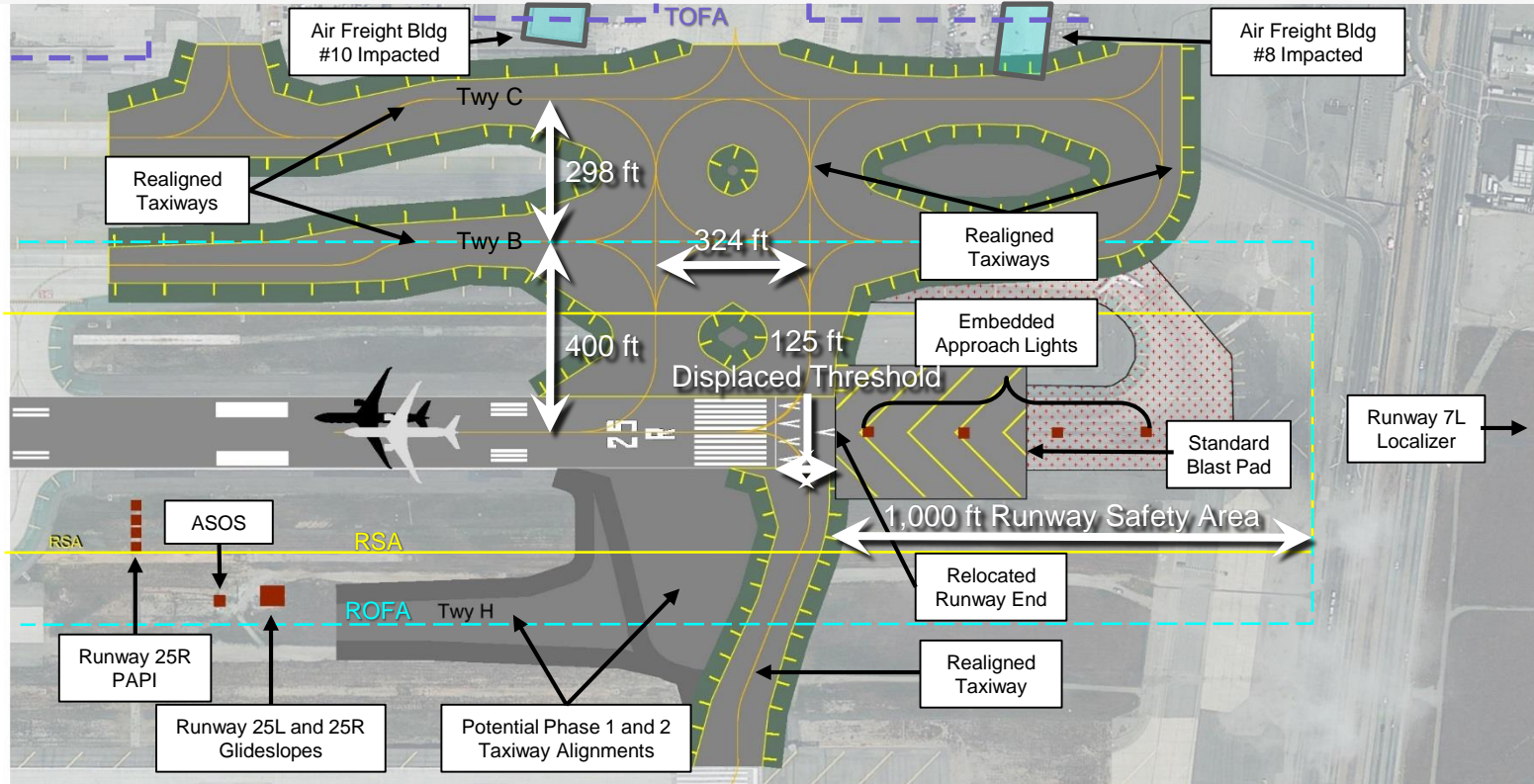
Shift Alternative West End Geometry



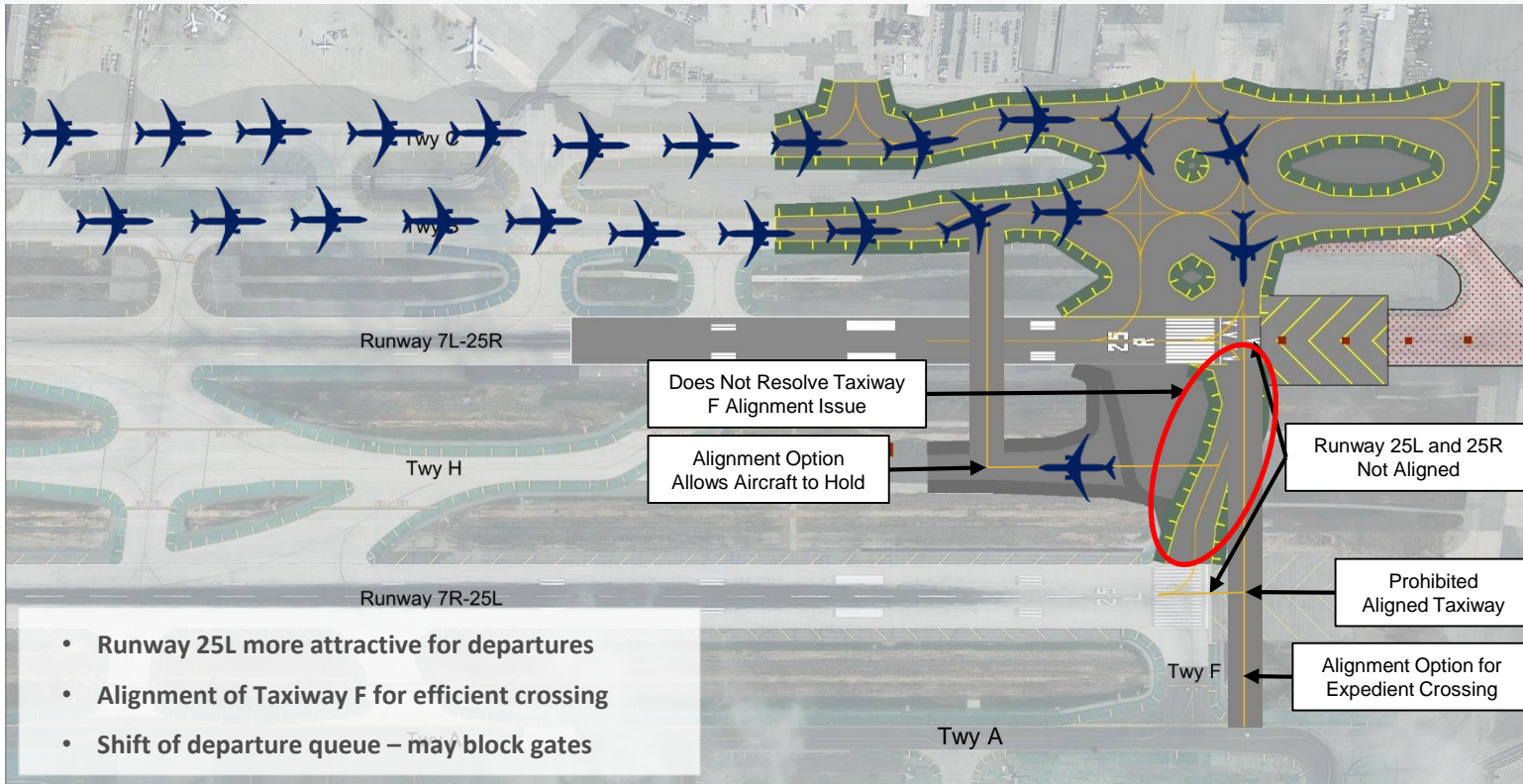
Approved Alternative East End Geometry



Shift Alternative East End Geometry

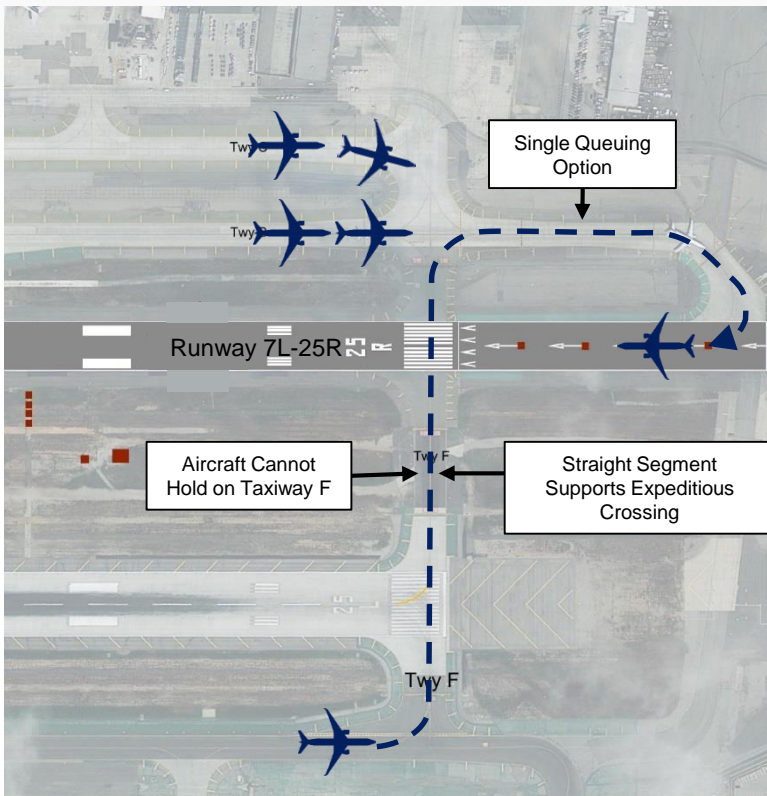


8 Operational Impacts



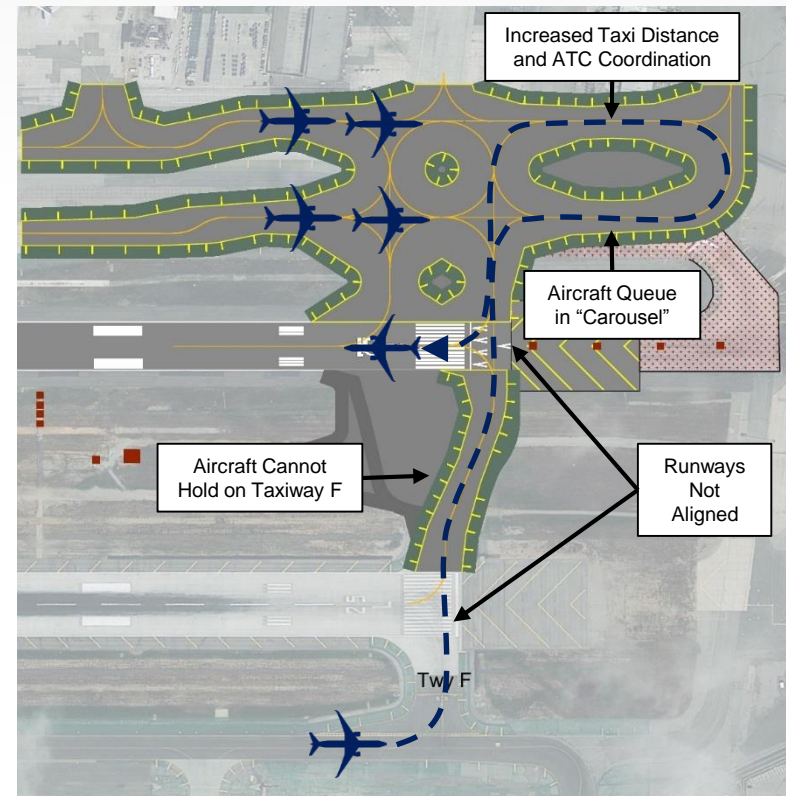
Approved Alternative

- Challenging departure queuing



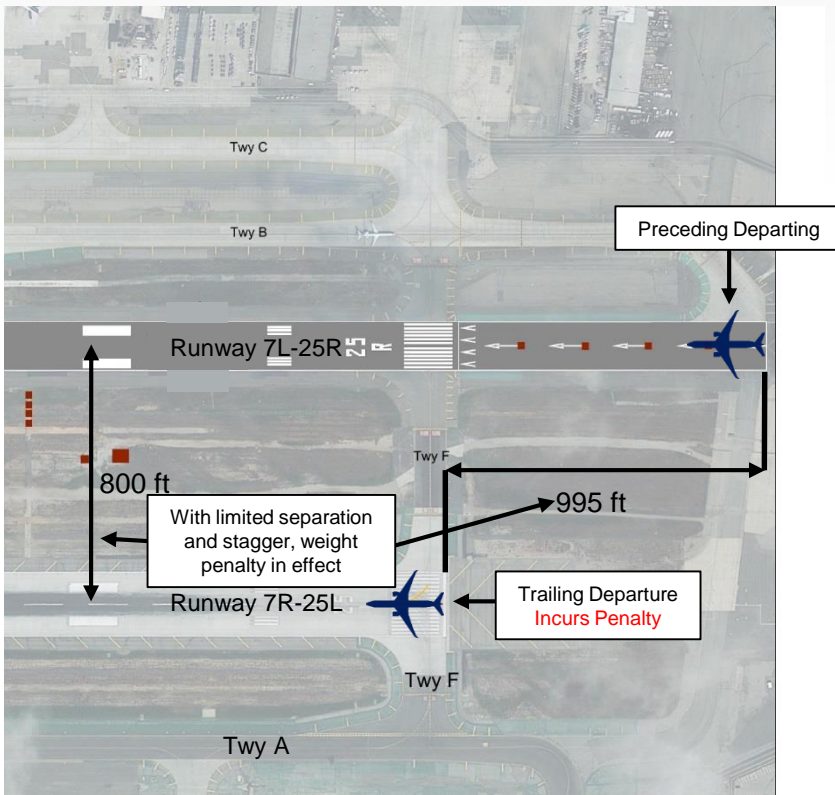
Shift Alternative

- More challenging departure queuing
- Unintended consequence: Potential increase in Runway 25L departures



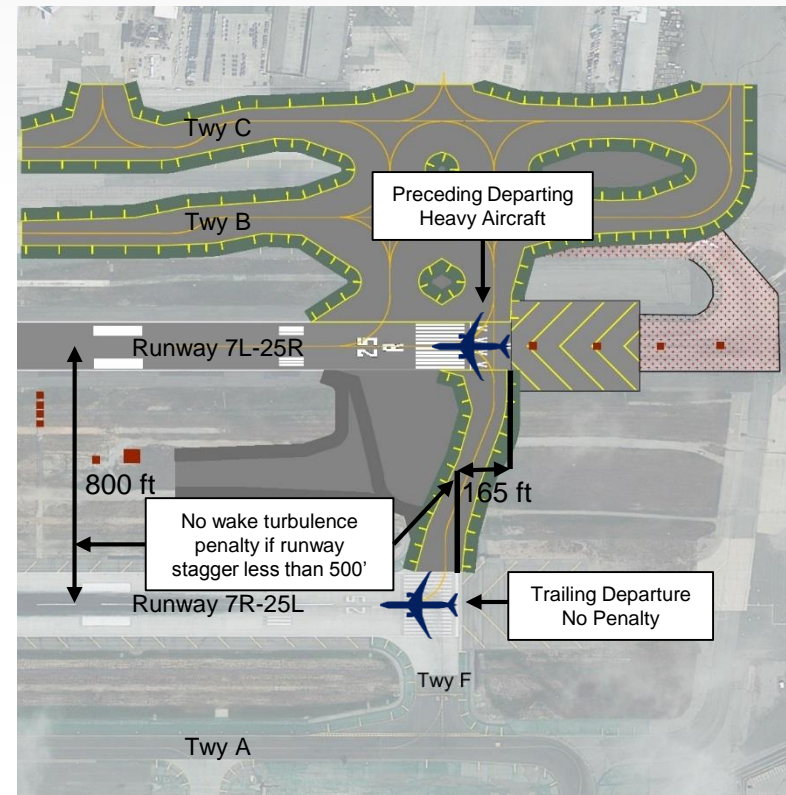
Approved Alternative

- Wake turbulence penalties
- Incentive to use Runway 25R



Shift Alternative

- Wake turbulence penalties removed
- No incentive to use Runway 25R



Survey letter included 3 questions –

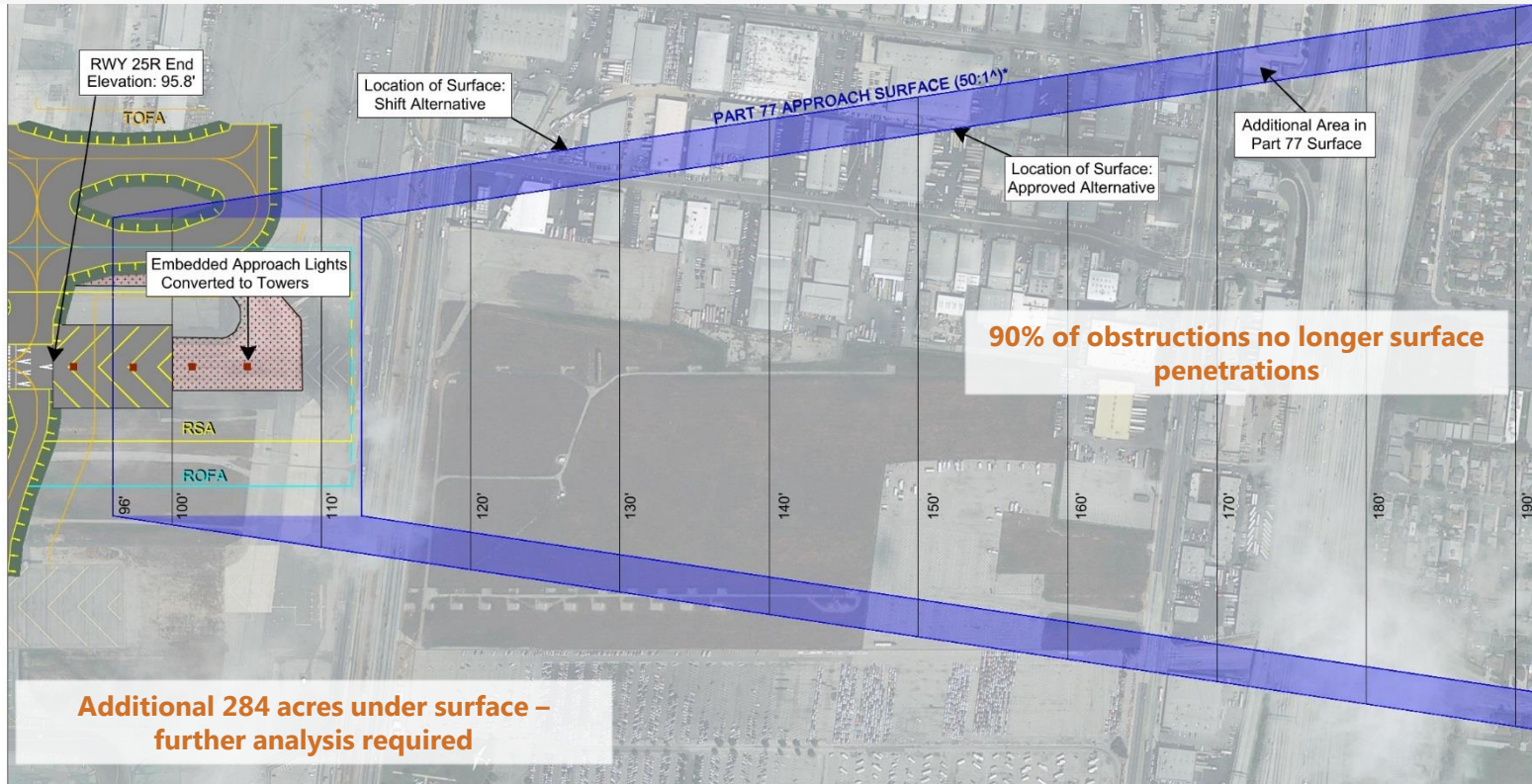
- *“Will shifting Runway 7L-25R 832 feet to the west have an impact on your airline’s operation at LAX?”*
- *“How many flights are likely to be impacted as a result of the shift?”*
- *“What is your airline’s likely response to the impact of the shift (if any)?”*

12 Airline Engagement

- Response excerpts -
 - "...[we have] serious concerns on the impact to operations due to the runway shift."
 - "This amounts to about a 6,600 pound takeoff weight penalty and would not be acceptable for the operation of this aircraft from this runway."
- May encourage Runway 25L departures



East End Obstructions Part 77 Approach Surface



VOR Relocation Feasibility

Very High Frequency Omnidirectional Range

- VOR
 - Navigational aid gives pilots relative location and direction heading
- LAX VOR with Tactical Air Navigation (VORTAC)
 - Supports military and civil use
 - “Lighthouse” for transpacific flights
 - 50+ instrument procedures dependent on this navigation aid
- Highest object in dunes
 - Impacts airline operational capability in Shift Alternative



VOR Relocation Feasibility

Very High Frequency Omnidirectional Range

- **Modify**
 - Antenna and/or equipment shelter may be relocated
 - Relatively easy and inexpensive to implement
- **Relocate**
 - May be relocated elsewhere within LAX or off-Airport
 - Costly and time-consuming project
- **Remove**
 - Potential for other station in region to “pick up slack”
 - Not likely feasible



Discussion

EXHIBIT

14



Los Angeles
World Airports

*LOS ANGELES
INTERNATIONAL AIRPORT*

*RUNWAY 7L-25R
SHIFT STUDY*

MARCH 2015

Prepared for Los Angeles World
Airports Environmental and Land
Use Planning Division

Confidential Draft
For Deliberative Purposes Only

RS&H



TABLE OF CONTENTS

CHAPTER 1 EXECUTIVE SUMMARY	1
1.1 Overview	2
1.2 Analyses/Evaluation	5
1.3 Conclusions	6
CHAPTER 2 PROJECT DEFINITION	7
2.1 Project Description and Layout	8
2.1.1 Runway Safety Area and Declared Distances	8
2.1.2 Approved Alternative	9
2.1.3 Shift Alternative	9
2.2 Runway 7L-25R and Airfield Context	22
2.2.1 Preferential Runway Use Policy	22
2.2.2 Air Traffic Patterns	23
2.2.3 Runway Use	25
2.2.4 Airfield Challenges.....	27
2.3 Effectiveness of Enhanced Departure INSTRUCTIONS.....	28
CHAPTER 3 IMPACT OF SHIFT.....	33
3.1 Obstructions Analysis	34
3.1.1 FAR Part 77 50:1 Approach Surface.....	39
3.1.2 TERPS 40:1 Departure Surface	39
3.1.3 62.5:1 One Engine Inoperative (OEI) Surface	39
3.1.4 34:1 Threshold Siting Surface.....	40
3.2 Noise Impacts.....	49
3.3 LAX Operational Impacts	59
3.3.1 Airspace Impacts	59
3.3.2 Potential Increased Runway 25L Departures	59
3.3.3 Departure Queuing	60
3.3.4 Taxiway Geometry	60
3.3.5 Airline Operational Impacts	61
3.4 VORTAC Relocation Opportunities and Challenges.....	64
3.4.1 Very High Frequency Omnidirectional Range (VOR) Overview.....	64
3.4.2 General Project Coordination and Elements.....	64
3.4.3 Anchorage VOR Relocation Case Study.....	65
3.4.4 LAX VORTAC Relocation Feasibility Assessment.....	66
3.5 Impact of Shift Summary	66

CHAPTER 4 LAX OPERATIONS AND NOISE	69
4.1 LAX Noise Profile.....	70
4.2 Noise Reduction Concepts.....	77
4.2.1 Early Turns.....	77
4.2.2 Runway 25L Departures.....	79

LIST OF TABLES

Table 2-1: Approved Alternative Declared Distances	9
Table 2-2: Shift Alternative Declared Distances	19
Table 2-3: Shift Alternative Features Compared to Approved Alternative	21
Table 3-1: Obstructions Data Table.....	35
Table 3-2: Airline Operational Impact Survey Responses	63

LIST OF FIGURES

Figure 1-1: Shift Alternative Conditions	3
Figure 2-1: Approved Alternative (West) – Runway 7L.....	11
Figure 2-2: Approved Alternative (East) – Runway 25R.....	13
Figure 2-3: Shift Alternative (West) – Runway 7L	15
Figure 2-4: Shift Alternative (East) – Runway 25R	17
Figure 2-5: West Flow Operations	23
Figure 2-6: East Flow Operations	24
Figure 2-7: Over-Ocean Operations.....	25
Figure 2-8: 2013 Airfield Complex Utilization	25
Figure 2-9: 2013 Departure Split.....	26
Figure 2-10: 2013 Arrival Split.....	27
Figure 2-11: Early Turn Gates.....	29
Figure 2-12: Summary of El Segundo Gates Early Turns	30
Figure 2-13: Summary of Hyperion Gate Early Turns.....	31
Figure 3-1: FAR Part 77 50:1 Approach Surface	41
Figure 3-2: TERPS 40:1 Departure Surface.....	43
Figure 3-3: 62.5:1 One Engine Inoperative (OEI) Surface	45
Figure 3-4: 34:1 Threshold Siting Surface.....	47
Figure 3-5: 2015 Noise Contour Comparison – Approved Alternative vs No-Action Alternative.....	51
Figure 3-6: 2020 Noise Contour Comparison – Approved Alternative vs No-Action Alternative.....	53
Figure 3-7: 2015 Noise Contour Comparison – Shift Alternative vs No-Action Alternative.....	55
Figure 3-8: 2020 Noise Contour Comparison – Shift Alternative vs No-Action Alternative.....	57
Figure 4-1: 2011 Noise Contours	73
Figure 4-2: 2014 Third Quarter Noise Contours	75
Figure 4-3: Challenging Access to Runway 25r	80

Figure 4-4: Increased Departure Hold Times 81
Figure 4-5: Taxiway C Extension 82
Figure 4-6: Taxiway A Bypass..... 84

CHAPTER 1
EXECUTIVE SUMMARY

1.1 OVERVIEW

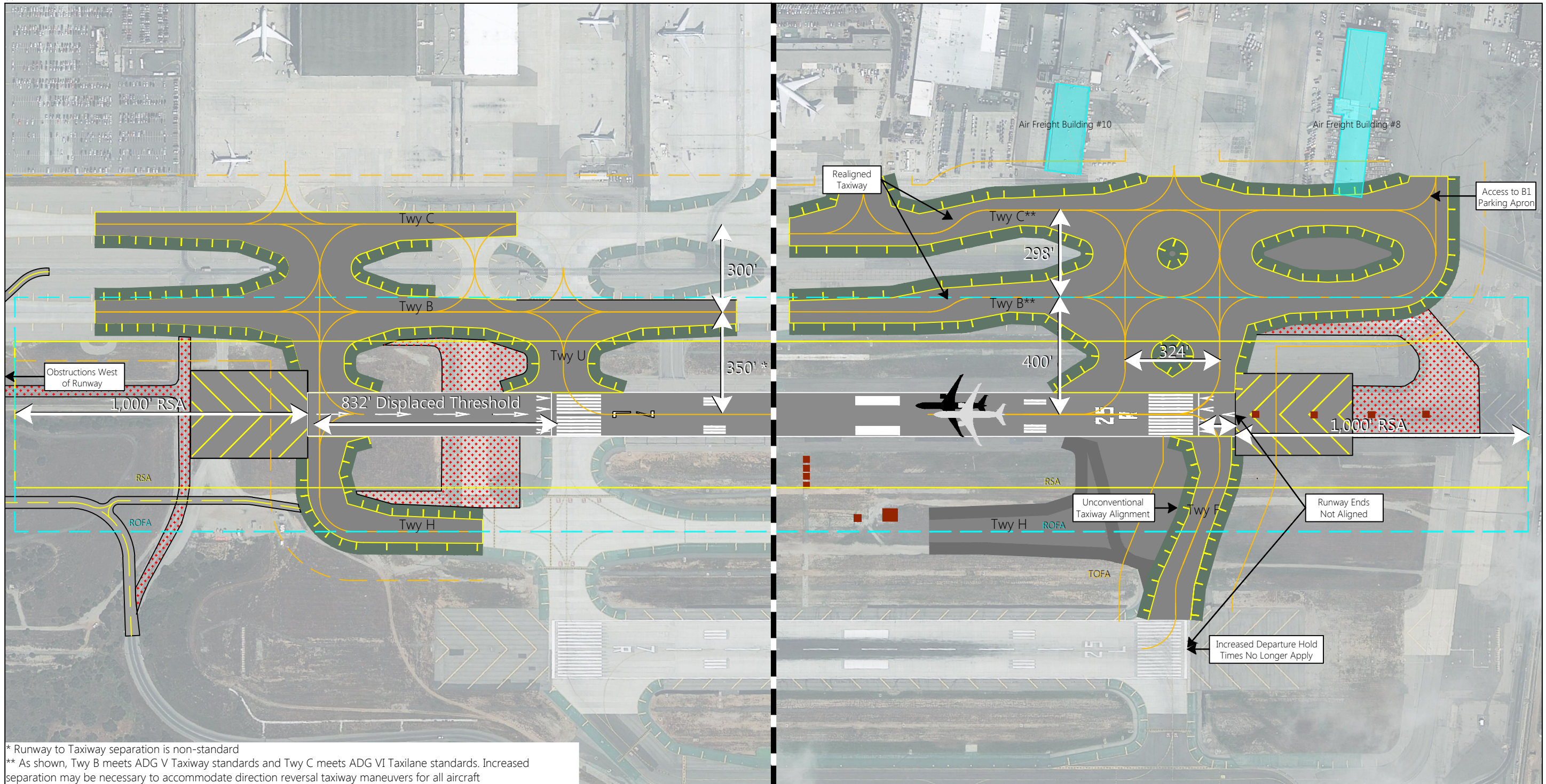
Los Angeles World Airports (LAWA) will be making improvements to the Runway Safety Area (RSA) for Los Angeles International Airport (LAX) Runway 7L-25R in response to a Federal mandate requiring airports to comply with Federal Aviation Administration (FAA) RSA standards by December 31, 2015.

Several alternatives were evaluated in 2012 and 2013 under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) resulting in the selection of the Approved Alternative. A different alternative, the Shift Alternative, would result in an 832-foot westward shift of the Runway and would affect the boundary of the 65 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL) contour.

The Shift Alternative, as depicted in Figure 1-1, would also result in operational changes that were not previously evaluated in detail. Therefore, LAWA prepared this Runway 7L-25R Shift Study (Shift Study) analysis to assess the impacts and the feasibility of implementing the Shift Alternative. LAWA will implement the Approved Alternative to meet the FAA mandate but retains the option to implement the Shift Alternative, pending the results of the Shift Study.

Based on the results of the Shift Study analysis, the Shift Alternative is not recommended. There are several impacts associated with the Runway 7L-25R Shift Alternative:

- » Removal of departure hold times and challenging departure queuing potentially increases Runway 25L departures
- » Operational impacts on some long-haul departures from LAX and general lack of support for the Shift Alternative by surveyed airlines



* Runway to Taxiway separation is non-standard
 ** As shown, Twy B meets ADG V Taxiway standards and Twy C meets ADG VI Taxiway standards. Increased separation may be necessary to accommodate direction reversal taxiway maneuvers for all aircraft

Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Navigational Aids (NAVAIDS)
- Pavement to be Removed

Operational Direction	Declared Distances			
	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
 ASDA - Accelerate Stop Distance Available
 TODA - Takeoff Distance Available
 LDA - Landing Distance Available

Figure 1-1:
Shift Alternative Conditions



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1.2 ANALYSES/EVALUATION

The Shift Study analysis evaluated the impacts and feasibility of implementing the Shift Alternative. The study evaluated potential impacts related to airport operations and provided a more detailed description of changes to LAX Runway 7L-25R required to implement the Shift Alternative. The Shift Alternative would require relocation of the east endpoint of the Runway 832 feet west and would require modifications to Taxiway F, Taxiway B, and Taxiway C to maintain access to the relocated runway end.

Runway 25R and Runway 25L Departure Coordination

The ends of Runway 25L and Runway 25R are staggered by approximately 1,000 feet today, a condition that would not change under the Approved Alternative. The runway stagger requires aircraft that depart from Runway 25L to accept additional departure hold time after large aircraft depart Runway 25R. These FAA mandated hold times are in place as a result of the staggered runway configuration. The Shift Alternative would reduce the stagger between the runways to approximately 165 feet and would eliminate the required hold time. The required hold time incentivizes aircraft to depart Runway 25R instead of Runway 25L and would remain in the Approved Alternative. The Shift Alternative would eliminate the required hold time for Runway 25L departures and would, therefore, eliminate an incentive to depart Runway 25R in lieu of Runway 25L. The result may lead to an increase in Runway 25L departures with the implementation of the Shift Alternative.

Taxiways

Taxiway F would need to be realigned to connect the two runway ends. The realignment would change taxi and queueing operations for Runway 25R departures. Taxiway F would continue to provide access between Taxiway A and Taxiway B. A curved segment between the ends of Runway 25R and Runway 25L is required because the Shift Alternative would not align the two runway ends. The curved segment of Taxiway F between the runway ends is unconventional and would result in operational complexities for Runway 25R departures. The added complexity may increase the number of departures from Runway 25L in lieu of Runway 25R departures.

Airplane Takeoff Performance and Obstructions West of the Runway

Nine airlines were surveyed regarding the Shift Alternative. Six of the nine airlines indicated that the Shift Alternative would negatively impact their operations.

The impact to airplane takeoff performance results from relocating the Runway 25R endpoint 832 feet west, closer to obstructions in the dunes west of the Runway. While the runway length would not change, the location of the start of takeoff roll would be closer to the terrain and obstructions west of the Runway.

Airlines indicated that payload reductions would be required to depart Runway 25R if the Shift Alternative were implemented. Payload reductions result in lost revenue. Lost revenue may result in some routes no longer being able to operate profitably which could force airlines to discontinue operation of some flights reducing LAX's economic benefit to the Los Angeles region. Alternatively, an airline may request departure from a different runway to minimize operational impacts resulting from the Shift Alternative.

Taxi Queues

Relocating the Runway 25R endpoint 832 feet west would result in shifting the departure queue farther west. The westerly shift of the Runway 25R departure queue would result in increased taxiway congestion near Terminal 7 and Terminal 8 during peak departure periods.

1.3 CONCLUSIONS

The Shift Alternative is not recommended for implementation. The Shift Alternative could increase Runway 25L departures resulting from changes to the runway and taxiway geometry on the South Airfield. The Shift Alternative would impact airline operations by moving the endpoint of Runway 25R closer to obstructions west of the Airport. The Shift Alternative may result in airlines discontinuing some long-haul international flights or using a different runway for departure. The Shift Alternative would also impact LAX operations by increasing the potential for congestion near Terminal 7 and Terminal 8.

The Approved Alternative will be implemented. A key LAWA objective is to minimize Runway 25L aircraft departures to the extent practicable. The potential increase in Runway 25L departures that may result from the Shift Alternative is an unintended consequence that may negate the noise benefits of the Shift Alternative as articulated in the CEQA and NEPA analysis. With the implementation of the Approved Alternative, an option to further minimize Runway 25L departures is to extend Taxiway C to Taxiway B1 to provide air traffic control with enhanced ability to maneuver and queue aircraft for departure from Runway 25R.

There is only a single access point to Runway 25R from Taxiway B in the Approved Alternative (as well as in the existing condition). Extending Taxiway C to Taxiway B1 may enhance FAA air traffic control's ability to use Runway 25R for departures in lieu of Runway 25L by providing a second access point to the Runway 25R end. The Taxiway C extension would ease air traffic control's ability to transition aircraft from Taxiway A to a departure queue on Taxiway B and Taxiway C.

CHAPTER 2
PROJECT DEFINITION

2.1 PROJECT DESCRIPTION AND LAYOUT

Los Angeles World Airports (LAWA) will be making improvements to the Runway Safety Area (RSA) for Los Angeles International Airport (LAX or the Airport) Runway 7L-25R. This in response to a United States Congressional mandate requiring airports to improve RSAs to comply with Federal Aviation Administration (FAA) standards by December 31, 2015.

LAWA and its consultants evaluated several alternatives for providing a standard RSA for Runway 7L-25R and prepared environmental documents under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) in 2012 and 2013. One of the alternatives, the Shift Alternative, evaluated an 832-foot westward shift of the Runway. Analysis of the Shift Alternative indicated that shifting the Runway west would affect the boundary of the 65 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL) noise contour¹. The shift in the noise contour may result in fewer residences within the 65 dBA CNEL. Hence, some community members favored the Shift Alternative relative to other RSA alternatives that would not shift the noise contour. However, the Shift Alternative requires a number of operational changes that had not been evaluated in detail. For this reason, LAWA selected a different alternative, the Approved Alternative that has fewer unknown operational impacts.

LAWA intends to implement the Approved Alternative within the next few years and retains the option to convert to the Shift Alternative, pending the results of the Shift Study. The analysis of the Shift Alternative is the focus of this study.

This study evaluates the impacts of the Shift Alternative in terms of aircraft performance, obstacle clearance, and how the shifted runway affects airfield operations at LAX. It should be noted that the Shift Alternative is compared to the Approved Alternative, approved in the *2013 Finding of No Significant Impact and Record of Decision for Proposed Runway 7L-25R Safety Area Project and Associated Improvements* (2013 FONSI) and the *2014 Final Environmental Impact Report for Runway 7L-25R Runway Safety Area and Associated Improvements Project* (2014 Final EIR). The Shift Alternative is not compared to existing conditions ("existing conditions" refers to conditions of Runway 7L-25R as of September 2014). The Approved Alternative and the Shift Alternative are described in this chapter.

2.1.1 Runway Safety Area and Declared Distances

An RSA is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overrun, or excursion from the runway. Standard dimensions for an RSA for a runway serving large commercial aircraft are 1,000 feet beyond the departure end of runway and 600 feet prior to the arrival threshold. Declared Distances may be used as an alternative method to achieve a standard RSA in cases where it is not practicable to achieve a full-dimensional RSA.

Declared Distances are runway distances declared by the airport owner available for a turbine-powered aircraft. Declared Distances represent the maximum distances available and suitable for achieving takeoff,

¹ Final Environmental Assessment of Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

rejected takeoff, and landing distances performance requirements for turbine-powered aircraft. The Declared Distances are Takeoff Run Available (TORA) and Takeoff Distance Available (TODA), which apply to takeoff; Accelerate-Stop Distance Available (ASDA), which applies to a rejected takeoff; and Landing Distance Available (LDA), which applies to landing.

2.1.2 Approved Alternative

The Approved Alternative, as depicted in *Figure 2-1* and *Figure 2-2*, was the result of numerous previous RSA and environmental studies. The Approved Alternative was further evaluated in the environmental documentation previously completed. The Approved Alternative was selected as the most appropriate and feasible option because it minimizes the following: operational impacts in the long-term; operational impacts during construction; construction costs; and environmental impacts.

The Approved Alternative runway length is 12,923 feet. *Table 2-1* describes the Approved Alternative Declared Distances.

**TABLE 2-1:
APPROVED ALTERNATIVE DECLARED DISTANCES**

	Runway 25R Operational Direction	Runway 7L Operational Direction
TORA (ft.)	12,091	12,091
TODA (ft.)	12,091	12,091
ASDA (ft.)	12,091	12,091
LDA (ft.)	11,134	11,259

Source: RS&H, 2015

Notes: TORA - Takeoff Run Available, TODA – Takeoff Distance Available,
ASDA – Accelerate-Stop Distance Available, LDA – Landing Distance
Available

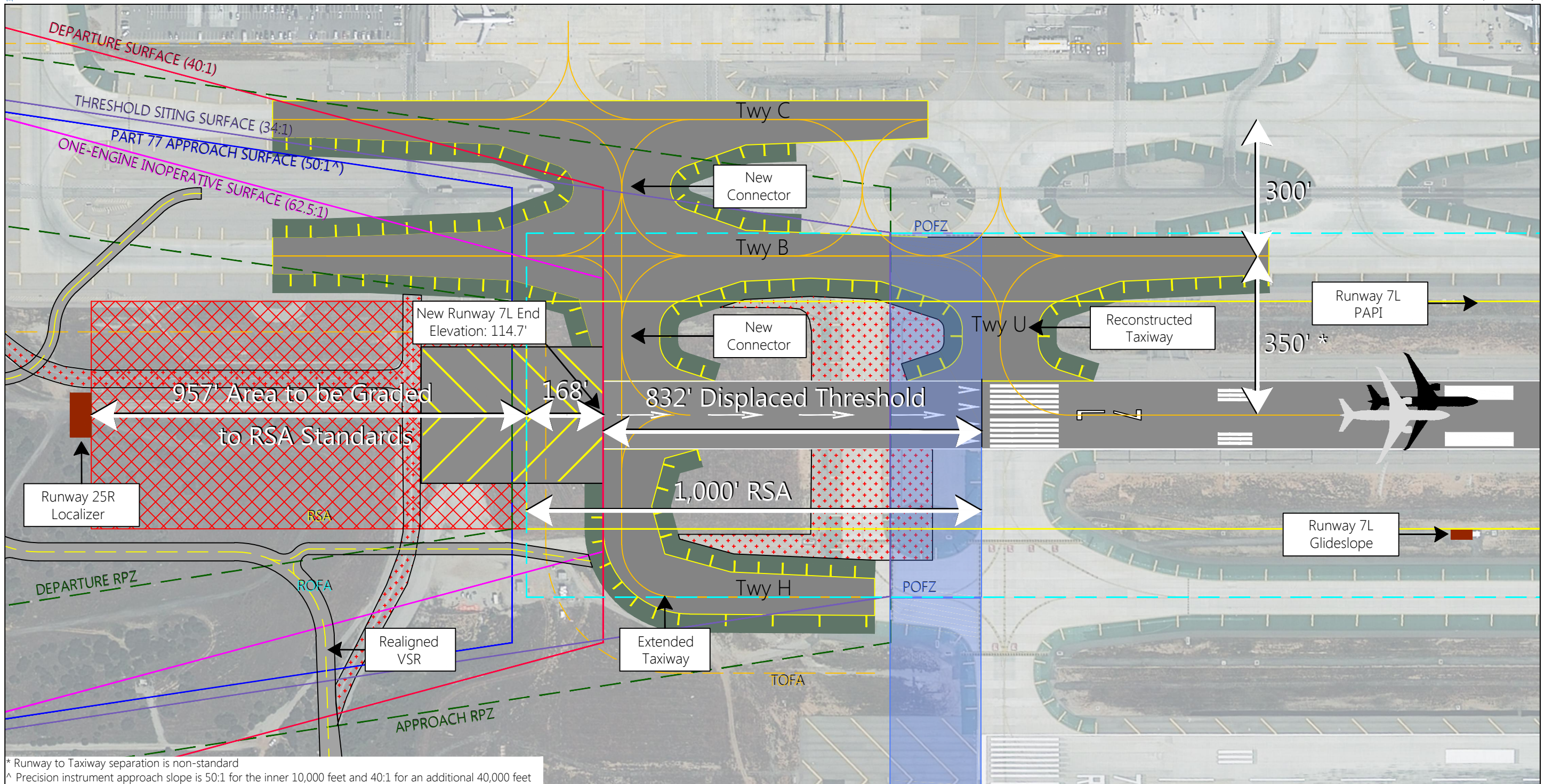
Per the 2013 FONSI, an additional area 957 feet long and 500 feet wide beyond the west end of the RSA will be graded to RSA standards to enable the implementation of the Shift Alternative pending the results of operational analysis.

The location of the FAA Terminal Instrument Procedures (TERPS) Departure Surface and One-Engine Inoperative Surface was based on the FAA Airspace Review of proposed development of the West Aircraft Maintenance Area.

2.1.3 Shift Alternative

The Shift Alternative, as depicted in *Figure 2-3* and *Figure 2-4*, proposes shifting the Runway 25R endpoint 832 feet to the west relative to the Approved Alternative. The Runway 25R arrival threshold is not relocated resulting in a 125-foot displaced threshold on the east end of the Runway. The Runway 7L endpoint and threshold is not relocated relative to the Approved Alternative. A full-dimensional RSA is provided on each runway end.

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* Runway to Taxiway separation is non-standard
 ^ Precision instrument approach slope is 50:1 for the inner 10,000 feet and 40:1 for an additional 40,000 feet

Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Precision Obstacle Free Zone (POFZ)
- Navigational Aids (NAVAIDS)
- Runway Protection Zone (RPZ)
- Departure Surface
- Part 77 Approach Surface
- One-Engine Inoperative Surface
- Threshold Siting Surface
- Pavement to be Removed

Declared Distances

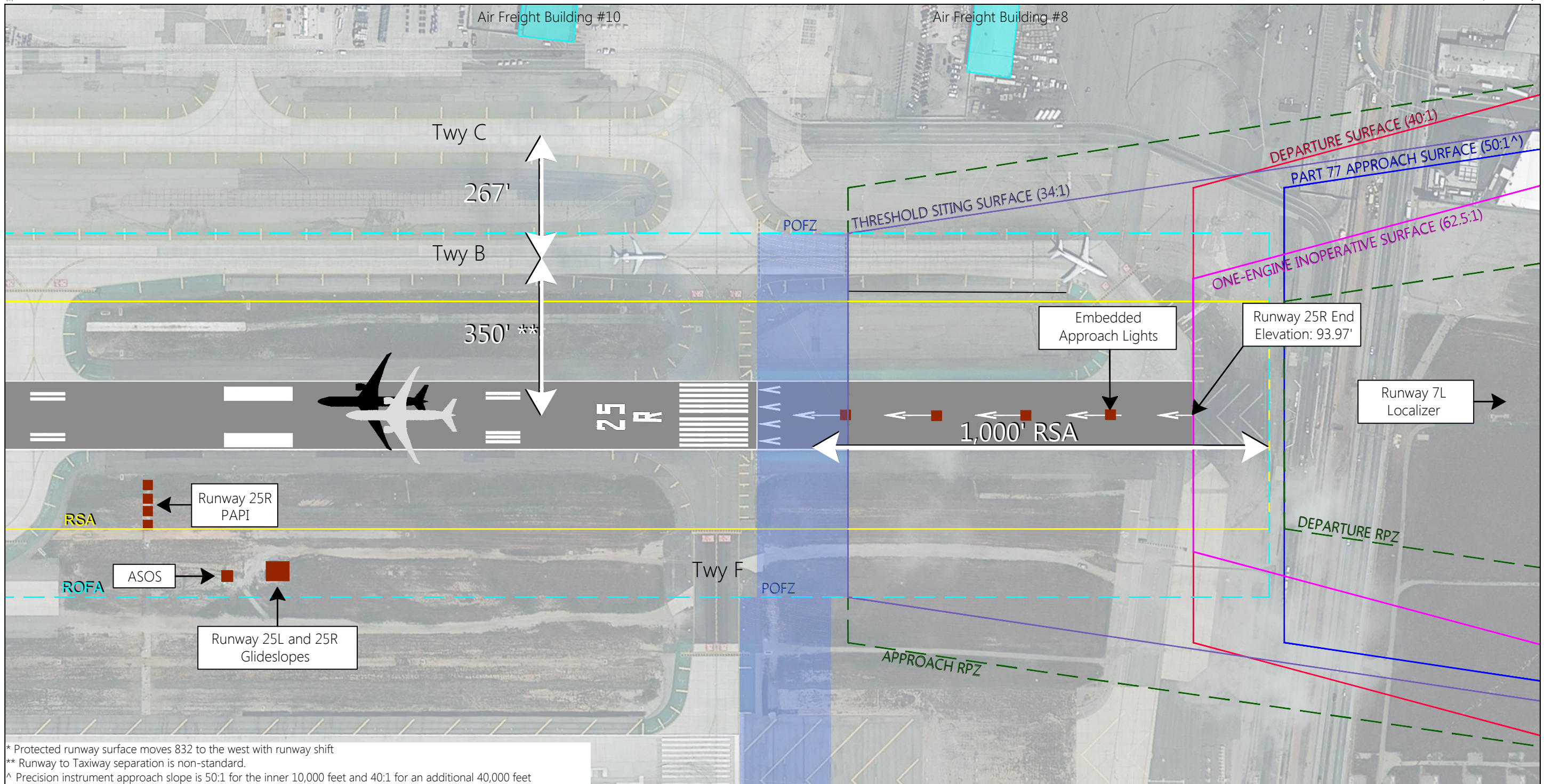
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,134'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
 ASDA - Accelerate Stop Distance Available
 TODA - Takeoff Distance Available
 LDA - Landing Distance Available

Figure 2-1:
Approved Alternative Runway 7L (West)



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* Protected runway surface moves 832 to the west with runway shift
 ** Runway to Taxiway separation is non-standard.
 ^ Precision instrument approach slope is 50:1 for the inner 10,000 feet and 40:1 for an additional 40,000 feet

Legend

- Runway Safety Area (RSA)
- - - Runway Object Free Area (ROFA)
- - - Taxiway Object Free Area (TOFA)
- Precision Obstacle Free Zone (POFZ)
- Navigational Aids (NAVAIDS)
- - - Runway Protection Zone (RPZ)
- Departure Surface
- Part 77 Approach Surface
- One-Engine Inoperative Surface
- Threshold Siting Surface

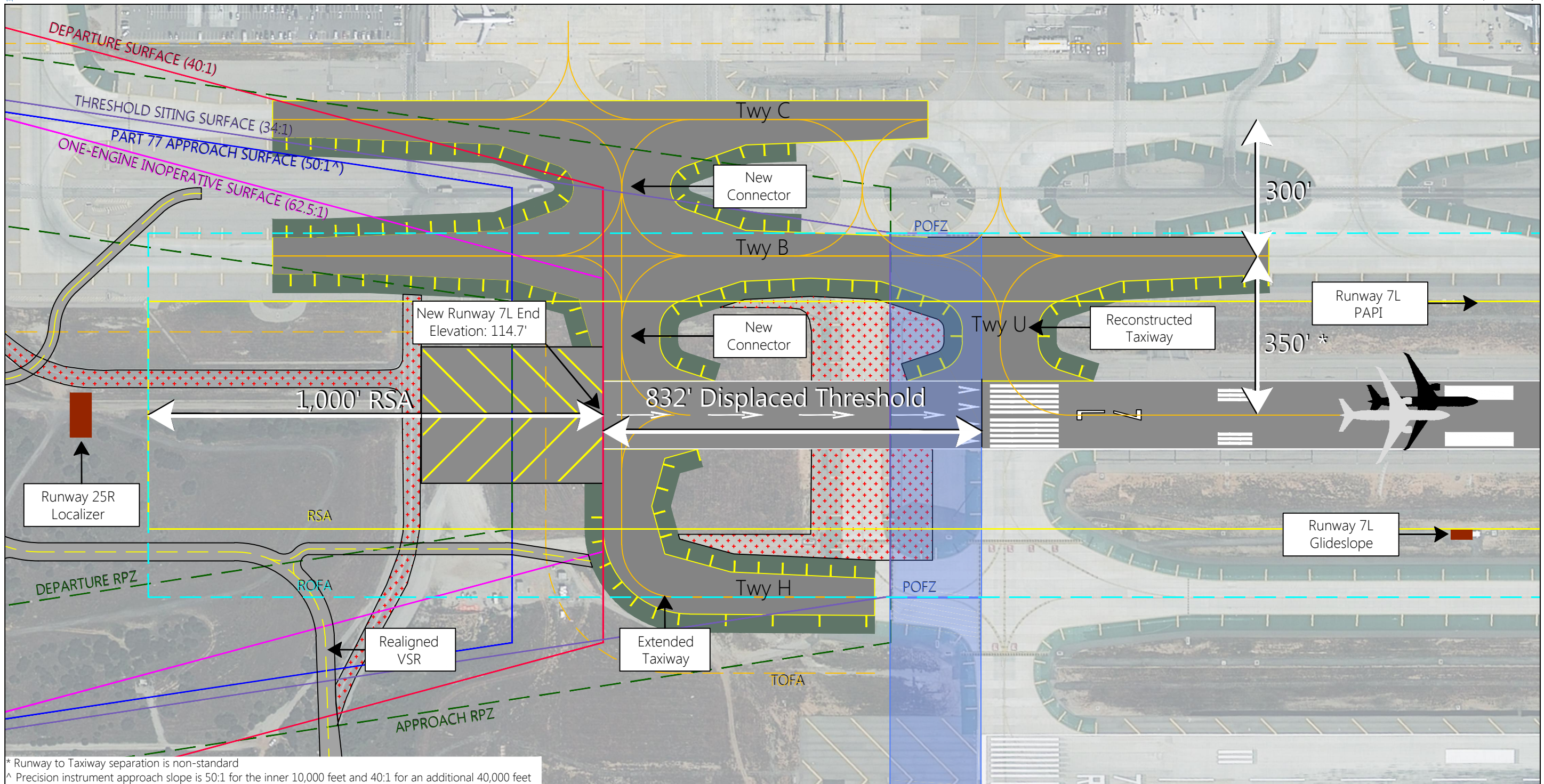
Operational Direction	Declared Distances			
	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,134'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
 ASDA - Accelerate Stop Distance Available
 TODA - Takeoff Distance Available
 LDA - Landing Distance Available

Figure 2-2:
Approved Alternative Runway 25R (East)



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Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Precision Obstacle Free Zone (POFZ)
- Navigational Aids (NAVAIDS)
- Runway Protection Zone (RPZ)
- Departure Surface
- Part 77 Approach Surface
- One-Engine Inoperative Surface
- Threshold Siting Surface
- Pavement to be Removed

Declared Distances

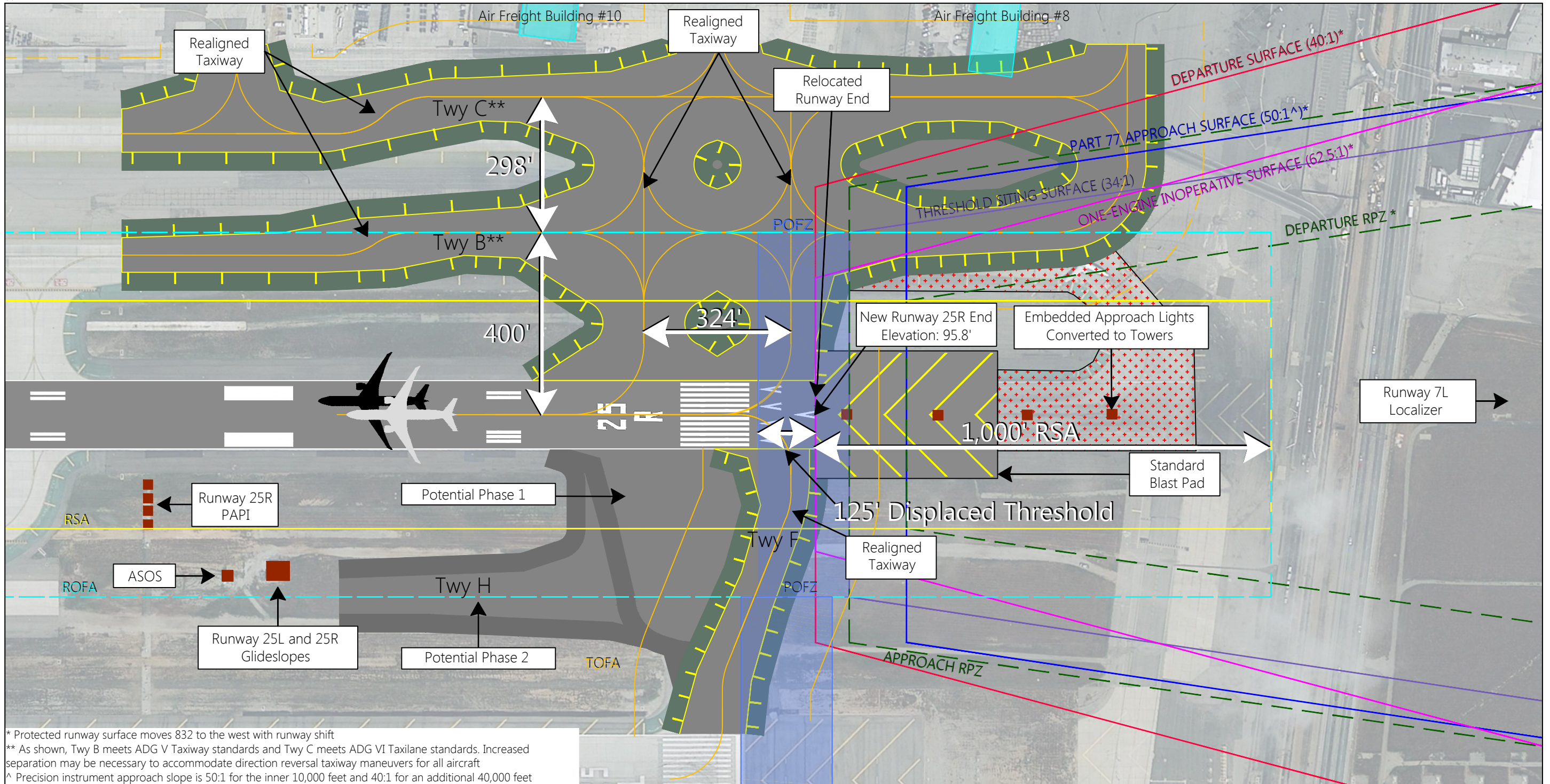
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
ASDA - Accelerate Stop Distance Available
TODA - Takeoff Distance Available
LDA - Landing Distance Available

Figure 2-3:
Shift Alternative Runway 7L (West)



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Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Precision Obstacle Free Zone (POFZ)
- Navigational Aids (NAVAIDS)
- Runway Protection Zone (RPZ)
- Departure Surface
- Part 77 Approach Surface
- One-Engine Inoperative Surface
- Threshold Siting Surface
- Pavement to be Removed

Declared Distances				
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
 ASDA - Accelerate Stop Distance Available
 TODA - Takeoff Distance Available
 LDA - Landing Distance Available

Figure 2-4:
Shift Alternative Runway 25R (East)



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The Shift Alternative runway length is 12,091 feet. *Table 2-2* describes the Shift Alternative Declared Distances.

**TABLE 2-2:
SHIFT ALTERNATIVE DECLARED DISTANCES**

	Runway 25R Operational Direction	Runway 7L Operational Direction
TORA (ft.)	12,091	12,091
TODA (ft.)	12,091	12,091
ASDA (ft.)	12,091	12,091
LDA (ft.)	11,966	11,259

Source: RS&H, 2015

Notes: TORA - Takeoff Run Available, TODA – Takeoff Distance Available,
ASDA – Accelerate-Stop Distance Available, LDA – Landing Distance
Available

The Navigational Aids (NAVAIDs) and taxiways at the west end of the Runway are not changed relative to the Approved Alternative. Some taxiways and NAVAIDs at the east end of the Runway are modified relative to the Approved Alternative. The Shift Alternative features the following changes to NAVAIDs, taxiways, and associated infrastructure relative to the Approved Alternative:

- » A portion of the embedded Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) system is converted to towers.
- » A portion of Taxiway B is reconstructed 50 feet north to meet the Airplane Design Group (Group) V parallel runway to taxiway separation standard. Taxiway B would extend east along its relocated centerline beyond the Runway 25R end to provide access to the B1 parking apron.
- » A portion of Taxiway C is reconstructed 298 feet north of the relocated Taxiway B centerline to meet the Group VI parallel taxiway separation standards. Taxiway C is extended east along its relocated centerline beyond the Runway 25R end to provide access to the B1 parking apron. The realignment of this Taxiway affects two existing facilities – Air Freight Building #8 and Air Freight Building #10 – requiring the partial or full demolition of those facilities.
- » Taxiway F is realigned between the Runway 25L endpoint and the new Runway 25R endpoint to connect to both Runway ends via a standard right-angle intersection as described in FAA Advisory Circular 150/5300-13A, Airport Design.
- » A bypass taxiway is constructed 324 feet west of Taxiway F to provide redundant access to the Runway 25R end from Taxiway C and Taxiway B.
- » The bypass taxiway may be extended south in the future to connect to the Runway 25L endpoint. Realigned Taxiway F and bypass taxiway may include a stub-out to the west to support the possible future connection to Taxiway H. Currently the Runway 25L and Runway 25R glideslope equipment and Automated Surface Observing System (ASOS) equipment prevents this connection.

- » A standard blast pad is constructed at the east end of the new Runway 25R endpoint.

The Runway Protection Zones and protected surfaces on the west end of Runway 7L-25R are not changed relative to the Approved Alternative. The Shift Alternative features the following changes to Runway Protection Zones and protected surfaces on the east end of the Runway relative to the Approved Alternative:

- » The TERPS Departure Surface shifts 832 feet to the west to align with the new Runway 25R endpoint (end of TODA).
- » The Part 77 Approach Surface shifts 832 feet to the west to align 200 feet east of the new Runway 25R endpoint (end Part 77 Primary Surface).
- » The One-Engine Inoperative Obstacle Clearing Surface shifts 832 feet to the west to align with the new Runway 25R endpoint.
- » The Departure Runway Protection Zone shifts 832 feet west align 200 feet east of the new Runway 25R endpoint.

The Approach Runway Protection Zone and Threshold Siting Surface for Runway 25R would not change relative to the Approved Alternative.

Table 2-3 summarizes the changes between the Approved Alternative and Shift Alternative.

**TABLE 2-3:
SHIFT ALTERNATIVE FEATURES COMPARED TO APPROVED ALTERNATIVE**

Project Element	West End Condition	East End Condition
Taxiway B	No change	Portion reconstructed 50 feet north Extended east along relocated centerline
Taxiway C	No change	Portion reconstructed 298 feet north of relocated Twy B Extended east along relocated centerline
Taxiway H	No change	Stub-out for connection to Taxiway F (Future)
Taxiway F	n/a	Realigned north of Runway 25L Bypass taxiway constructed 324 feet west of Taxiway F
Taxiway U	No change	n/a
Runway Endpoint	No change	Relocated 832 feet west
Runway Threshold	No change	No change
Runway Blast Pad	No change	Relocated / reconstructed to standard
Runway Safety Area	Full-dimensional	Full-dimensional
Runway Object Free Area	Full-dimensional	Full-dimensional
Approach Runway Protection Zone	No change	No change
Departure Runway Protection Zone	No change	Relocated 832 feet west
Part 77 Approach Surface	No change	Relocated 832 feet west
Threshold Siting Surface	No change	No change
TERPS Departure Surface	No change	Relocated 832 feet west
One-Engine Inoperative Obstacle Clearing Surface	No change	Relocated 832 feet west
Instrument Landing System (Localizer and Glideslope)	No change	No change
Approach Lighting System	No change	Partially rebuilt in place
Vertical Guidance (PAPI)	No change	No change

Source: RS&H, 2015

2.2 RUNWAY 7L-25R AND AIRFIELD CONTEXT

Runway 7L-25R has an important role within the four-runway system at the Airport. Runway length, proximity to general aviation and air cargo facilities, proximity to Terminals 4 through 8, and adherence to the Preferential Runway Use Policy (PRUP) contribute to Runway 7L-25R being the most frequently used departure runway at the Airport.

The Airport's four-runway system is separated into two areas of parallel runways: the North Airfield complex and the South Airfield complex. The North Airfield complex is comprised of Runway 6L-24R at 8,925 feet in length and Runway 6R-24L at 10,285 feet in length. The South Airfield complex is comprised of Runway 7L-25R at 12,091 feet in length and Runway 7R-25L at 11,095 feet in length.

2.2.1 Preferential Runway Use Policy

Aircraft operations within the four runway system at LAX are primarily guided by the regulations defined in the PRUP which was adopted in 1972 by LAWA's Board of Airport Commissioners under Resolution No. 7467. The purpose of the PRUP is to reduce noise impacts from airport operations on the communities surrounding the Airport. It is LAWA's belief that without the PRUP in place, aircraft noise levels in the communities closest to the Airport would be significantly higher². Historically, the loudest operations at the Airport are from departing aircraft. Therefore, the PRUP includes a preference for using the inboard runways, Runway 6R-24L and Runway 7L-25R, or those runways farthest from the communities directly north and south of the Airport, for departures at all times. During the more noise sensitive nighttime hours, between 10 p.m. and 7 a.m., the preferential use of the inboard runways is further expanded to include both departures and arrivals. Finally, during the late night hours between midnight and 6:30 am, a contra-flow operation, also known as the Over-Ocean Operations policy, is used to direct both arrival and departure operations over the ocean rather than over the communities east of the Airport. The Over-Ocean Policy alone provides a substantial noise benefit to the communities east of the Airport.

It is important to note that FAA Air Traffic Control (ATC) personnel have discretion to use all four runways as they deem necessary for the purposes of safety and air traffic efficiency, pursuant to federal law. It may be necessary to prescribe deviations because of aircraft emergencies, adverse weather, or field construction and maintenance work. The PRUP does not limit the discretion of either ATC or the pilot with respect to the full utilization of the airport facilities in an unusual situation. LAWA communicates with ATC personnel regularly, including LAX/Community Noise Roundtable meetings, to ensure that ATC implements the PRUP to the greatest practical extent.

LAWA engaged FedEx in 2013 at LAX/Community Noise Roundtable meetings in order to increase the use of Runway 7L-25R for departures instead of Runway 7R-25L. The purpose of this engagement was to reduce noise impacts and increase adherence to the PRUP. As a result, FedEx instituted policies whereby all FedEx pilots are to request Runway 25R for departures, with the understanding that in some instances ATC personnel may not grant the request or the inboard runway may not be available at that time, and they may be directed to depart on Runway 25L.

² LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

Adherence with the PRUP exceeded 90 percent in 2013, with the exception of departures on the South Airfield complex in the first quarter of 2013, according to the *2014 Los Angeles International Airport Preferential Runway Use Policy Report* (2014 PRUP Report). Furthermore, adherence to the PRUP has been historically high.

2.2.2 Air Traffic Patterns

LAX has three standard air traffic patterns – West Flow Operations, East Flow Operations, and Over-Ocean Operations.

The West Flow Operations procedure, as depicted in *Figure 2-5*, is the normal traffic pattern used during the daytime (6:30 am to midnight) throughout the year. Aircraft approach the Airport from the east and depart the Airport to the west due to the prevailing westerly wind. This procedure routes louder departing aircraft to the west over the ocean, while arriving aircraft fly from the east to the west over the communities east of the Airport, including the cities of Los Angeles and Inglewood, and the communities of Athens and Lennox. This procedure uses Runway 24L and Runway 25R as the preferred departure runways and uses Runway 24R and Runway 25L as the preferred arrival runways.

**FIGURE 2-5:
WEST FLOW OPERATIONS**



Source: RS&H, 2015

The East Flow Operations procedure, as depicted in *Figure 2-6*, is used when wind conditions (generally during rainstorms and Santa Ana winds) require reversing the traffic flow, so that aircraft arrive from the west and depart to the east. This routes the departing aircraft over the communities to the east, as well as areas to the north and south depending on an aircraft's destination. This procedure uses Runway 6R and Runway 7L as the preferred departure runways and uses Runway 6L and Runway 7R as the preferred arrival runways.

**FIGURE 2-6:
EAST FLOW OPERATIONS**



Source: RS&H, 2015

During the more noise-sensitive nighttime period between midnight and 6:30 am, aircraft normally operate in accordance with the Over-Ocean Operations procedure, as depicted in *Figure 2-7*. In this procedure, aircraft depart over the ocean to the west, as in normal West Flow Operations, and arrive from the west over the ocean. This reduces the aircraft noise exposure on communities to the east of the Airport during the most noise-sensitive hours. Over-Ocean Operations may be canceled and West Flow Operations reinstated if ATC determines that conditions are unsafe for these procedures. Such conditions may include fog and low clouds at the shoreline, winds from the west, runway maintenance and repairs, FAA equipment outages, and air traffic considerations. This procedure uses Runway 25R as the preferred departures runway and Runway 6R as the preferred arrival runway.

Runway 7L-25R is involved in each of the standard air traffic patterns as a preferred departure runway.

**FIGURE 2-7:
 OVER-OCEAN OPERATIONS**



Source: RS&H, 2015

2.2.3 Runway Use

The South Airfield complex accommodates a larger proportional operational split than the North Airfield complex. Approximately 55 percent of all operations occurred on the South Airfield and approximately 45 percent of all operations occurred on the North Airfield in 2013, as depicted in *Figure 2-8*. The South Airfield complex is adjacent to a greater number of passenger gates, air cargo facilities, and general aviation facilities than the North Airfield complex, which contributes to the greater number of operations on the South Airfield complex.

**FIGURE 2-8:
 2013 AIRFIELD COMPLEX UTILIZATION**



Source: RS&H, 2015 and LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

There were 609,060 total airport operations in 2013, including both departures and arrivals. The inboard runways – Runway 6R-24L and Runway 7L-25R – have a higher proportion of total airport departures due to the PRUP. Runway 7L-25R handled approximately 54 percent of total airport departures at the Airport in 2013 – more than any other runway, as depicted in *Figure 2-9*. Runway 6R-24L was the second busiest departure runway at the Airport in 2013, handling approximately 40 percent of total airport departures. The two outboard runways – Runway 6L-24R and Runway 7R-25L – are used sparingly for departures, accounting for the remaining 6 percent of total airport departures.

**FIGURE 2-9:
2013 DEPARTURE SPLIT**



Source: RS&H, 2015 and LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

The outboard runways – Runway 6L-24R and Runway 7R-25L – have a higher proportion of arrivals due to the PRUP. Runway 7R-25L handled 48 percent of all arrivals at the Airport in 2013 – more than any other runway, as depicted in *Figure 2-10*. Runway 6L-24R was the second busiest arrival runway at the Airport in 2013, handling 45 percent of total airport arrivals. The two inboard runways – Runway 6R-24L and Runway 7L-25R – are used sparingly for arrivals, accounting for the remaining 7 percent of total arrivals. In total, Runway 7L-25R accommodated more total operations than any other runway at the Airport in 2013.

Runway length also contributes to the frequency to which Runway 7L-25R is used for departures. Runway 7L-25R is nearly 1,000 feet longer than the second longest runway at the Airport. The long Runway 7L-25R length supports aircraft departure operations that require longer takeoff distances, especially large aircraft flying long-haul routes. Reduction in available takeoff distance may require reductions in aircraft departure payload or stage length.

**FIGURE 2-10:
2013 ARRIVAL SPLIT**



Source: RS&H, 2015 and LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

2.2.4 Airfield Challenges

Airfield constraints and runway closures are two challenges LAWA faces with the operation of Runway 7L-25R. FAA airfield design standards and aircraft sizes pose challenges for some aircraft operations on Runway 7L-25R. Group VI aircraft (e.g., Boeing 747-8 and Airbus A380) have large wingspans and require greater separation from aircraft on adjacent runways and taxiways. Nonstandard lateral separation between Runway 7L-25R and Taxiway B prohibit Group VI aircraft from using Runway 7L-25R. As a result, these aircraft are required to depart from Runway 7R-25L when assigned to the South Airfield complex. Group VI aircraft can and do depart from the North Airfield complex on Runway 24L. Adequate separation³ between Runway 6R-24L and Runway 6L-24R, and between Runway 6R-24L and Taxiway E permits use by Group VI aircraft. However, Runway 6R-24L is about 1,800 feet shorter than Runway 7L-25R.

Runway closures can occur for a variety of reasons, including routine maintenance activities (e.g., rubber removal, runway painting, lighting and electrical work), pavement testing, and aircraft mechanical problems. The most common reason for runway closures, however, is routine maintenance.⁴

LAWA has worked to minimize closures of Runway 7L-25R as a way to reduce Runway 25L departures during more noise-sensitive periods between midnight and 6:30 a.m. In an effort to improve the existing practice of minimizing closures, LAWA consolidates all required maintenance work during planned runway closures. Several routine maintenance functions, including runway painting, concrete repair, lighting and electrical work, and rubber removal are all scheduled at the same time during the closure to minimize the frequency and the duration of the closure of the Runway. Runway 7L-25R closures are also scheduled to commence at 2:00 a.m. This is different from the other three runways where scheduled closures commence at midnight. Later Runway 7L-25R closures reduce the need for departures on the outboard runway that would otherwise

³ Adequate separation achieved through use FAA approved modification to standards

⁴ LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

occur in the early morning hours (midnight to 2 a.m.) when there are several international carriers with scheduled departures using heavy aircraft. All of these efforts help to reduce the total closure time on Runway 7L-25R to a maximum of four hours per occurrence rather than six hours, which is typical for the three other runways.

2.3 EFFECTIVENESS OF ENHANCED DEPARTURE INSTRUCTIONS

An "early turn" occurs when an aircraft on a West Flow departure from any of the four LAX runways initiates a turn prior to reaching the shoreline, which results in the aircraft flying over the community to either the north or south of the Airport.

To minimize noise in residential communities along the north and south airport boundaries, aircraft departing toward the west (over the ocean) shall fly straight until they are past the shoreline before beginning any turns, unless specifically instructed otherwise by ATC. Enhanced ATC departure instructions were implemented on April 8, 2013 in an attempt to minimize early turn overflights.

For instrument departures, ATC instructs pilots to depart via specific, fixed waypoints that route aircraft across shoreline prior to turning. For visual departures, pilots are instructed to depart via runway heading and remain on LAX ATC frequency. LAX ATC instructs the pilots to contact Southern California Terminal Radar Approach Control for further instructions after the aircraft passes the shoreline. Southern California Terminal Radar Approach Control personnel do not instruct aircraft to turn on initial contact, which also helps minimize early turns.

LAWA regularly monitors all early turns and generates monthly early turn summary reports. For aircraft turning over El Segundo or the Playa del Rey / Westchester communities, LAWA uses recordings of communications between pilots and ATC to characterize the reason for the early turns as ATC directed, wind drift, assumed pilot initiated, or unknown. "Gates" are used to generally define where aircraft conduct early turns over the communities, as depicted in *Figure 2-11*. The northern gate is known as the Playa del Rey gate. The southern gate is divided into two segments - the El Segundo gate and the Hyperion gate. In general, aircraft penetrating the El Segundo or Hyperion gates are departures from Runway 25L or 25R and penetrations to the Playa del Rey gate typically depart Runway 24L or 24R.

**FIGURE 2-11:
EARLY TURN GATES**

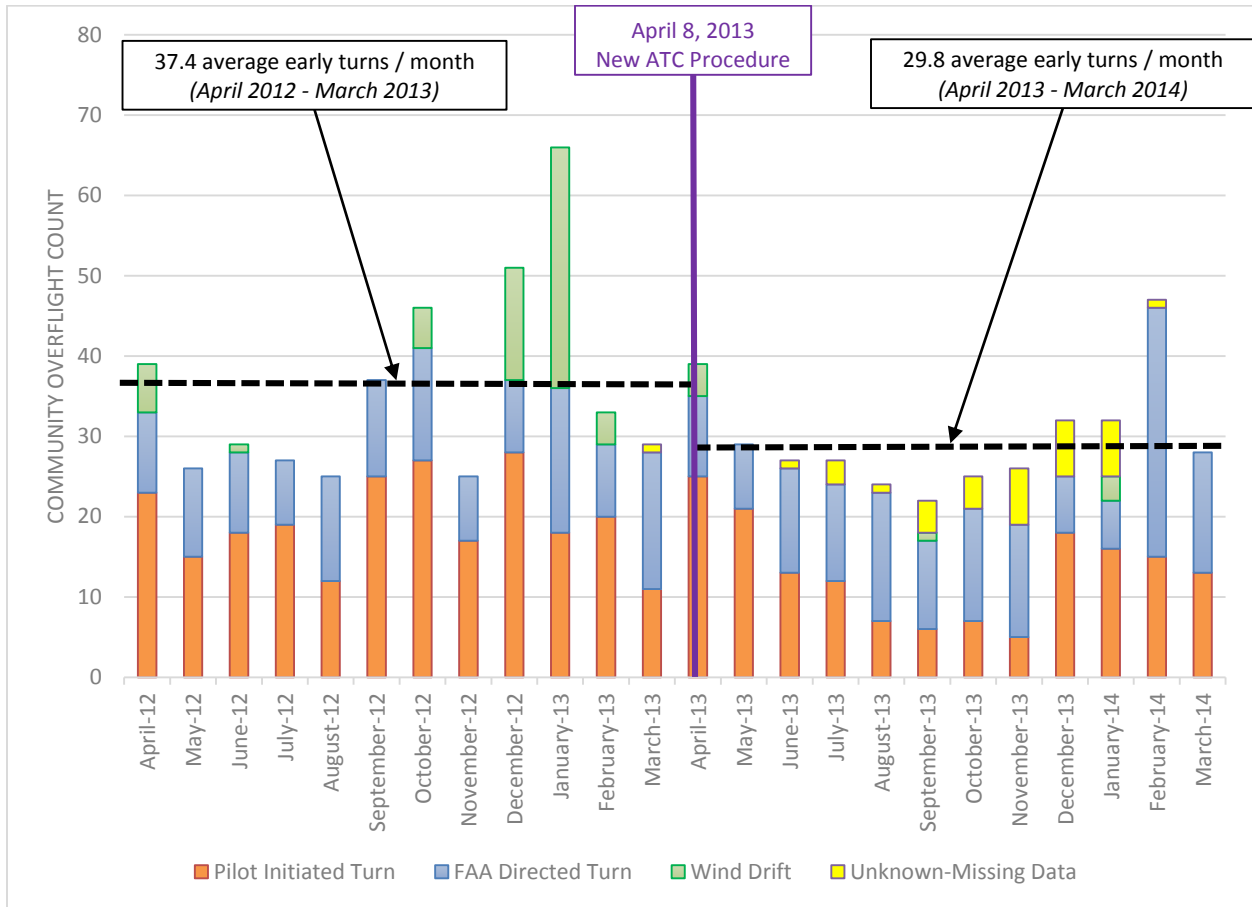


Source: Community Overflights Summaries, LAWA Noise Management Office, 2012
- 2014

A review of the LAX early turn data was conducted for the Hyperion and El Segundo gates to summarize the impact of the newly implemented ATC departure instructions. A review of reports before and after the implementation of the enhanced ATC instructions generally demonstrates a decrease in early turn incidents, as depicted in *Figure 2-12* and *Figure 2-13*. For the El Segundo gate, there was a decrease in the average early turns per month from 37.4 to 29.8 in the 12-month period before and after April 2013, respectively. The average monthly pilot initiated early turns also decreased from 20.8 to 13.2 during the same period. This indicates an apparent effectiveness of the new ATC departure instructions. There was a slight increase in the average number of early turns that were FAA directed during the same time period but the FAA has the authority to instruct pilots to turn early to ensure the safe operation of the aircraft.

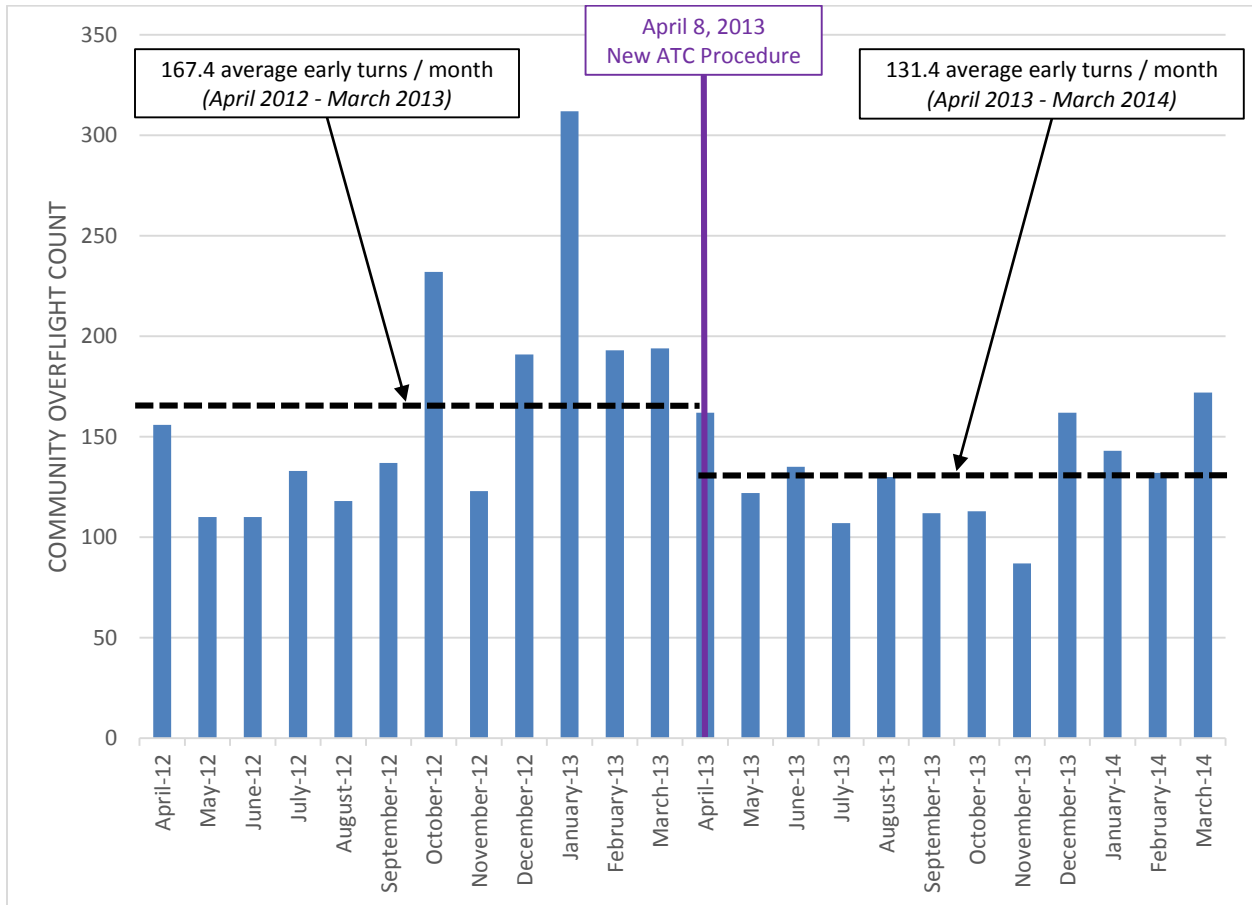
For the Hyperion gate, there was a decrease in the average early turns per month from 167.4 to 131.4 in the 12-month period before and after April 2013, respectively. The decrease in average early turns per month through the Hyperion gate also indicates effectiveness in LAWA and ATC initiatives to decrease early turns.

FIGURE 2-12:
SUMMARY OF EL SEGUNDO GATES EARLY TURNS



Source: RS&H, 2015 and Community Overflights Summaries, LAWA Noise Management Office, 2012 - 2014

**FIGURE 2-13:
 SUMMARY OF HYPERION GATE EARLY TURNS**



Source: RS&H, 2015 and Community Overflights Summaries, LAWA Noise Management Office, 2012 - 2014

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CHAPTER 3
IMPACT OF SHIFT

Analyses were conducted to identify and understand the potential impacts that could be expected as a result of shifting Runway 7L-25R. These impacts are important to assess the feasibility of implementing the Shift Alternative. Potential impacts may be related to the following: obstructions, noise, Airport operations, and Very High Frequency Omnidirectional Range with Tactical Air Navigation (VORTAC) NAVAID relocation. These changes may include positive or negative impacts.

3.1 OBSTRUCTIONS ANALYSIS

This section describes the results of the basic obstructions analysis completed for the Approved Alternative and Shift Alternative. The obstructions analysis did not include a new field survey or new aeronautical survey. The basic obstructions analysis was completed using data from the Airport Layout Plan. The analysis evaluated four protected surfaces – Federal Aviation Regulation (FAR) Part 77 50:1 Approach Surface, Terminal Instrument Procedures (TERPS) 40:1 Departure Surface, 62.5:1 One Engine Inoperative (OEI) Surface, and 34:1 Threshold Siting Surface. The analysis evaluated how known objects impact these protected surfaces if the Shift Alternative is implemented.

There was no need to evaluate the west end of Runway 7L-25R because the west end protected surfaces do not shift. The Runway 7L threshold and endpoint remain in the same location in the Approved Alternative and the Shift Alternative. Therefore, the protected surfaces on the west end of Runway 7L-25R for the Shift Alternative do not change relative to the Approved Alternative.

The obstructions analysis focuses on the impacts on the east end of Runway 7L-25R. The Shift Alternative moves the Runway 25R endpoint 832 feet to the west relative to the Approved Alternative. Three protected surfaces on the east end of the Runway 7L-25R shift 832 feet to the west – the FAR Part 77 50:1 Approach Surface, TERPS 40:1 Departure Surface, and 62.5:1 OEI Surface. The 34:1 Threshold Siting Surface does not change because its location is based on the Runway 25R arrival threshold location, which is not relocated.

The analysis evaluated 101 objects east of Runway 7L-25R. Nearly all of the objects penetrate one or more protected surfaces in the Approved Alternative configuration. The objects penetrating the protected surfaces may no longer be penetrations as the protective surfaces move 832 feet to the west and the surface height increases relative to the object. However, additional areas are captured within the trapezoidal boundaries of the protected surfaces as the surfaces move 832 feet to the west. New penetrations are potentially introduced within these newly captured areas. Aerial survey and analysis of these areas is required to evaluate all objects within these areas and determine surface penetrations.

The objects evaluated are described in *Table 3-1*. The table includes the object number (as described on the Airport Layout Plan), the object type, the top elevation of the object, and the height of the object relative to the protected surface. A positive value indicates the object penetrates the given surface while a negative value indicates the object is below the surface. The Shift Alternative objects that were penetrations for the Approved Alternative but no longer penetrate the respective surfaces after the shift are identified in the table with red text. Green text represents new penetrations resulting from the runway shift or penetrations that remain even after the shift.

TABLE 3-1:
 OBSTRUCTIONS DATA TABLE

Number	Object	Top Elevation (ft.)	Approved Alternative				Shift Alternative			
			50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface	50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface
459	Utility Pole	156.2	3.7	-53.9	-16.0	12.3	-15.0	-53.9	-38.9	-3.2
460	Building Peak	162.6	9.0	-49.1	-10.9	17.7	-9.7	-49.1	-33.8	2.3
461	Utility Pole	155.5	3.8	-53.3	-15.6	12.2	-14.9	-53.3	-38.5	-3.2
462	Utility Pole	139.8	8.0	-39.7	-6.4	12.4	-10.7	-39.7	-29.3	-3.0
465	Utility Pole	132.7	13.3	-28.7	1.9	15.2	-5.4	-28.7	-21.0	-0.2
466	Utility Pole	120.0	4.3	-35.9	-6.2	5.4	-14.4	-35.9	-29.1	-10.0
467	Utility Pole	153.3	1.9	-55.1	-17.4	10.2	-16.8	-55.1	-40.3	-5.2
468	Utility Pole	140.7	1.6	-49.6	-14.7	7.4	-17.1	-49.6	-37.6	-8.0
469	Utility Pole	149.8	40.2	3.0	31.4	N/A	21.5	3.0	8.5	25.0
470	Utility Pole	148.7	36.3	-2.3	26.7	36.8	17.6	-2.3	3.8	21.4
472	Utility Pole	133.5	1.8	-45.9	-12.6	6.2	-16.9	-45.9	-35.5	-9.2
473	Utility Pole	126.7	3.6	-40.2	-8.8	6.2	-15.1	-40.2	-31.7	-9.2
474	Utility Pole	147.8	31.9	-8.3	21.5	33.1	13.2	-8.3	-1.4	17.7
475	Utility Pole	134.2	13.4	-29.2	1.7	15.6	-5.3	-29.2	-21.2	0.2
476	Utility Pole	135.5	16.0	-26.0	4.6	17.9	-2.7	-26.0	-18.3	2.5
477	Utility Pole	143.5	16.4	-29.2	3.1	19.8	-2.3	-29.2	-19.8	4.4
479	Utility Pole	141.8	11.0	-36.3	-3.2	15.2	-7.7	-36.3	-26.1	-0.2
480	Utility Pole	152.3	N/A	N/A	40.8	N/A	29.9	N/A	17.9	32.0
481	Utility Pole	134.3	13.5	-29.2	1.7	15.6	-5.2	-29.2	-21.2	0.2
482	Building Peak	121.2	10.6	-27.2	1.4	10.7	-8.1	-27.2	-21.5	-4.7
483	Utility Pole	129.2	4.6	-39.8	-8.1	7.5	-14.1	-39.8	-31.0	-7.9
484	Utility Pole	131.5	24.8	-11.2	16.6	N/A	6.1	-11.2	-6.3	9.0
485	Building Peak	118.1	3.3	-36.4	-6.9	4.3	-15.4	-36.4	-29.8	-11.1
486	Light Pole	127.5	18.8	-18.1	10.1	N/A	0.1	-18.1	-12.8	3.4
487	Building Peak	118.8	2.5	-38.0	-8.1	3.8	-16.2	-38.0	-31.0	-11.6
488	Building Peak	119.8	1.2	-40.4	-10.0	2.9	-17.5	-40.4	-32.9	-12.5
489	Utility Pole	124.4	3.9	-38.6	-7.8	6.0	-14.8	-38.6	-30.7	-9.4

Number	Object	Top Elevation (ft.)	Approved Alternative				Shift Alternative			
			50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface	50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface
490	Fence	103.3	2.9	-30.1	-3.7	N/A	-15.8	-30.1	-26.6	-14.2
491	Building Peak	114.3	12.7	-20.9	5.8	N/A	-6.0	-20.9	-17.1	-4.1
492	Light Pole	113.0	10.2	-23.9	3.0	N/A	-8.5	-23.9	-19.9	-6.4
493	Building Peak	122.5	17.0	-18.3	9.2	16.1	-1.7	-18.3	-13.7	0.7
494	Light Pole	127.1	18.7	-18.1	10.0	18.4	0.0	-18.1	-12.9	3.0
495	Utility Pole	137.1	5.4	-42.4	-9.1	9.7	-13.3	-42.4	-32.0	-5.7
496	Building Peak	104.9	4.5	-28.5	-2.1	N/A	-14.2	-28.5	-25.0	-12.6
498	Building Peak	109.6	8.8	-24.4	2.1	N/A	-9.9	-24.4	-20.8	-8.2
499	Fence	102.9	N/A	-34.1	-7.2	N/A	-18.4	-34.1	-30.1	-16.5
500	Ground	103.2	2.1	-31.2	-4.7	N/A	-16.6	-31.2	-27.6	N/A
501	Utility Pole	128.4	4.2	-40.1	-8.4	7.0	-14.5	-40.1	-31.3	-8.4
503	Building Peak	109.8	7.7	-26.1	0.7	N/A	-11.0	-26.1	-22.2	-9.0
504	Building Peak	103.7	1.1	-32.9	-6.0	N/A	-17.6	-32.9	-28.9	-15.5
505	Light Pole	102.5	1.1	-32.3	-5.7	N/A	-17.6	-32.3	-28.6	-15.7
506	Light Pole	112.5	11.9	-21.2	5.2	N/A	-6.8	-21.2	-17.7	-5.1
507	Ground	103.2	2.3	-30.9	-4.4	N/A	-16.4	-30.9	-27.3	-14.6
508	Fence	103.2	2.1	-31.2	-4.6	N/A	-16.6	-31.2	-27.5	-14.8
509	Building Peak	114.7	0.2	-39.5	-10.0	1.1	-18.5	-39.5	-32.9	-14.3
510	Treetop	105.5	8.2	-23.3	2.4	N/A	-10.5	-23.3	-20.5	-9.5
511	Building Peak	107.1	5.7	-27.8	-1.2	N/A	-13.0	-27.8	-24.1	-11.2
512	Light Pole	102.6	0.1	-33.9	-7.1	N/A	-18.6	-33.9	-30.0	-16.5
513	Sign	121.4	17.3	-17.5	9.7	16.1	-1.4	-17.5	-13.2	0.7
514	Sign	125.7	25.6	-7.3	19.1	N/A	6.9	-7.3	-3.8	8.5
515	Treetop	106.3	9.1	-22.4	3.3	N/A	-9.6	-22.4	-19.6	-8.6
516	Utility Pole	122.5	2.2	-40.2	-9.4	4.2	-16.5	-40.2	-32.3	-11.2
517	Light Pole	102.9	0.4	-33.5	-6.7	-1.1	-18.3	-33.5	-29.6	-16.5
518	Sign	125.1	24.8	-8.2	18.2	N/A	6.1	-8.2	-4.7	7.7
519	Sign	100.6	2.3	-29.8	-3.9	N/A	-16.4	-29.8	-26.8	-15.2

Number	Object	Top Elevation (ft.)	Approved Alternative				Shift Alternative			
			50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface	50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface
520	Fence	102.9	0.4	-33.6	-6.7	-1.1	-18.3	-33.6	-29.6	-16.5
521	Fence	103.1	2.4	-30.8	-4.4	N/A	-16.3	-30.8	-27.3	-14.7
522	Utility Pole	147.4	-3.6	-60.1	-22.6	4.8	-22.3	-60.1	-45.5	-10.6
523	Treetop	103.8	6.6	-24.9	0.8	N/A	-12.1	-24.9	-22.1	-11.1
524	Sign	104.4	4.5	-28.2	-1.9	N/A	-14.2	-28.2	-24.8	-12.6
526	Road	108.2	9.1	-23.2	2.9	N/A	-9.6	-23.2	-20.0	-8.2
527	Tower	117.9	N/A	-6.0	19.0	N/A	5.5	-6.0	-3.9	5.6
529	Utility Pole	127.9	7.7	-34.7	-3.9	9.7	-11.0	-34.7	-26.8	-5.7
531	Fence	102.2	7.5	-22.8	2.3	N/A	-11.2	-22.8	-20.6	-10.7
534	Road	108.6	N/A	-14.8	10.1	N/A	-3.5	-14.8	-12.8	-3.4
536	Railroad	116.2	18.5	-13.3	12.6	N/A	-0.2	-13.3	-10.3	0.9
537	Fence	98.5	0.4	-31.6	-5.7	N/A	-18.3	-31.6	-28.6	-17.2
538	Road	108.6	14.6	-15.4	9.6	N/A	-4.1	-15.4	-13.3	-3.8
539	Sign	104.5	4.9	-27.8	-1.6	2.8	-13.8	-27.8	-24.5	-12.6
540	Fence	101.9	4.8	-26.6	-0.9	N/A	-13.9	-26.6	-23.8	-12.9
541	Building Peak	101.1	4.5	-26.8	-1.2	N/A	-14.2	-26.8	-24.1	-13.4
542	Sign	101.3	3.2	-28.8	-2.9	N/A	-15.5	-28.8	-25.8	-14.4
545	Building Peak	101.4	4.9	-26.3	-0.8	N/A	-13.8	-26.3	-23.7	-12.9
548	Building Peak	101.9	5.3	-25.9	-0.4	N/A	-13.4	-25.9	-23.3	-12.5
560	Light Pole	118.3	17.3	-16.0	10.5	15.5	-1.4	-16.0	-12.4	0.1
590	Fence	100.0	5.9	-24.1	0.9	2.8	-12.8	-24.1	-22.0	-12.6
593	Sign	101.7	4.2	-27.4	-1.7	1.7	-14.5	-27.4	-24.6	-13.7
597	Utility Pole	107.5	10.3	-21.2	4.5	7.8	-8.4	-21.2	-18.4	-7.6
598	Sign	99.2	2.7	-28.4	-2.9	N/A	-16.0	-28.4	-25.8	N/A
614	Runway Light	120.5	10.5	-27.0	1.5	10.5	-8.2	-27.0	-21.4	-4.9
615	Utility Pole	150.3	0.7	-55.5	-18.2	8.6	-18.0	-55.5	-41.1	-6.8
622	Fence	98.9	0.2	-32.1	-0.6	-2.1	-18.5	-32.1	-23.5	-17.5
628	Fence	107.0	N/A	-16.0	8.8	10.3	-4.8	-16.0	-14.1	-5.1

Number	Object	Top Elevation (ft.)	Approved Alternative				Shift Alternative			
			50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface	50:1 Part 77 Approach Surface	34:1 TSS	40:1 TERPS Departure Surface	62.5:1 OEI Surface
629	Fence	95.6	1.3	-28.8	-3.8	-1.8	-17.4	-28.8	-26.7	-17.2
637	Road	107.2	12.2	-18.2	7.0	9.2	-6.5	-18.2	-15.9	-6.2
644	Utility Pole	149.4	0.1	-55.9	-18.7	8.0	-18.6	-55.9	-41.6	-7.4
661	Tower	108.1	0.7	-35.6	-7.6	0.2	-18.0	-35.6	-30.5	-15.2
663	Utility Pole	181.2	7.3	-60.3	-17.7	20.1	-11.4	-60.3	-40.6	4.7
667	Fence	97.3	0.8	-30.3	-4.8	-1.9	-17.9	-30.3	-27.7	-17.3
677	Sign	101.9	4.1	-27.7	-1.9	1.7	-14.6	-27.7	-24.8	-13.7
678	Fence	100.0	4.8	-25.8	-0.5	1.8	-13.9	-25.8	-23.4	-13.6
680	Railroad	117.0	21.3	-9.6	15.8	18.4	2.6	-9.6	-7.1	3.0
681	Road	106.8	10.4	-20.8	4.8	7.7	-8.3	-20.8	-18.1	-7.7
683	Road	107.0	12.8	-17.2	7.8	N/A	-5.9	-17.2	-15.1	-5.5
685	Fence	98.3	0.5	-31.3	-5.5	N/A	-18.2	-31.3	-28.4	-17.1
691	Road	107.8	10.9	-20.5	5.1	N/A	-7.8	-20.5	-17.8	-6.9
696	Fence	99.7	4.7	-25.8	-0.6	N/A	-14.0	-25.8	-23.5	-13.4
700	Fence	98.5	0.9	-30.7	-5.0	N/A	-17.8	-30.7	-27.9	-16.7
701	Railroad	117.0	21.5	-9.1	16.2	N/A	2.8	-9.1	-6.7	3.5
703	Fence	97.3	1.4	-29.6	-4.2	N/A	-17.3	-29.6	-27.1	-16.6
724	Utility Pole	203.6	N/A	N/A	-10.5	32.8	-0.9	N/A	-33.4	17.4

Source: RS&H, 2015 and Draft LAX Airport Layout Plan, 2012

3.1.1 FAR Part 77 50:1 Approach Surface

The FAR Part 77 50:1 Approach Surface, as depicted in *Figure 3-1*, starts 200 feet from the runway end and extends 10,000 feet at a 50:1 slope with an additional 40,000 feet at a 40:1 slope. This protected surface is used to assess whether an object may present a potential hazard to air navigation though not all penetrations are considered hazards to air navigation. There are 94 penetrations to the FAR Part 77 50:1 Approach Surface in the Approved Alternative. The greatest penetration to the Surface is approximately 40 feet in the Approved Alternative configuration. Implementing the Shift Alternative reduces the number of known penetrations from 94 to nine.

Implementing the Shift Alternative results in 284 acres of newly captured area within the boundary of the FAR Part 77 50:1 Approach Surface. Based on available information, two new objects located within the newly captured areas would penetrate the Surface. In total, at least 11 penetrations exist for the FAR Part 77 50:1 Approach Surface in the Shift Alternative configuration. The greatest known penetration to the Surface is approximately 22 feet in the Shift Alternative configuration. The newly captured area requires further analysis, including a new aerial survey and obstructions analysis, to determine if additional objects would penetrate the relocated Approach Surface.

3.1.2 TERPS 40:1 Departure Surface

The TERPS 40:1 Departure Surface, as depicted in *Figure 3-2*, starts at the end of the runway and extends 10,200 feet at a 40:1 slope. This Surface should be clear of obstacles to protect aircraft departing in Instrument Meteorological Conditions. Although this area is not as shallow of the Part 77 50:1 surface, it covers a greater swath of land closer to the airport.

There are 42 penetrations to the TERPS 40:1 Departure Surface in the Approved Alternative. The greatest penetration to the Surface is approximately 41 feet in the Approved Alternative configuration. Implementing the Shift Alternative reduces the number of known penetrations from 42 to three. The greatest known penetration to the Surface is approximately 18 feet in the Shift Alternative configuration.

Implementing the Shift Alternative results in 100 acres of newly captured area within the boundary of the TERPS 40:1 Departure Surface. The newly captured area requires further analysis, including a new aerial survey and obstructions analysis, to determine if additional objects would penetrate the relocated Departure Surface.

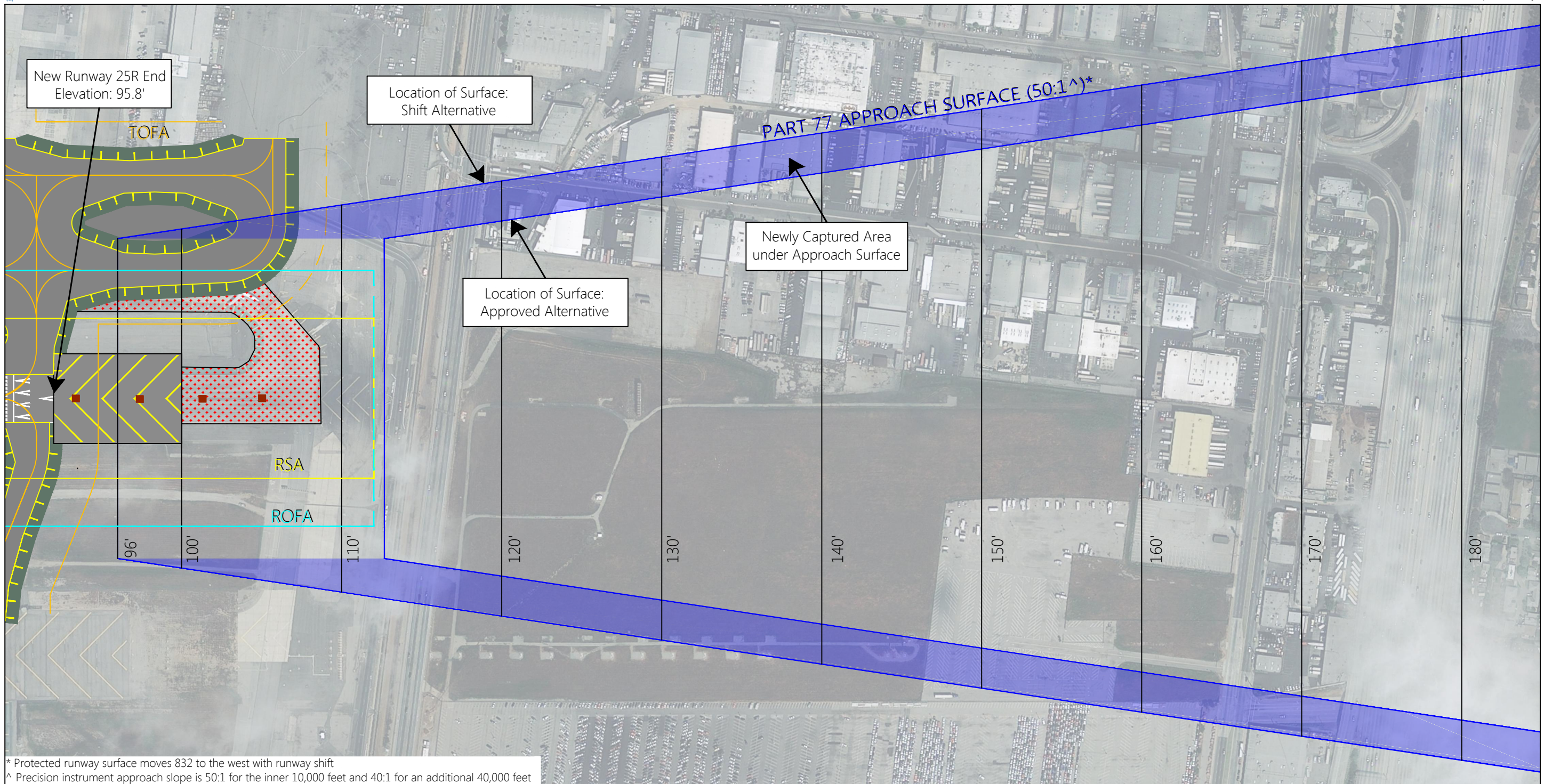
3.1.3 62.5:1 One Engine Inoperative (OEI) Surface

The 62.5:1 OEI Surface, as depicted in *Figure 3-3*, begins at the runway end and extends for 50,000 feet at a 62.5:1 slope. This Surface should be clear of obstacles to protect departing aircraft that experience an engine failure. There are 49 penetrations to the 62.5:1 OEI Surface in the Approved Alternative. The greatest penetration to the Surface is approximately 37 feet in the Approved Alternative configuration. Implementing the Shift Alternative reduces the number of known penetrations from 49 to 14.

Implementing the Shift Alternative results in 219 acres of newly captured area within the boundary of the 62.5:1 OEI Surface. Based on available information, nine new objects located within the newly captured area penetrate the Surface. In total, at least 23 penetrations exist for the 62.5:1 OEI Surface in the Shift Alternative configuration. The greatest known penetration to the Surface is approximately 32 feet in the Shift Alternative configuration. The newly captured area requires further analysis, including a new aerial survey and obstructions analysis, to determine if additional objects would penetrate the relocated OEI Surface.

3.1.4 34:1 Threshold Siting Surface

The 34:1 Threshold Siting Surface, as depicted in *Figure 3-4*, is located 200 feet from the Runway 25R threshold. This Surface should be clear of obstacles and used to establish the location of the threshold. The Surface extends 10,000 feet at a slope of 34:1. This slope is steeper when compared with the other protected surfaces. There is one penetration to the 34:1 Threshold Siting Surface in the Approved Alternative. The object penetrates the Surface by approximately 3 feet in the Approved Alternative configuration. The 34:1 Threshold Siting Surface does not change if the Shift Alternative is implemented. The penetration remains and no new area would be captured.



* Protected runway surface moves 832 to the west with runway shift
 ^ Precision instrument approach slope is 50:1 for the inner 10,000 feet and 40:1 for an additional 40,000 feet

Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Navigational Aids (NAVAIDS)
- Part 77 Approach Surface
- Pavement to be Removed

Declared Distances

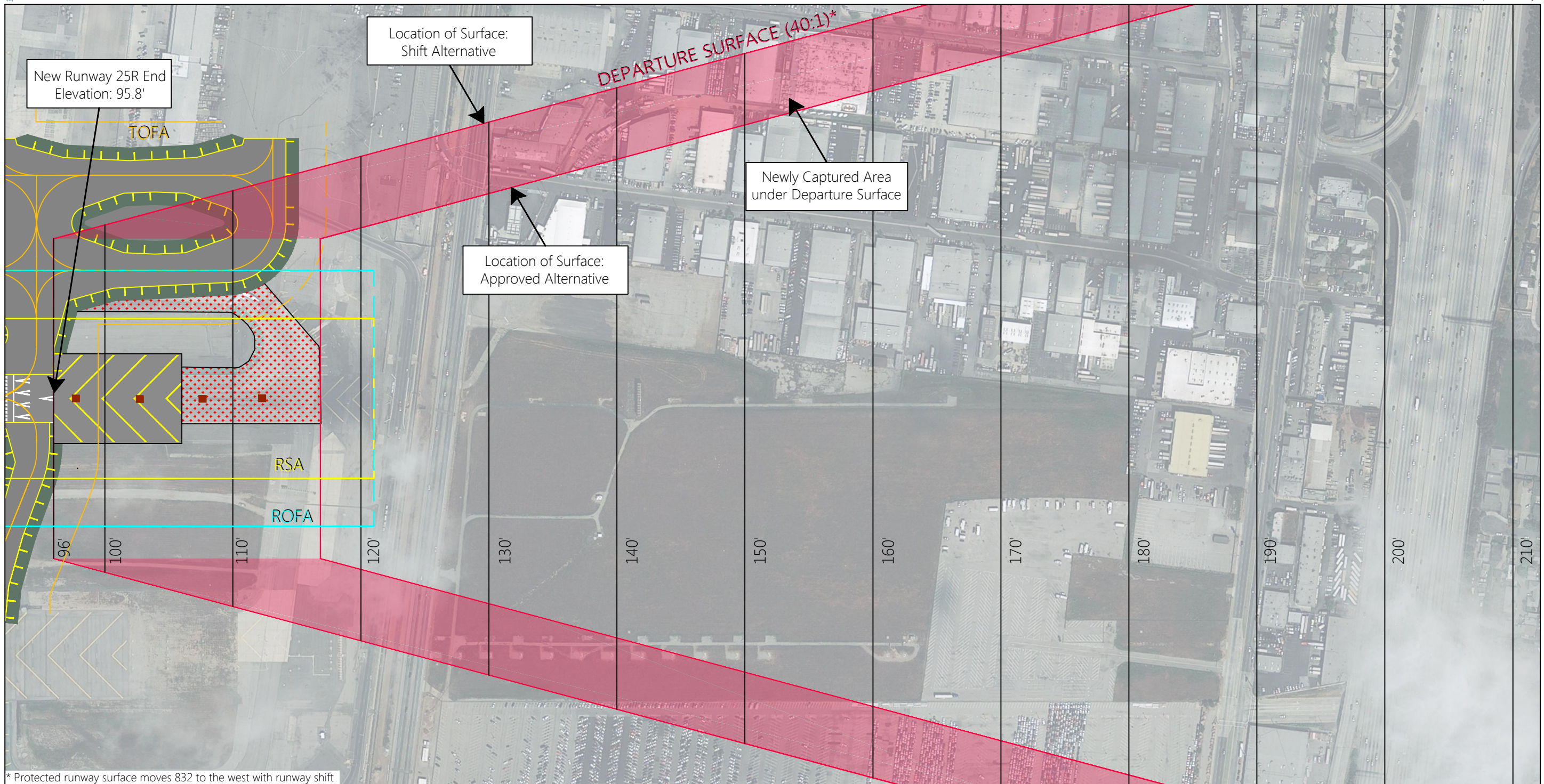
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
 ASDA - Accelerate Stop Distance Available
 TODA - Takeoff Distance Available
 LDA - Landing Distance Available

Figure 3-1:
Shift Alternative Runway 25R (East) Part 77 Approach Surface



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Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- - Taxiway Object Free Area (TOFA)
- Navigational Aids (NAVAIDS)
- Departure Surface
- ▤ Pavement to be Removed

Declared Distances

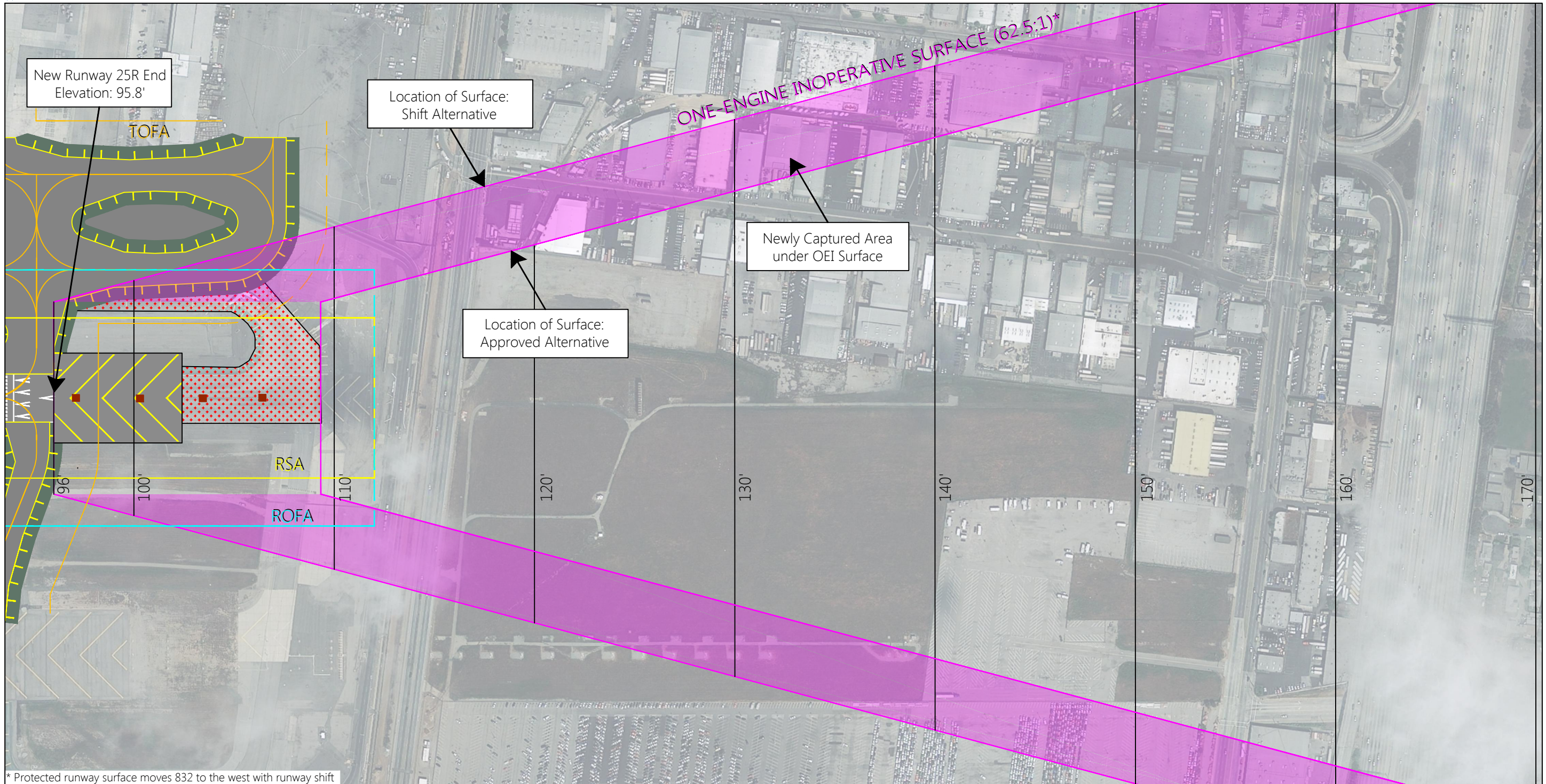
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
ASDA - Accelerate Stop Distance Available
TODA - Takeoff Distance Available
LDA - Landing Distance Available

Figure 3-2:
Shift Alternative Runway 25R (East) Departure Surface



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Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Taxiway Object Free Area (TOFA)
- Navigational Aids (NAVAIDS)
- One-Engine Inoperative (OEI) Surface
- Pavement to be Removed

Declared Distances

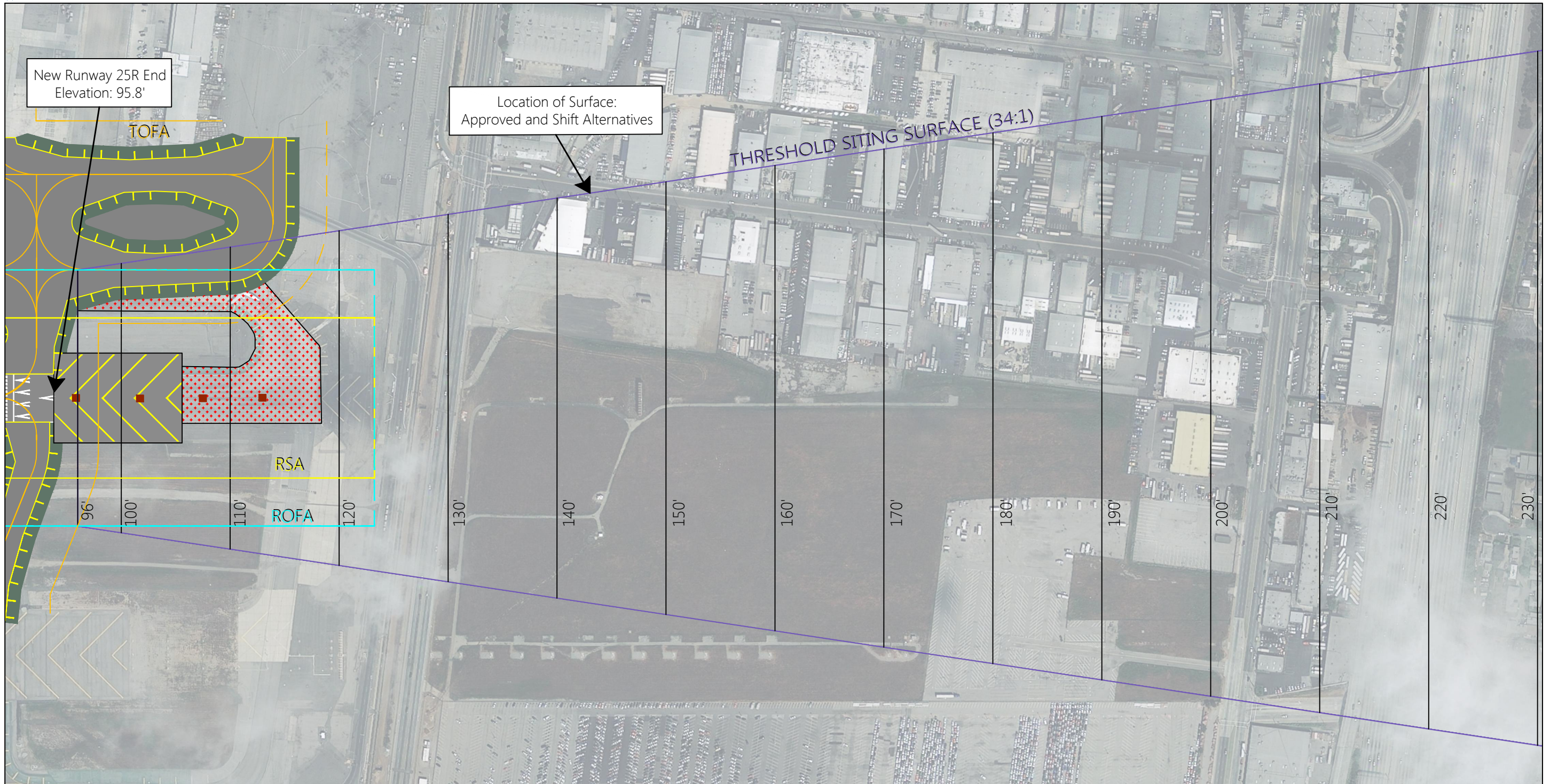
Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
ASDA - Accelerate Stop Distance Available
TODA - Takeoff Distance Available
LDA - Landing Distance Available

Figure 3-3:
Shift Alternative Runway 25R (East) One-Engine Inoperative Surface



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Legend

- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- - Taxiway Object Free Area (TOFA)
- Navigational Aids (NAVAIDS)
- Threshold Siting Surface
- Pavement to be Removed

Declared Distances

Operational Direction	TORA	TODA	LDA	ASDA
West Flow Rwy 25R	12,091'	12,091'	11,966'	12,091'
East Flow Rwy 7L	12,091'	12,091'	11,259'	12,091'

TORA - Takeoff Run Available
ASDA - Accelerate Stop Distance Available
TODA - Takeoff Distance Available
LDA - Landing Distance Available

Figure 3-4:
Shift Alternative Runway 25R (East) Threshold Siting Surface



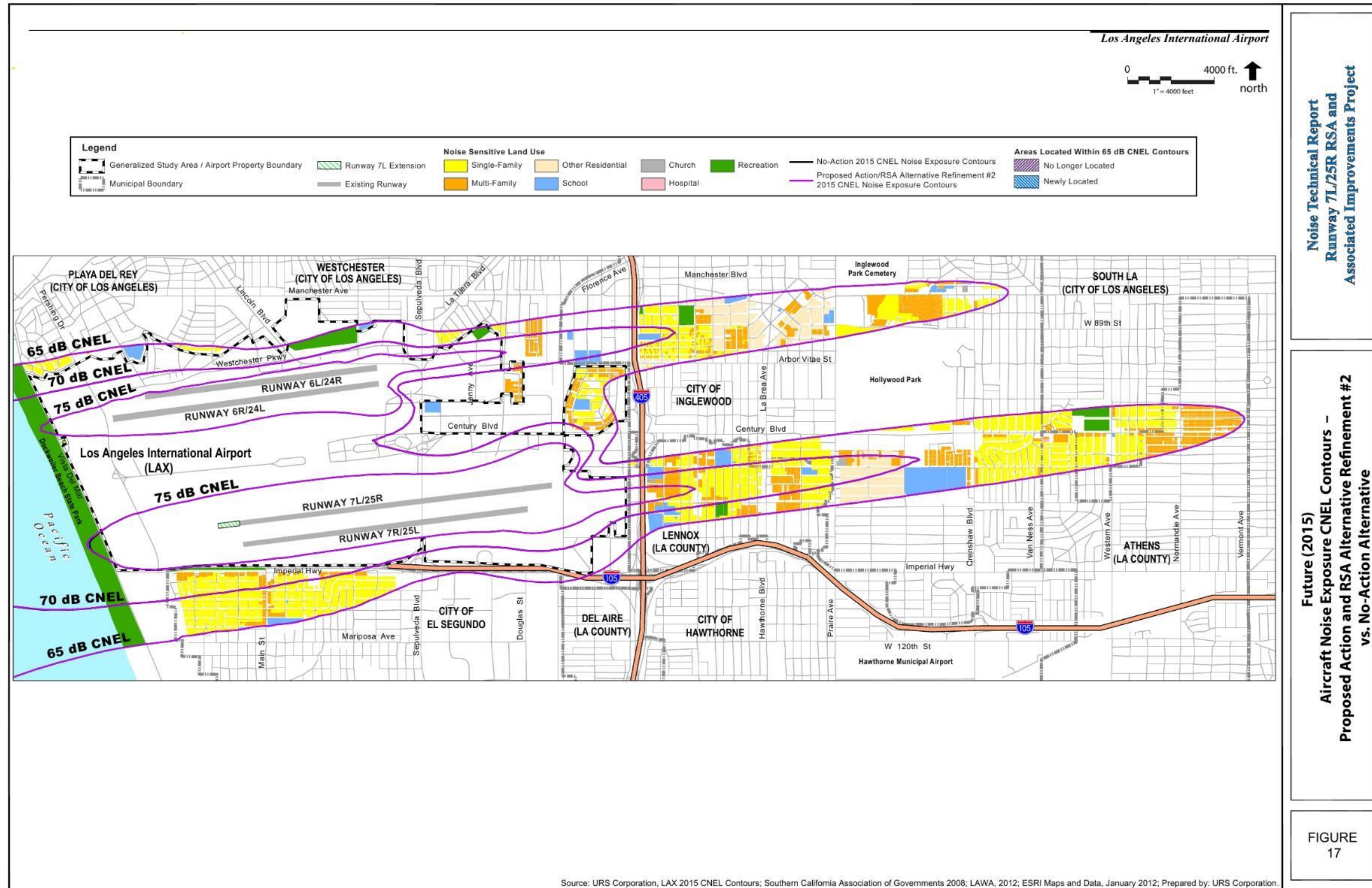
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3.2 NOISE IMPACTS

Noise impact studies were completed as part of the Runway 7L-25R environmental analyses. Alternatives evaluated within the NEPA and CEQA environmental analyses, include the No-Action Alternative, Proposed Action Alternative, and the Shift Runway Alternative. The Proposed Action Alternative in the 2013 Final EA corresponds to the Approved Alternative that will be implemented within the next few years. The noise impacts associated with the Approved Alternative (Proposed Action Alternative) and the Shift Alternative were evaluated in comparison to the No-Action Alternative in the 2013 Final EA. *Figure 3-5* and *Figure 3-6* depict the noise contour comparisons between the Approved Alternative and No-Action Alternative. *Figure 3-7* and *Figure 3-8* depict the noise contour comparisons between the Shift Alternative and No-Action Alternative. Detailed description of the noise impacts can be found in Section 4.2 and Appendix B of the 2013 Final EA.

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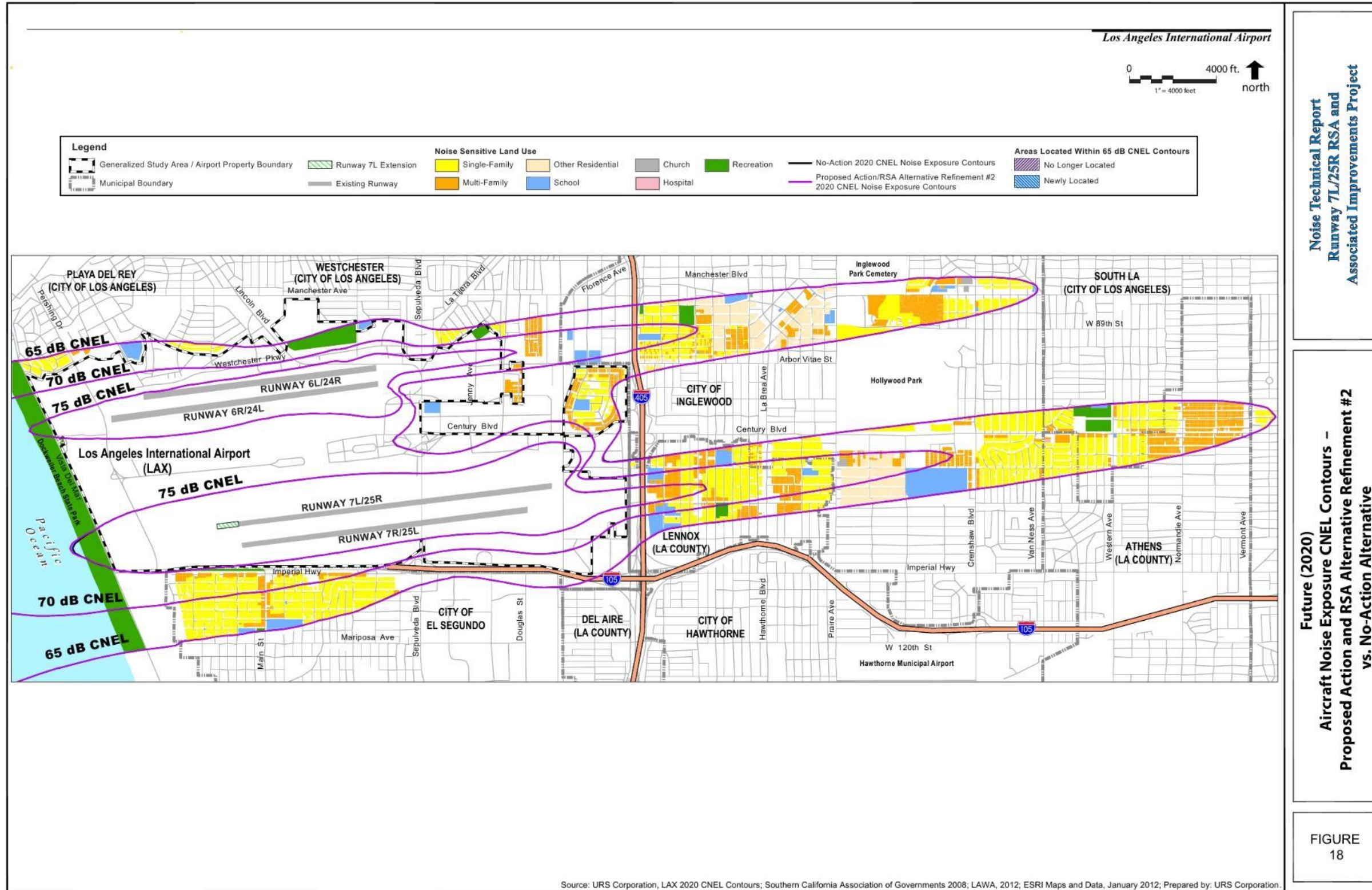
FIGURE 3-5:
 2015 NOISE CONTOUR COMPARISON – APPROVED ALTERNATIVE VS NO-ACTION ALTERNATIVE



Source: Final Environmental Assessment Appendix B Noise Technical Report for Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

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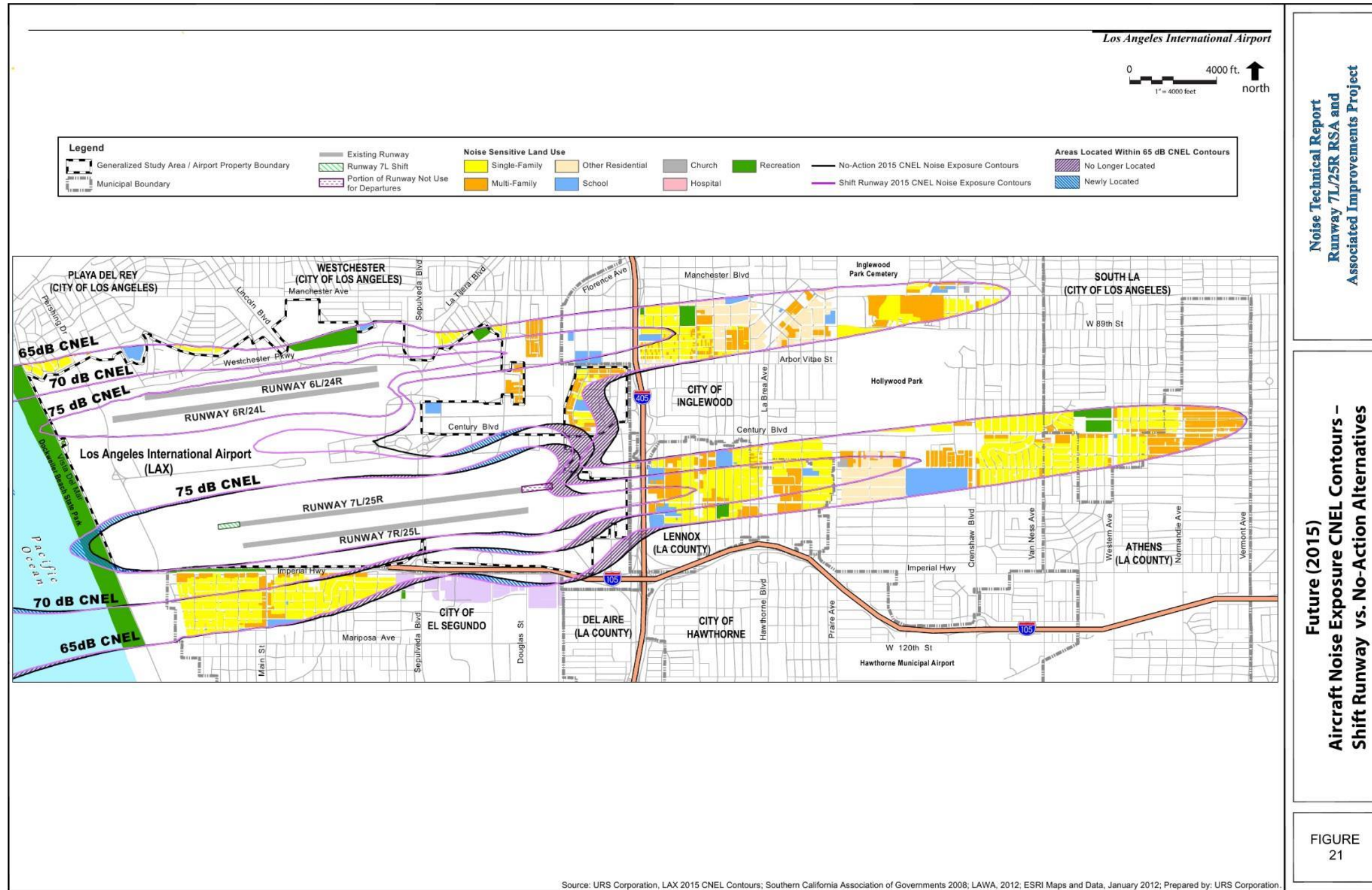
FIGURE 3-6:
 2020 NOISE CONTOUR COMPARISON – APPROVED ALTERNATIVE VS NO-ACTION ALTERNATIVE



Source: Final Environmental Assessment Appendix B Noise Technical Report for Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

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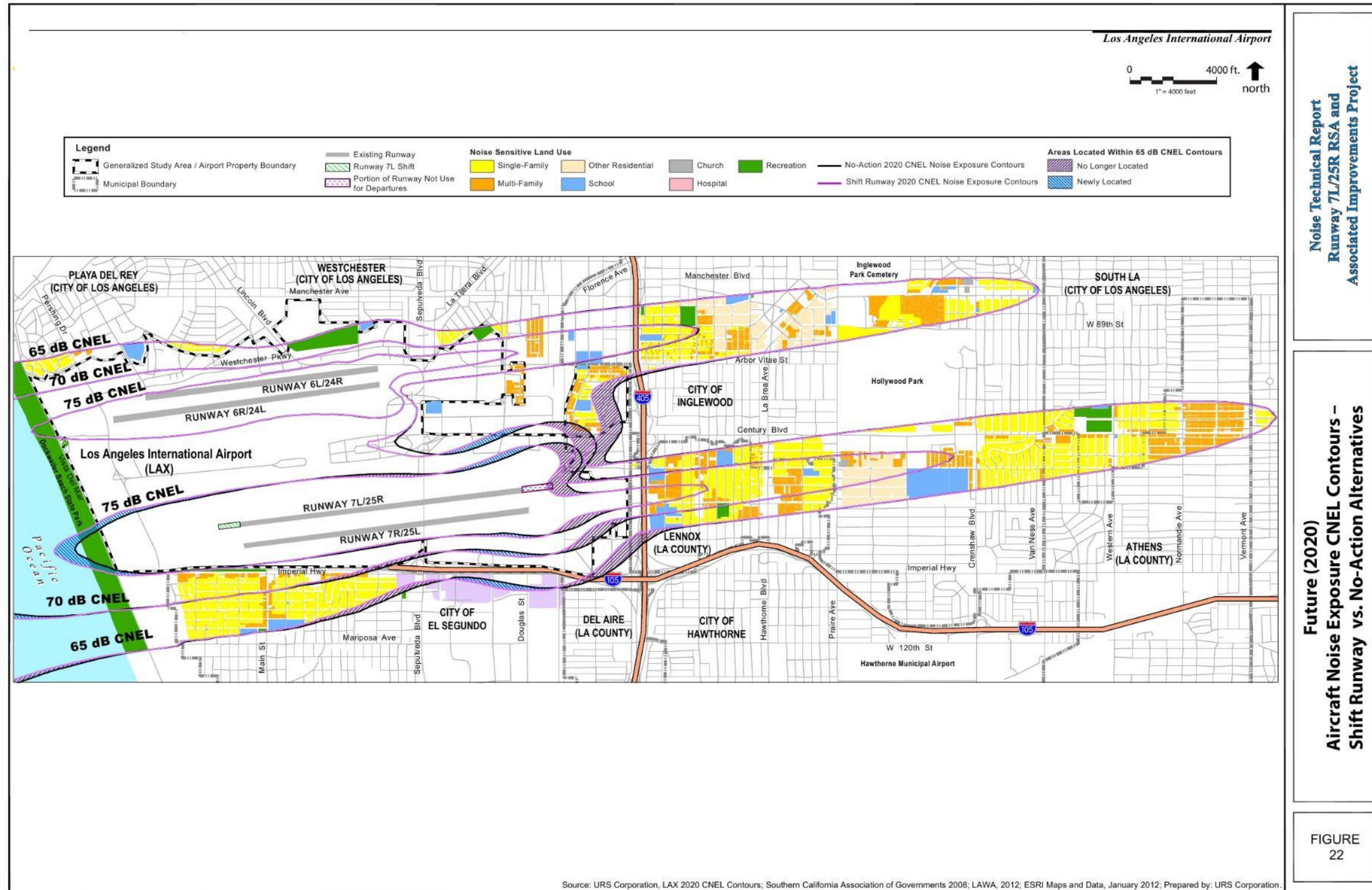
FIGURE 3-7:
 2015 NOISE CONTOUR COMPARISON – SHIFT ALTERNATIVE VS NO-ACTION ALTERNATIVE



Source: Final Environmental Assessment Appendix B Noise Technical Report for Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

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FIGURE 3-8:
 2020 NOISE CONTOUR COMPARISON – SHIFT ALTERNATIVE VS NO-ACTION ALTERNATIVE



Source: Final Environmental Assessment Appendix B Noise Technical Report for Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

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3.3 LAX OPERATIONAL IMPACTS

This section describes the potential impacts to LAX operations with the implementation of the Shift Alternative. The evaluation of operational impacts focused on the impacts at the east end of Runway 7L-25R. Airfield geometry on the west end of Runway 7L-25R is the same in the Approved Alternative and Shift Alternative.

Several connecting taxiways on the east end of the Runway would need to be realigned to facilitate the runway shift. These airfield geometry changes impact airfield operations, departure procedures, aircraft maneuvering and queuing, and airline operations.

The potential impacts summarized in this section are based on consultation with staff from LAWA, FAA Airport District Office, and FAA ATC. Airline stakeholders were also consulted, via a survey letter, to determine the impact to airline operations.

3.3.1 Airspace Impacts

LAX currently operates under a waiver for simultaneous departures from the North Airfield complex and South Airfield Complex. Aircraft departing Runway 25L or Runway 25R must initiate a 15 degree left turn within 2 nautical miles from the departure end of runway to create appropriate lateral separation from North Airfield departures. The FAA standard is for this turn to be initiated within 1 nautical mile of the departure end of runway. Runway 25R Area Navigation (RNAV) departure procedures instruct pilots to initiate a 15-degree turn prior to the first waypoint, known as DOCKR. DOCKR is located 1.55 nautical miles from the Runway 25R departure end of runway.

Shifting the Runway 25R departure end of runway may affect the location of DOCKR and could require relocation of the waypoint. FAA ATC is concerned about the runway shift and its potential impact on the existing waiver for simultaneous departures. It is not known if the waiver could be extended or if the waiver would be nullified. If LAX were to lose the waiver, it would force all departures from the North Airfield and South Airfield into a single departure stream. This may lead to operational inefficiencies and delays. Further coordination with FAA Air Traffic Organization may be necessary to address this issue.

It is important to note that change to the Runway 25R departure end of runway occurs with the Approved Alternative. No additional change occurs as a result of the Shift Alternative. Therefore, this impact is not considered in the evaluation of the Shift Alternative relative to the Approved Alternative.

3.3.2 Potential Increased Runway 25L Departures

In the Approved Alternative configuration, aircraft departing from Runway 25L have a three-minute departure hold time restriction when in-trail heavy aircraft departing Runway 25R via Taxiway B1. This departure hold time is an FAA mandated restriction in place to avoid wake turbulence. This restriction is in place when the following two conditions are met: 1) parallel runways are closer than 2,500 feet; and 2) runway ends are staggered more than 500 feet. This restriction is one factor that encourages pilots and controllers to cross Runway 25L and Runway 25R to takeoff on Runway 25R instead of waiting for Runway 25L during peak times. Additional departure hold times do not apply for successive aircraft departures on

Runway 25R. Therefore, pilots and ATC are more inclined to depart Runway 25R than accept potential departure delays by waiting to depart Runway 25L.

Implementation of Shift Alternative reduces the runway end stagger to less than 500 feet so the additional departure hold times would no longer apply for Runway 25L. Therefore, implementing the Shift Alternative may incentivize the use Runway 25L departures because of the enhanced operational flexibility. This conflicts with desires expressed by El Segundo representatives to reduce noise to the community by decreasing Runway 25L departures.

3.3.3 Departure Queuing

Aircraft departing on Runway 25R queue on Taxiway C and Taxiway B. The departure queue often extends west beyond Taxiway C6, resulting in congestion and delay for aircraft waiting to taxi to or push back from gates at Terminal 7 and Terminal 8. Shifting the Runway 25R end west would also shift the aircraft departure queue to the west. Shifting the Runway 25R departure queue farther west along Taxiway B would exacerbate taxiway congestion and delays in the terminal area near Terminals 6, 7, and 8.

3.3.4 Taxiway Geometry

The Shift Alternative includes Taxiway B and Taxiway C realignment to the north to meet Group VI parallel taxilane separation design standards. Increased separation may be necessary to accommodate direction reversal taxi maneuvers between parallel taxiways for all aircraft. The realigned taxiways may require removal of two cargo facilities – Air Freight Building #8 and Air Freight Building #10 – and portions of aircraft parking apron adjacent to the taxiways.

The Shift Alternative includes extension of Taxiway C east and provides access to Taxiway B via Taxiway B1. The Taxiway C extension is required as part of the runway shift to provide ATC operational flexibility. The Taxiway C extension allows for bidirectional access for the B1 aircraft parking apron. The Taxiway C extension provides more queuing and staging area for aircraft departing Runway 25R than is provided in the Approved Alternative. The extension allows aircraft to exit the departure queue and hold closer to the Runway 25R end when pilots are not ready for departure. Queuing and staging in this area would be restricted on portions of the taxiways and in certain conditions to protect the Precision Obstacle Free Zone, Part 77 Approach Surface, and the Threshold Siting Surface. Hold lines would be appropriately sited to identify the locations on the taxiways where these restrictions exist. Similar restrictions would be in effect during East Flow Operations to protect the Departure Surface and One-Engine Inoperative Surface on the east end of the Runway.

Taxiway F needs realignment to connect the Runway 25L end with the Runway 25R end. Right-angle runway-taxiway intersections are a required standard per FAA Advisory Circular 150/5300-13A, *Airport Design*. Implementing the Shift Alternative does not align the Runway ends. The Runway 25R end is approximately 165 feet farther east than the Runway 25L end in the Shift Alternative. A straight Taxiway F segment that connects east of the Runway 25L end does not meet FAA design standards and results in a prohibited aligned taxiway configuration. Therefore, a curved taxiway segment is required to facilitate right-angle intersections at the locations where Taxiway F connects to the runway ends.

Constructing a curved Taxiway F segment may increase the time required for aircraft to cross Runways 25L and Runway 25R. Accessing Runway 25R from Taxiway A is a more cumbersome process in the Shift Alternative than in the Approved Alternative. Aircraft do not commonly hold on Taxiway F between the runways. Aircraft holding in this location would impact the Precision Obstacle Free Zone and Instrument Landing System critical area. Additionally, the runway centerline-to-centerline separation restricts the size of aircraft that can hold between the runways on Taxiway F. Therefore, ATC typically provide clearance to cross both runways at a time when neither runway is occupied. A large radius taxiway turn is recommended to minimize potential pilot confusion and allow aircraft to maintain higher taxi speeds through the curve.

Constructing a taxiway parallel to and west of Taxiway F may also enhance ATC operational flexibility. The taxiway could connect the Taxiway H stub-out to Taxiway B. It allows aircraft to exit and enter Runway 7L-25R in cases when pilots are not ready for departure without having to taxi to Taxiway J. This taxiway connection also allows aircraft to hold facing east-west on the Taxiway H stub-out allowing aircraft to cross one runway at a time. Holding on the Taxiway H stub-out would be prohibited during Instrument Meteorological Conditions because aircraft would penetrate the Instrument Landing System critical area for the glideslope antenna. The north-south portion of this taxiway configuration parallel to Taxiway F would be greater than 500 feet west of the Runway 25R end. This results in the aforementioned three-minute in-trail separation restriction for aircraft departing Runway 25R from this intersection. Therefore, the operational benefit of this configuration may be limited. Further exploration of this taxiway configuration may be warranted if the Shift Alternative is implemented.

3.3.5 Airline Operational Impacts

Preliminary analysis conducted in 2013 indicated that shifting the Runway 832 feet to the west (thus reducing the distance between the start end of the runway and controlling obstacles west of the South Airfield) will impact certain long-haul, twin-engine departures. The analysis was general in nature and did not account for the varying operational procedures and policies of individual airlines. Therefore, nine airlines were surveyed to determine if there is objection to the Runway shift. Airlines were asked to participate in the survey if they currently operate long-haul, twin-engine routes or if they were one of the top carriers at LAX.

The survey requested airlines to evaluate use of Runway 25R and the operational impact of the shift with particular focus on long-haul, twin-engine departures. Airlines were asked to consider their proprietary operational parameters (e.g., equipment type, stage length, typical load) when responding. The goal was to have chief pilots, flight dispatch, and route-planning representatives involved with the completion of the survey. Airlines were asked to respond to the following three questions using as much detail as possible:

1. Will shifting Runway 7L-25R 832 feet to the west have an impact on your airline's operation at LAX?
2. How many flights are likely to be impacted as a result of the shift?
3. What is your airline's likely response to the impact of the shift (if any)?

The airline responses are summarized in *Table 3-2*. Six airlines respondents indicate that their operation would be impacted if the Shift Alternative were implemented. Impacted airlines would incur payload penalties (up to 15,900 pounds) as a result of the runway shift. Runway 25R tailwinds (as little as 3 knots) or temperature (as low as 77 degrees Fahrenheit) are contributing factors to operational impacts. Objects located in the dunes west of the South Airfield (namely the VORTAC Doppler Monitor Antenna) present operational challenges for the airlines. An airline respondent notes that a lesser impact (reduced takeoff weight penalty) results if the Doppler Monitor Antenna has a frangible mount.

Three impacted airlines indicated they would restrict passenger seat sales or cargo booking to offset the payload restrictions. Two impacted airlines indicated that the operational impact was a “serious concern” and that the payload penalty “would not be acceptable.” Airline responses most often indicated that the Boeing 777-300ER is impacted. The Boeing 777-300ER is a popular aircraft used by many long-haul route operators. According to a Boeing aircraft order and delivery summary⁵, the 777-300ER is the best-selling airframe within the 777 family – representing the most orders and deliveries to-date. The first 777-300ER was delivered in 2004 and the airframe is likely to be in service for the foreseeable future.

One airline respondent recognized that shifting Runway 7L-25R enhances operational flexibility for Runway 7L departures. The airline noted that shifting the Runway 25R endpoint farther from objects east of the South Airfield would allow departures with heavier loads or during adverse conditions where Runway 25R departures are otherwise impacted. Pilots may opt to depart via Runway 7L even during normal West Flow Operations if Runway 25L departures are impacted. Pilots are permitted to request nonstandard departure procedures to facilitate the safe operation of their aircraft. Runway 7L departures during West Flow Operations may result in airfield and airspace congestion because it may be challenging for ATC to accommodate nonstandard departure routes. Departing Runway 7L may also result in additional noise impacts to noise sensitive land uses as the aircraft departs east over nearby communities

⁵ Boeing Order and Deliveries report, www.boeing.com/boeing/commercial/overview/index.page, accessed November 2014

**TABLE 3-2:
 AIRLINE OPERATIONAL IMPACT SURVEY RESPONSES**

Airline Respondent	Impact to Operations	Number of Flights Impacted	Airline Response to Shift
1	None	n/a	n/a
2	Yes Lift capacity reduced for 2 fleets	May impact future summer flights	Restrict cargo bookings out of LAX
3	Yes Up to 6,600 lbs takeoff weight restriction with tailwind > 3knts and temperature of 89°F	Not Specified	Not Specified
4	Minimal	n/a	n/a
5	Yes - Minor impact to 747-400 operations - Payload penalty for 777-300ER when temperatures > 79°F	May impact summer 777-300ER flights	Reduce passengers or cargo
6	Yes Performance may be affected with tailwind > 5knts and temperatures > 77°F	Not Specified	Not Specified
7	None Assuming current elevation/grade/pitch maintained in shifted runway	n/a	n/a
8	Yes Up to 15,900 lbs takeoff weight restriction	Not Specified	Not Specified
9	Yes Up to 11,000 lbs takeoff weight restriction with tailwind > 4knts	- 10% / year - 30% during winter holiday	- Seat capping - Lower cargo acceptance rate - Request Rwy 7L departures when tail winds > 4knts

Source: RS&H, 2015

3.4 VORTAC RELOCATION OPPORTUNITIES AND CHALLENGES

This section provides a general description of the actions required of LAWA and FAA in the event that the LAX VORTAC needs to be relocated to make the runway shift feasible. The FAA Air Traffic Organization Western Service Center was consulted to better understand these opportunities, challenges, and provide insight regarding the high-level feasibility of relocating the LAX VORTAC.

3.4.1 Very High Frequency Omnidirectional Range (VOR) Overview

A VOR is a navigational system radiating very high frequency radio signals to compatible airborne receivers. This NAVAID gives pilots a direct indication of bearing relative to the VOR facility.

Several types of VOR exist depending on the required function of the equipment. The LAX facility is a Doppler VORTAC station located in the dunes west of Runway 7L-25R. A VORTAC is a collocated facility comprised of standard VOR equipment for civil use and Tactical Air Navigation equipment that provides supplementary navigational information specific to the needs of military users. The LAX station also has a higher power output necessary to provide long-range, positive course guidance to aircraft including those enroute at high altitudes. These reasons make the LAX VORTAC an important NAVAID for aircraft bound for or departing LAX as well as other aircraft traveling through the area.

3.4.2 General Project Coordination and Elements

This section describes general steps to be undertaken to relocate a VOR. Preparing Form FAA 7460-1, *Notice of Proposed Construction or Alteration*, is one of the first steps to move forward in the process of shifting Runway 7L-25R and/or relocate the VOR. The accompanying analysis evaluates the effect of the proposed construction on operating procedures with air navigation and identifies mitigating measures to enhance safe air navigation. Several mitigation options could be considered if the LAX VORTAC was determined to be a hazard to air navigation as a result of the runway shift.

One such solution is to modify the existing departure procedures. Non-standard climb rates and/or non-standard higher departure minimums can be implemented to avoid obstacles penetrating the departure surface. The minimum required climb gradient is 200 feet per nautical mile but many aircraft may be able to exceed this climb gradient – especially new aircraft.

Removing an existing VOR station may also not require a direct replacement. The capability of other stations in the area could potentially be modified to substitute the information currently provided by a removed VOR. Increasing the power output of other VORs in the area may be possible to compensate for the removal of a VOR system. Direct replacement of a VOR, however, may be the only solution. This determination needs to be made in consultation with the FAA as part of a more thorough analysis.

FAA documentation states that initial airspace review may need to be conducted as early as three years in advance of construction. This provides enough time for the applicable FAA lines of business to review – Technical Operations, Flight Procedures, Flight Standards, Air Traffic / Operations Support Group, Runway Safety, and the Airport District Office. Coordination with the Department of Defense may be required since

the station also serves military interests. It takes about six months to one year to perform a siting study and at least two years for FAA to redesign impacted instrument procedures. A siting study may take longer if a VOR is to be relocated off-airport because it requires additional coordination with third-party landowners.

FAA Order 6820.10, *VOR, VOR/DME, and VORTAC Siting Criteria*, provides guidance and reference material to be used in practical application of VOR equipment. The document describes procedures and techniques that apply to the initial evaluation, selection, and acquisition of sites for the NAVAID. It outlines guidance with site improvement and the minimization of performance degradation due to multipath. The Order applies to new and relocated facilities.

Finding a suitable location for a new VOR may be challenging because of the specific siting requirements. Line of sight is an important component of siting to facilitate unobstructed signal transmission. Additionally, siting should consider impacts to existing flight procedures because all terminal and enroute procedures predicated on wayfinding via the LAX VORTAC need to be adjusted.

The FAA Airports District Office and Technical Operations Services are the groups with whom LAWA would first coordinate to assess relocation feasibility. Technical Operations Services would be most involved with the technical aspects associated with VORTAC siting and provide feedback on the VORTAC site selection process.

FAA Air Traffic Organization Western Service Center staff indicated that VOR relocation is a costly project. The demolition of the existing VORTAC station and land acquisition increase project costs. FAA generally prefers to acquire land for the NAVAIDs instead of entering long-term leases with landowners. Ideally, the FAA prefers to locate NAVAIDs on airport property to provide protection from encroachment of non-compatible land uses. Easements are used to protect from encroachment but are not always effective. If non-compatible land uses (i.e., private development) encroach on a VOR, there may be impacts to the operational capability and signal integrity of the NAVAID.

3.4.3 Anchorage VOR Relocation Case Study

The recent relocation of a VOR station in Anchorage, Alaska was used as a case study to examine potential opportunities and challenges of relocating a VOR station. The new Anchorage VOR became operational in February 2012. The Anchorage VOR was relocated approximately eight miles east from its previous location to property within the Ted Stevens Anchorage International Airport boundary. The VOR relocation was prompted due to proposed development of a wind farm that conflicted with the original station. The process of relocating the Anchorage VOR took approximately seven years from the start of FAA involvement to the commissioning of the new station.

Relocation of the Anchorage VOR was a challenging task for the FAA and Ted Stevens Anchorage International Airport staff. Restructuring of certain terminal and enroute flight procedures associated with the VOR were required with the station relocation. Recalibration of several NAVAIDs at Ted Stevens Anchorage International Airport and at other airports in the region was also required as part of this project.

One notable opportunity was upgrading the old system from a conventional VOR system to a Doppler VOR during the relocation process. A Doppler VOR is advantageous because it is generally more tolerant of other structures in the area and inherently more accurate than a conventional VOR.

3.4.4 LAX VORTAC Relocation Feasibility Assessment

FAA Air Traffic Organization Western Service Center staff indicated that relocating the LAX VORTAC would be very challenging. The LAX VORTAC is an important facility based on the regularity of use and the high number of procedures with which it is associated. Based on a draft FAA study, approximately 50 instrument procedures for LAX are associated with the LAX VORTAC – including Standard Terminal Arrival Route procedures, Standard Instrument Departures procedures, and navigational waypoints. Several airways associated with the VORTAC would also be impacted – one T-Route (low-level Area Navigation) and three Q-Routes (high-altitude airways). Some instrument procedures would also be affected for other airports in the region, including Van Nuys Airport and Santa Monica Municipal Airport. These procedures, waypoints, and airways need to be redesigned if the LAX VORTAC were relocated.

LAWA would first assess the feasibility of relocating the LAX VORTAC within the LAX property boundary – perhaps within the dunes. Environmental analysis would likely be required to assess the impacts of relocating the VORTAC near or within the El Segundo Blue Butterfly Habitat Restoration Area. However, relocating the VORTAC to a lower elevation from its existing elevated position on the dunes may affect signal integrity. FAA Air Traffic Organization Western Service Center staff indicated that the current location of the LAX VORTAC is ideal as its elevation and unobstructed 360-degree signal provide good line of sight to aircraft.

Alternatively, the LAX VORTAC could potentially be modified in its existing site so it no longer is the controlling obstacle for Runway 25R departures. The Doppler Monitor Antenna attached to the north side of the VORTAC equipment shelter is the highest point associated with the VORTAC. FAA Air Traffic Organization Western Service Center staff believes that it may be feasible to relocate the equipment shelter and/or the Doppler Monitor Antenna. Relocation of these components would be less complicated and less expensive than relocation of the entire VORTAC and would not affect the VORTAC signal integrity. Further, work and costs associated with redesigning the instrument procedures, waypoints, and airways would be avoided. This modification could be conducted in less time than is required to relocate the entire VORTAC station and redesign the instrument procedures.

3.5 IMPACT OF SHIFT SUMMARY

Shifting Runway 7L-25R may also have unintended consequences. Cumbersome taxiway alignments and removal of wake turbulence hold times make Runway 25L departures more attractive, which may increase Runway 25L departures. These potential resulting impacts were not taken into consideration in the 2013 Final EA. Therefore, the 2013 noise analysis results do not reflect the noise impacts associated with the potential increase in Runway 25L departures.

The cost of the Shift Alternative can be measured in the capital cost of construction. Additionally, several airlines indicate that the Shift Alternative impacts their operation. Lost airline revenue and loss of long-haul service may result from the runway shift. These costs are difficult to precisely gauge but would be considered a major negative economic impact to Los Angeles and the region. Impact to airlines may be mitigated if the LAX VORTAC and its associated equipment is modified or relocated. Relocation of the LAX VORTAC is a costly project.

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CHAPTER 4

LAX OPERATIONS AND NOISE

The Airport property boundary are contiguous to several communities to the north, south, and east of the Airport. LAWA continuously works to foster an amicable relationship between these communities and the Airport. LAWA has put forth considerable effort to being a good neighbor and minimizing adverse airport impacts on land uses near the Airport.

LAWA has a long-standing history of working to reduce the impacts of the noise profile created by aircraft. The Runway 7L-25R Shift Study was borne as a result of these noise abatement efforts. The purpose of the Runway 7L-25R Shift Study is to evaluate the potential impacts of shifting the Runway west 832 feet as part of the solution to resolve the non-standard RSA that was purported to offer noise benefits to the local community by reducing the number of residences within the 65 dBA CNEL counter. LAWA agreed to

LAWA NOISE MANAGEMENT WEBSITE

http://www.lawa.org/welcome_lax.aspx?id=788

conduct the study and maintain the ability to implement the runway shift, pending the results of the study. This is indicative of LAWA's commitment to supporting the interests of the local communities.

This chapter summarizes LAWA's other recent, ongoing, and recommended efforts to reduce airplane noise impacts as it relates to aircraft operations.

4.1 LAX NOISE PROFILE

The land use to the north and south of the Airport is mostly residential and commercial. Land uses to the east of the Airport are primarily commercial and industrial. The nearest noise-sensitive areas to the Airport includes:⁶

- » Residential uses in the City of El Segundo, south of the Airport
- » Multi-family homes along Century Boulevard east of Aviation Boulevard
- » Hotels and single-family homes in the area east of the Airport, at the northeast corner of South La Cienega Boulevard and West 104th Street

Noise sensitive receptors adjacent to the Airport include eight parks / areas of open space, 27 schools, 4 fire stations, 1 healthcare facility, and 10 religious facilities.⁷

Noise sources affecting the noise-sensitive uses around the Airport include aircraft noise, major highways, and major arterial roadways. Airport noise results from aircraft departing, landing, and taxiing operations. Noise levels from aircraft departure operations commonly exceed 110 dBA at locations near the Airport runways, according to the 2013 Final EA. A major contributor to noise proximate to the east end of Runway 25R is the departure backblast noise generated around the point of aircraft takeoff roll. According to the

⁶ Final Environmental Assessment of Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013

⁷ Sensitive land uses within ¼ mile of the 2013 Final EA Generalized Study Area

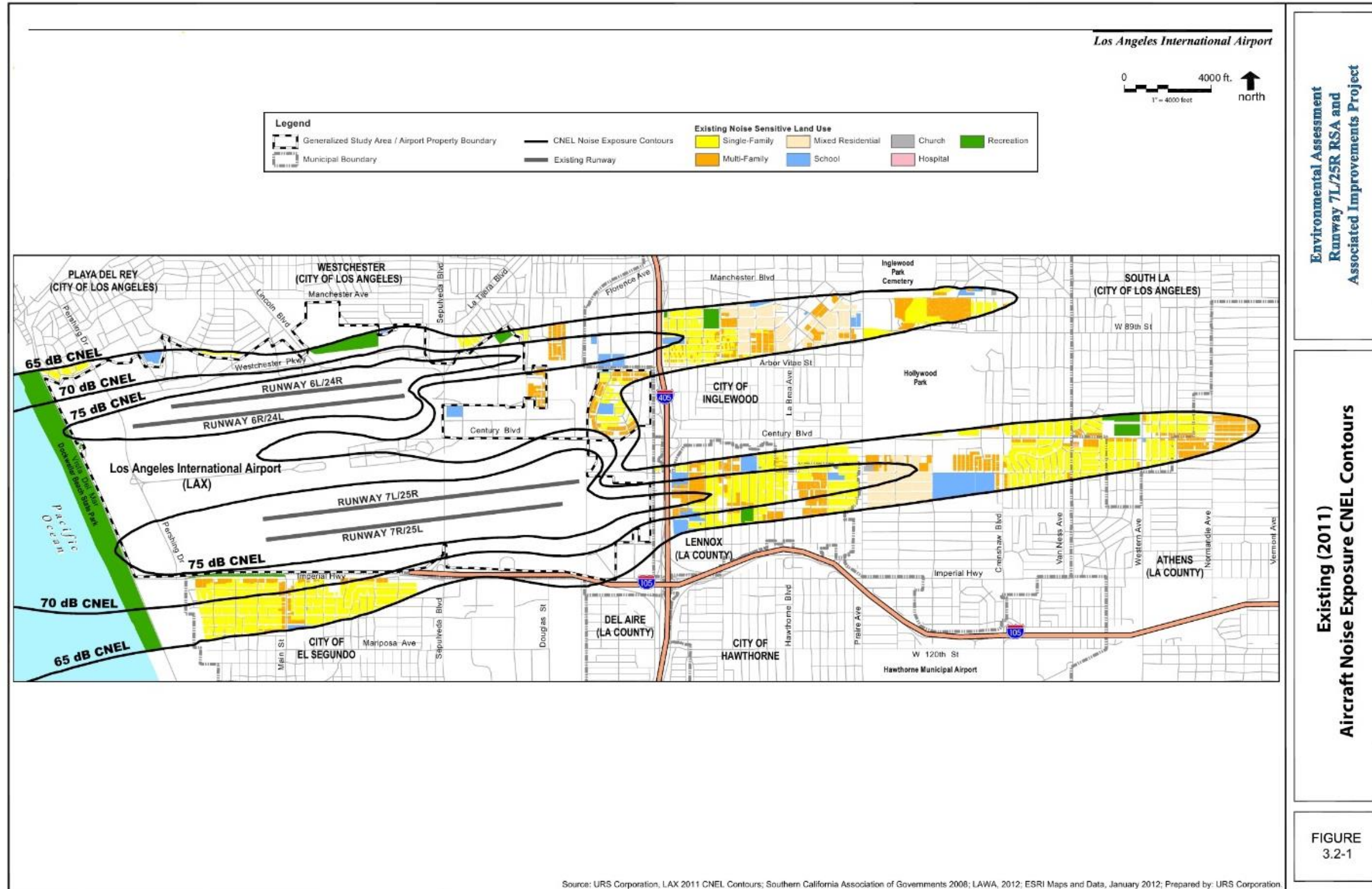
LAX Quarterly Noise Reports, the Boeing 747 aircraft has the highest takeoff noise level for aircraft that operate at the Airport.

Figure 4-1 depicts the 2011 noise contours from the 2013 Final EA. A total of 12,093 single- and multi-family dwelling units (representing 38,514 people) are located within the 65 dBA CNEL.

Figure 4-2 depicts the noise contour from the Third Quarter of 2014 as published in the *LAX Quarterly Noise Reports*. A total of 10,145 single- and multi-family dwelling units (representing 35,655 people) are located within the 65 dBA CNEL. Noise values and contours in the *LAX Quarterly Reports* include the current quarter and three previous quarters of noise measurements.

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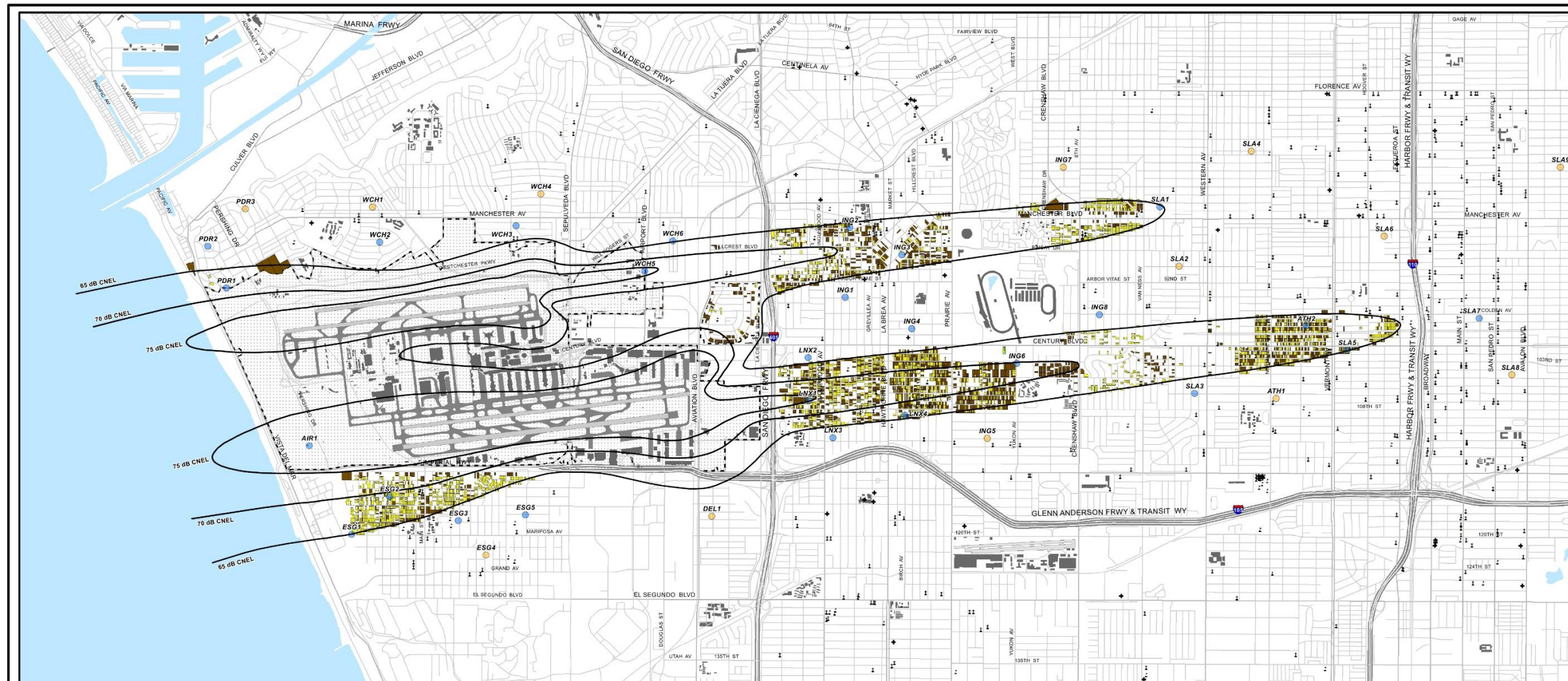
FIGURE 4-1:
 2011 NOISE CONTOURS



Source: Final Environmental Assessment of Proposed Runway 7L-25R Runway Safety Area and Associated Improvements Project, URS Corporation and Ricondo and Associates, Inc., August 2013; Figure 3.2-1

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FIGURE 4-2:
 2014 THIRD QUARTER NOISE CONTOURS



ANNUAL CNEL VALUES (dBA)

AIR1	PDR1	PDR2	PDR3	ESG1*	ESG2	ESG3	ESG4	ESG5	DEL1					
79	68	62	58	65	68	63	59	61	54					
WCH1	WCH2	WCH3	WCH4	WCH5	WCH6	ING1	ING2	ING3	ING4	ING5	ING7	ING8		
55	62	61	58	75	63	61	66	67	69	58	61	61		
LNX1	LNX2	LNX3	LNX4	ATH1	ATH2	SLA1	SLA2	SLA3	SLA4	SLA5	SLA6	SLA7	SLA8	SLA9
74	63	62	65	60	66	65	59	61	59	64	62	64	61	61

TECHNICAL NOTES

*The annual value shown for ESG1 is not a true annual value since it is calculated using less than four quarters of data.

NOTES

Noise Contours are generated using RealContours which supports the Federal Aviation Administration's Integrated Noise Model (INM) version 7.0. The modeled contour is based on annualized operational information gathered for the 12-month period ending December 31, 2013. The RealContours program is run yearly and the resultant contour is adjusted to the current quarter's Noise Monitoring Station (NMS) annual average aircraft CNEL.

Sources of information include: FAA's Automated Radar Terminal System (ARTS) Data, and FAA Tower Traffic Records.

Dwelling unit calculations are based on estimates made using 2009 assessor information, supplemented with local land use updates. Population estimates reflect the 2000 census data, (including updated 2009 estimates), for persons per dwelling unit. The new landuse database used to generate this report reflects all progress made through LAWA's Sound Insulation Grant Program (previously the Land Use Mitigation Program) through December 31, 2013.

Map projection is in State Plane Feet based on North American Datum of 1983 (NAD83), and is located in Zone 5 of the California Coordinate System of 1983.

Reproduced with permission granted by THOMAS BROS. MAPS. This map is based on data copyrighted by THOMAS BROS. MAPS. It is unlawful to copy or reproduce all or any part of this map, whether for personal use or resale, without permission.

- LEGEND**
- Residential - Single Family
 - Residential - Multi-Family
 - Residential - Mobile Home
 - Airport Property
 - Landmarks
 - Noise Contours
 - Streets
 - Noise Monitor (Required for Title 21)
 - Noise Monitor (Not required for Title 21)
 - Churches
 - Hospitals
 - Schools

Los Angeles World Airports 3Q14
 Los Angeles International Airport

California State Airport Noise Standards Quarterly Report

0.5 0 0.5 1 Miles

LAWA Noise Management
 Environmental Affairs Officer: Kathryn Pantoja
 Checked by: Joanne Choi, Environmental Specialist III
 Prepared by: James C. Dunagan III, Environmental Specialist II
 Prepared on: November 06, 2014

Source: 2014 Third Quarter LAX Quarterly Noise Report

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4.2 NOISE REDUCTION CONCEPTS

LAWA has long been an advocate for minimizing airplane noise on the local communities. LAWA's efforts include the close coordination with community leaders. LAWA and representatives of El Segundo hold regular meetings to discuss airport issues affecting the El Segundo community, including the following:

- » Early turns over El Segundo, and
- » Runway 25L departures, especially cargo aircraft at night.

4.2.1 Early Turns

An "early turn" occurs when an aircraft on a West Flow departure from any of the four LAX runways initiates a turn prior to reaching the shoreline that results in the aircraft flying over the community to either the north or south of the Airport. LAWA has several ongoing efforts that support this goal.

Section 5 of the *LAX Rules and Regulations* document specifically prohibits early turns in the Operational Responsibilities subsection. The purpose of this document is to provide airport users with the compendium of rules, regulations, procedures, and general information governing activities at the Airport. LAWA expects airport tenants and users to be informed of the document's contents, as it is important to comply with airport rules to maintain the safe and efficient operation of the Airport.



Early turn noise mitigation instructions are also included on the FAA Airport/Facility Directory for LAX. The Airport/Facility Directory informs pilots of important airport information. Informational signs are located near the east end of all LAX runways to remind pilots that aircraft are to maintain runway heading until past the shoreline before commencing any turns.

LAWA hosts a LAX/Community Noise Roundtable meeting every two months. The LAX/Community Noise Roundtable was created in September 2000 and is intended to reduce and mitigate the adverse noise impacts on the surrounding communities. Membership of the Roundtable consists of local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA, the airlines and LAWA Management. This forum provides a mechanism that attempts to ensure cooperation between the Airport and local impacted communities in achieving noise impact reduction to those communities, wherever possible, without shifting noise from one community to another.

LAWA actively monitors early turn occurrences through the Early Turn Notification Program. Early turns that do occur are classified as follows: FAA ATC instructed, pilot initiated, wind drift, or unknown. LAWA coordinates closely with FAA to minimize ATC instructed early turns. Enhanced ATC departure instructions were instituted on April 8, 2013 in an attempt to minimize community overflights. A description of the enhanced ATC departure instructions is included in Chapter 2.

LAWA also directly engages airlines and pilots to minimize early turn occurrences. Airlines responsible for early turns are contacted and asked to identify strategies of how future uninstructed early turns (pilot initiated, wind drift, and unknown reason) will be avoided.

Data analysis shows that early turn occurrences have noticeably decreased after the implementation of the enhanced departure instructions and other LAWA efforts. The early turn occurrence average for the El Segundo gate was about 37 per month during the period of April 2012 to March 2013. Early turn occurrence for the El Segundo gate has decreased to about 28 per month during the period of April 2013 to November 2014.⁸ Chapter 2 includes additional detail about the effectiveness of minimizing early turns.

Potential Concepts

LAWA and FAA ATC efforts have been successful in reducing early turn occurrences in recent years. The following concepts describe additional efforts that may be undertaken to further minimize early turn occurrences.

Turboprop aircraft account for the greatest percentage of early turn occurrences. Turboprop early turns are FAA ATC instructed maneuvers 64 percent of the time, during the period of April 2013 to November 2014. Therefore, early turn occurrences may be further minimized by focusing on FAA ATC instructed early turns by turboprops.

ATC instructs turboprops to turn early to make way for faster, trailing aircraft queued for departure or to avoid the wake created by larger, preceding aircraft. FAA ATC has the authority to instruct departing aircraft to turn before reaching the shoreline to ensure the safe and efficient operation of the Airport.

Long-term, it is expected that regional jets will replace the passenger airline turboprop fleet. Regional jet aircraft are faster than turboprops so regional jets may not need to turn early to make way for trailing aircraft. However, regional jets would still be subject to wake turbulence by larger, preceding aircraft. Uninstructed early turns (pilot initiated, wind drift, and unknown reason) account for approximately 70 percent of early turn occurrences committed by jet aircraft. Increased airline and pilot outreach may minimize these pilot initiated and wind drift related jet early turn occurrences. Detailed information may be distributed more regularly to airlines and request that it be disseminated with pilots that operate at LAX regularly. Similar information can be distributed within fixed-base operator flight planning rooms to increase general aviation pilot awareness.

Nighttime early turns are not common but eliminating these nighttime overflights may result in a community perception of greater early turn reduction. Aircraft noise is generally more noticeable during this period due to the decrease in other background noise sources.

⁸ Community Overflights Summaries, LAWA Noise Management Office, 2012 - 2014

4.2.2 Runway 25L Departures

El Segundo representatives have expressed a desire to minimize departures from Runway 25L to reduce aircraft noise. Runway 25L departures have a greater noise impact on the El Segundo community than Runway 25R departures since it is the closest runway to the community. El Segundo representatives are most concerned with minimizing nighttime cargo operations.

LAWA implemented the PRUP in 1972 to reduce noise impacts from aircraft operations. LAWA recognized that the loudest operations at the Airport are typically from departures. Therefore, the PRUP encourages use of the inboard runways (e.g., Runway 7L-25R) for departures and the outboard runways (e.g., Runway 7R-25L) for arrivals. A detailed description of the air traffic flows and preferred runway use is included in Chapter 2.

LAWA analyzed the implementation of the PRUP in the 2014 PRUP Report. Overall adherence to the PRUP is high. Over 90 percent of all operations at the Airport use the preferred runways.⁹ Passenger and air cargo operations compliance is also high – more than 93 percent of departures used the inboard runway between 2010 and 2013.

2014 LAX PRUP REPORT

http://www.lawa.org/uploadedFiles/LAX/noise/PDF/Final%20LAX%20Preferential%20Runway%20Use%20Policy%20Report%20041114_Web.pdf

LAWA closely coordinates with FAA ATC and engages airlines to facilitate adherence to the PRUP. LAWA worked with FedEx at LAX/Community Noise Roundtable meetings in 2013 to increase the use of Runway 7L-25R for departures. As a result, FedEx instituted policies whereby all FedEx pilots are to request Runway 25R for departure to reduce noise impacts on the El Segundo community.

Approximately 91 percent of departures from the South Airfield adhered to the PRUP and used Runway 7L-25R, between 2010 and 2013. As a result, an average of 42 daily departures occurred from Runway 7R-25L during the same time period. Eighteen of the 42 Runway 7R-25L departures occurred at nighttime, between 10 p.m. and 7 a.m. The 2014 PRUP Report acknowledged that nighttime compliance is lower than expected. This is due to regular nighttime runway closures and the operational limitations of Runway 7L-25R. Nighttime runway closures most often occur to allow routine maintenance, which must be performed at night when aircraft operations are low. Additionally, larger Group VI aircraft cannot easily be accommodated on Runway 7L-25R because of the non-standard lateral separation between the Runway and Taxiway B.

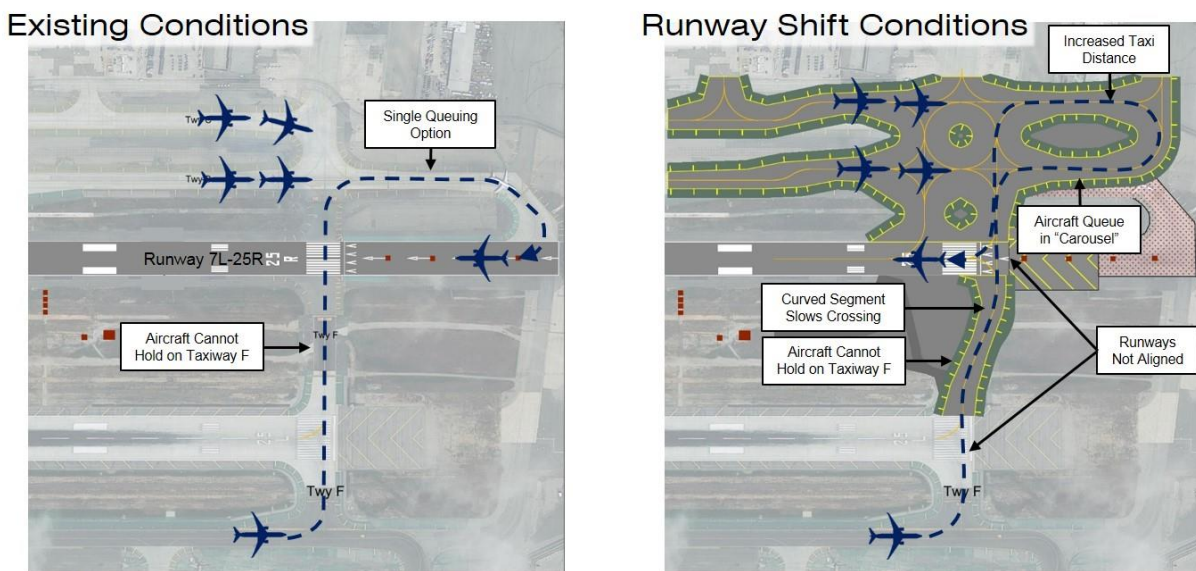
LAWA uses a contra-flow operation, also known as Over-Ocean Operations, between midnight and 6:30 a.m. The 2014 PRUP Report cites that Over-Ocean Operations provide a substantial noise benefit to the communities east of the Airport. During this time, PRUP adherence is affected because some operational limitations are placed on runway use to facilitate a safe contra-flow operation. This results in a generally higher proportion of departures from Runway 7L-25L during nighttime hours compared to other times of the day.

⁹ LAX Preferential Runway Use Policy Report, LAWA Environmental Services Division, April 2014

Runway Shift Conclusions

Shifting Runway 7L-25R may result in increased Runway 25L departures – an unintended consequence of the runway shift. Today, aircraft originating at facilities south of the South Airfield often depart from Runway 25R despite the fact that it is somewhat cumbersome. Shifting Runway 7L-25R would result in longer taxi distances and a more challenging queuing process for these aircraft to depart Runway 25R compared to the existing configuration (illustrated in *Figure 4-3*). The curved Taxiway F segment may be confusing to pilots and may increase the time to cross both runways. This cumbersome taxiing and queuing procedure would dissuade pilots and ATC from departing from Runway 25R.

FIGURE 4-3:
CHALLENGING ACCESS TO RUNWAY 25R

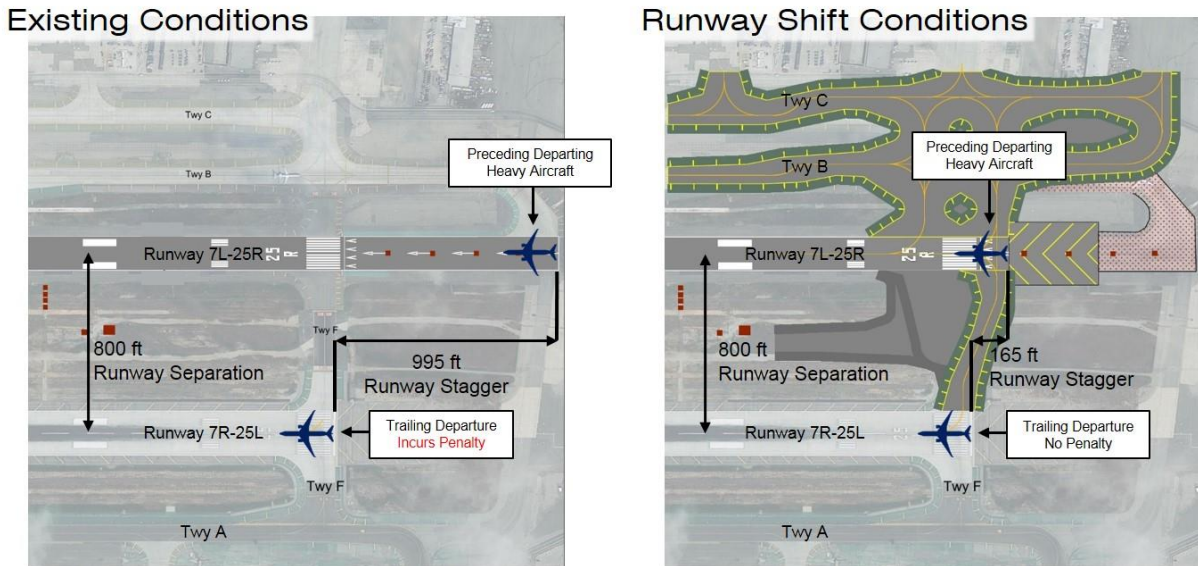


Source: RS&H, 2015

Additionally, operational incentives that currently encourage Runway 25R departures would no longer apply if Runway 7L-25R were shifted (illustrated in *Figure 4-4*). Today, aircraft that depart from Runway 25L encounter additional departure hold times after large aircraft depart Runway 25R. These FAA mandated hold times are in place because of the staggered runway configuration. This has a compounding effect and may result in departure delays, especially during periods of high departure demand at the Airport. Additional departure hold times do not apply for aircraft departing Runway 25R making it a more efficient option for departures. Therefore, pilots and ATC are more inclined to depart Runway 25R than accept potential departure delays by waiting to depart Runway 25L.

Shifting Runway 7L-25R eliminates the aforementioned staggered runway configuration. The additional departure hold times would no longer apply for Runway 25L potentially resulting in additional Runway 25L departures. Therefore, shifting Runway 7L-25R conflicts with the goal of minimizing Runway 25L departures.

**FIGURE 4-4:
 INCREASED DEPARTURE HOLD TIMES**



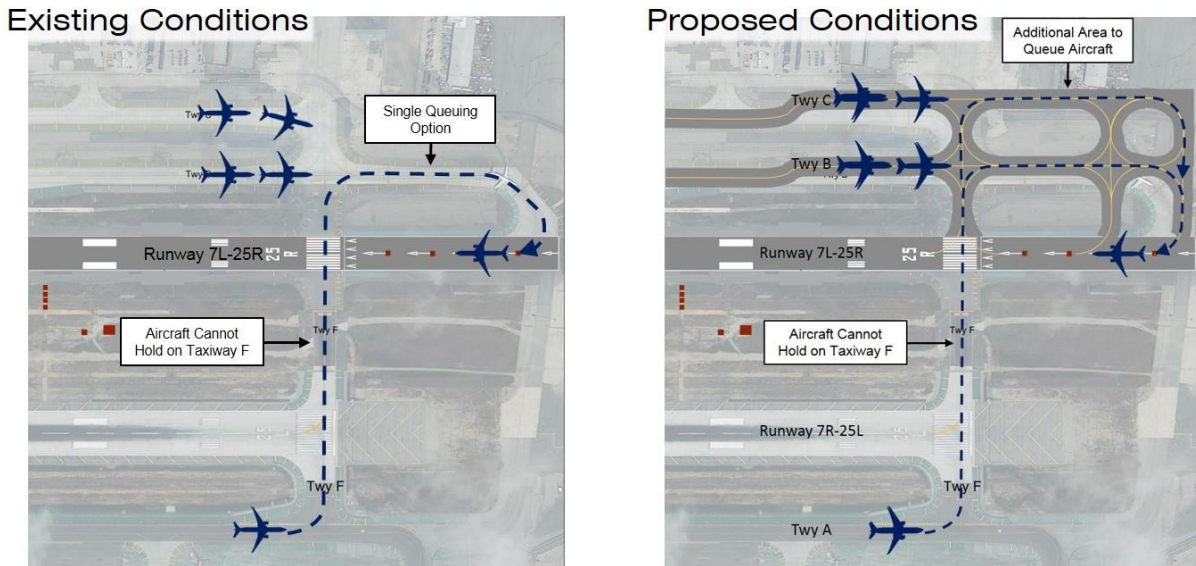
Source: RS&H, 2015

Taxiway C Extension Concept

Extending Taxiway C (illustrated in *Figure 4-5*) may further reduce Runway 25L departures by enhancing the flexibility for Runway 25R departures. The 2014 PRUP Report cites that the location of air cargo facilities and fixed-base operators contribute to the lower PRUP compliance for the South Airfield. Runway 7R-25L is proximate to the facilities south of the South Airfield making it an attractive option for departures.

Challenging access for departures to Runway 25R from Taxiway A discourages Runway 25R departures. Aircraft taxiing from the facilities south of the South Airfield must enter the departure queue on Taxiway B after crossing both runways. Aircraft generally cannot hold on Taxiway F between the runways because of insufficient lateral runway separation and the presence of protected areas (Precision Obstacle Free Zone and Instrument Landing System critical area). Therefore, space must be available within the departure queue on Taxiway B before an aircraft can cross the runways. ATC instructs aircraft on Taxiway A to cross when they are first, second, or third in line for departure. Aircraft cannot cross when they are fourth or later in line for departure because there is inadequate space to accommodate the aircraft in the departure queue on Taxiway B. This challenging procedure requires careful coordination with the departure queue and departing and arriving aircraft.

**FIGURE 4-5:
TAXIWAY C EXTENSION**



Source: RS&H, 2015

Extending Taxiway C would enhance access to Runway 25R from Taxiway A resulting in increased attractiveness of departing Runway 25R in lieu of Runway 25L. The Taxiway C extension would result in greater ATC flexibility for staging aircraft for Runway 25R departure. The additional staging area on Taxiway C may minimize the amount of time aircraft must idle on Taxiway A while waiting to cross the runways. The Taxiway C extension would provide bidirectional flow redundancy to the runway end and the B1 parking apron. The extension could be constructed to facilitate direction reversals between the parallel taxiways. Bidirectional flow would allow aircraft to remain in the departure queue without having to unnecessarily taxi down the runway if they are not ready for departure, which may result in air quality benefits. This project would result in an overall increased efficiency that supports the PRUP. The Taxiway C extension would enhance ATC's ability to bring aircraft from Taxiway A to depart Runway 25R. ATC expressed their support for the Taxiway C extension on numerous occasions noting that it would improve their ability to efficiently manage departures and would ease access to Runway 25R from Taxiway A. The improved Runway 25R departure queue efficiency may allow ATC to divert more departures from Runway 25L to Runway 25R. The following benefits are associated with the Taxiway C extension:

- » Larger queue area to stage for Runway 25R
- » Enhances ATC flexibility to cross aircraft from Taxiway A to queue for Runway 25R departure which may reduce aircraft idle time on Taxiway A
- » Potentially reduces Runway 25L departures
- » Bidirectional flow enhances access to the B1 aircraft parking apron even when aircraft are queued for departure
- » May reduce unnecessary taxiing to reenter departure queue which may benefit air quality

- » Supported by FAA ATC

General Aviation Concepts

General aviation PRUP adherence rates in the South Airfield were as low as 66 percent between 2010 and 2013, based on the 2014 PRUP Report. General aviation pilots typically are not as familiar with the airfield geometry and airport operations compared to passenger and air cargo pilots who regularly fly scheduled service to LAX. Therefore, FAA ATC often instructs general aviation pilots to depart Runway 25L because it is the closest runway to the general aviation facilities. The shorter taxi distance facilitates the safety and operational efficiency of the Airport.

Several concepts were prepared to increase the general aviation PRUP adherence rates and minimize Runway 7R-25L departures. Recommended concepts include update of the FAA Airport/Facility Directory noise mitigation remarks to include the PRUP instructions. The Airport/Facility Directory already includes information regarding early turns but does not currently include PRUP information. This update may encourage general aviation pilots to request Runway 7L-25R for departure more frequently.

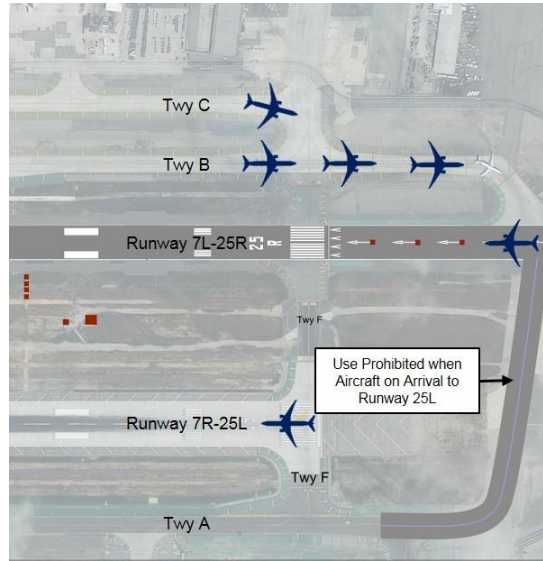
General aviation adherence may also be increased by actively engaging pilots. Distribution of PRUP materials in fixed-base operator flight planning rooms may increase pilot awareness. Distribution of airfield learning materials may also increase pilot familiarization with the Airport operations. These efforts may increase FAA ATC willingness to assign general aviation aircraft to Runway 7L-25R for departure.

Taxiway A Bypass Concept Not Feasible

A Taxiway A bypass was explored to assess the effectiveness on minimizing Runway 25R departures. It was determined that a Taxiway A bypass, as depicted in *Figure 4-6*, is not feasible because it does not meet FAA airfield design standards for an End-Around Taxiway.¹⁰ The centerline of an End-Around Taxiway must be a minimum of 1,500 feet from the stop end of the runway. There is insufficient space east the runway ends to construct a standard End-Around Taxiway. Additionally, use of the Taxiway A bypass aircraft would be prohibited when aircraft are on approach to Runway 25L. The analysis determined that the Taxiway A bypass may be used to taxi and queue aircraft from Taxiway B to depart Runway 25L. This is an unintended consequence, which conflicts with noise reduction efforts.

¹⁰ FAA Advisory Circular 150/5300-13A, Airport Design, Para. 415

**FIGURE 4-6:
TAXIWAY A BYPASS**



Source: RS&H, 2015.

EXHIBIT

15

LAX Terminal 9

NASIP Update

June 14, 2018

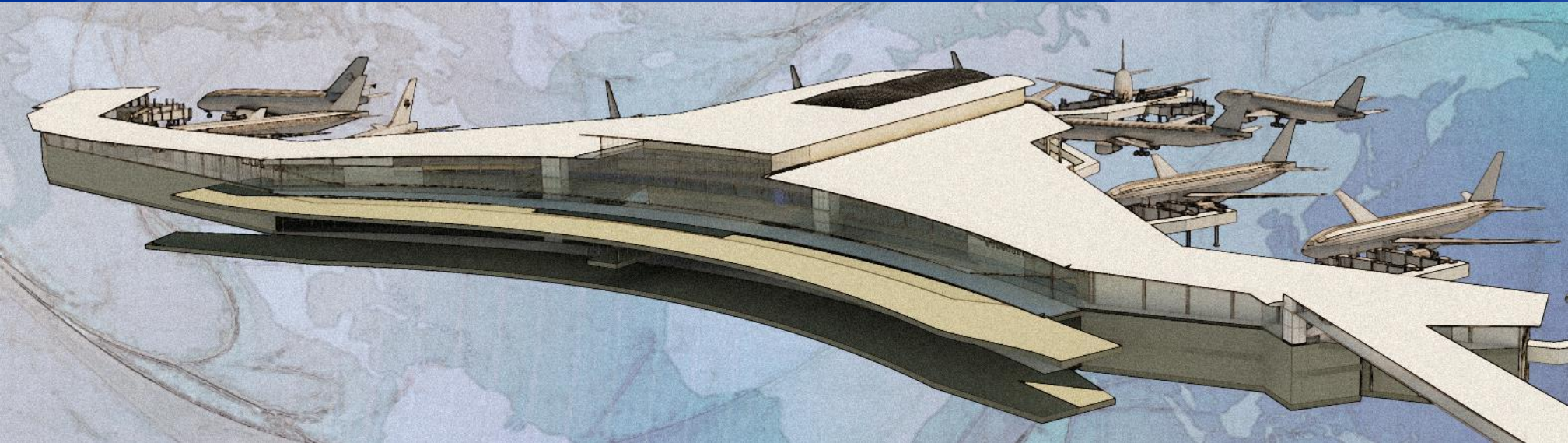
A STAR ALLIANCE MEMBER 

UNITED 

Agenda

- Current T9 Concept
- Program Schedule
- Airfield

Terminal Concept Plans



Developments since December

- Building shape adjusted to consolidate around central access
 - Better alignment of departures curb and ticketing
 - Central screening checkpoint and concessions
 - More holdroom space at highest density gate area
- Incorporated all United stakeholder feedback
- LAWA workshops to review Program Definition Book
 - Draft PDB issued to LAWA on May 7

Revised Concept





Terminal 9

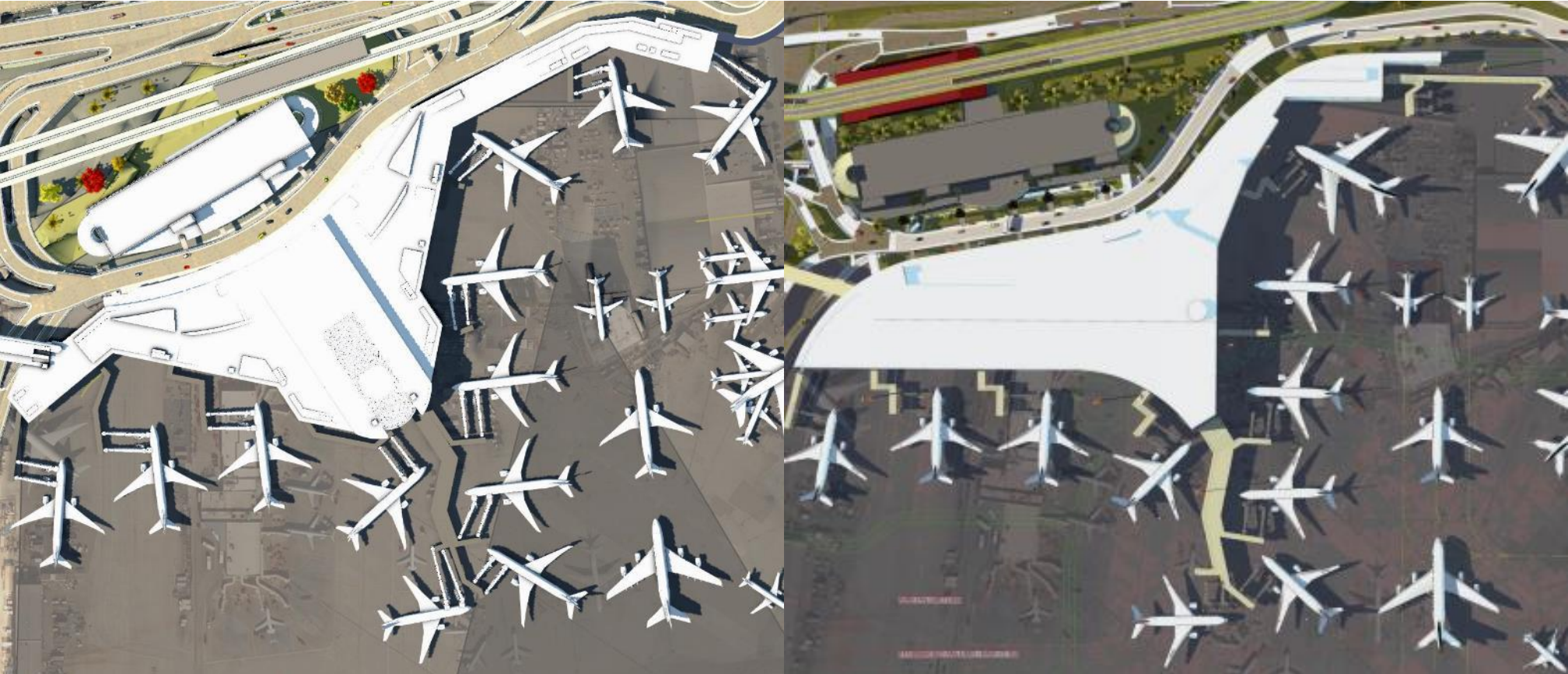
Parking

APM Station

CTA Roads

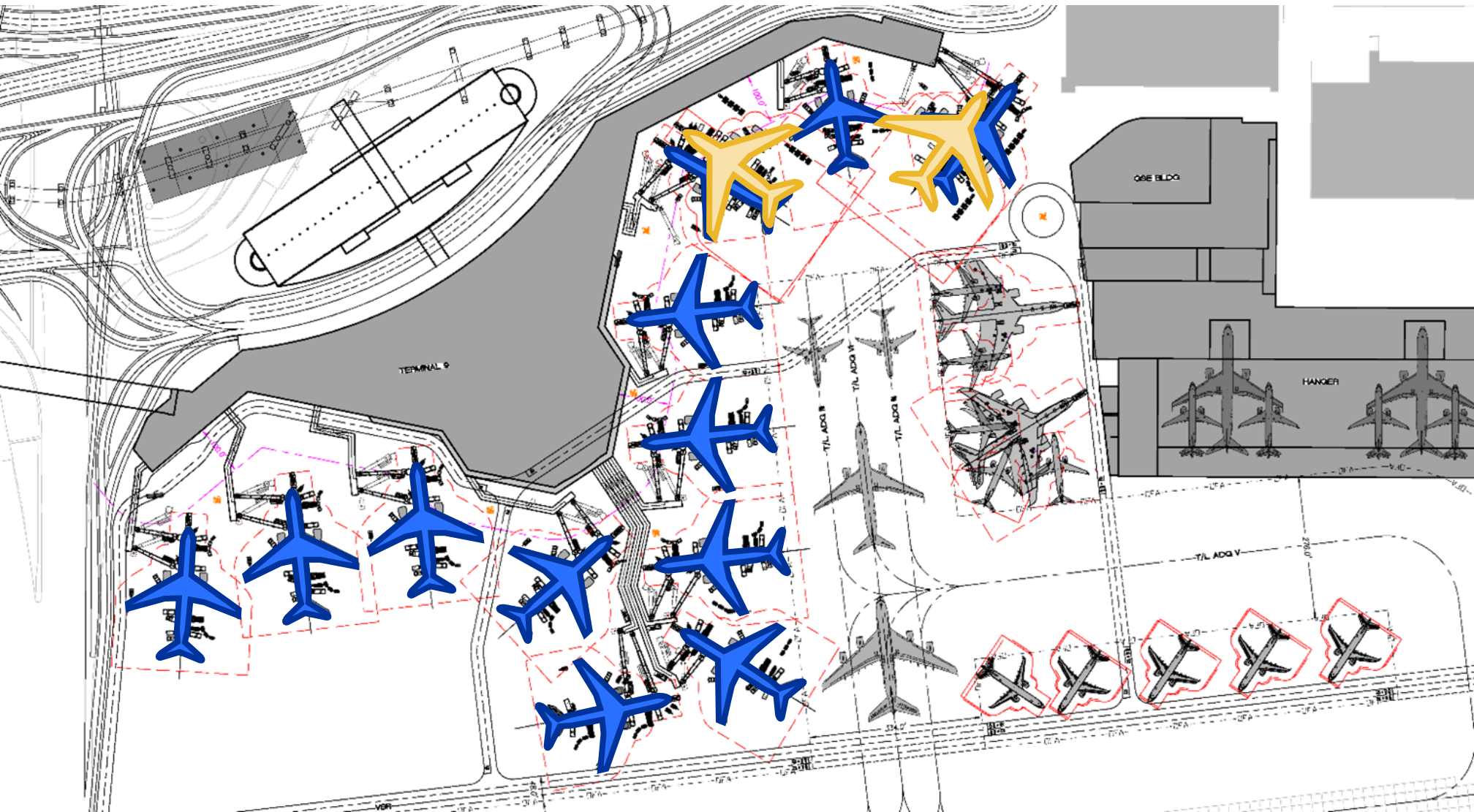
Revised Concept

Original Concept



Widebody Gates

9 ADG2/ADG3/ADG-VI



Five Level Terminal

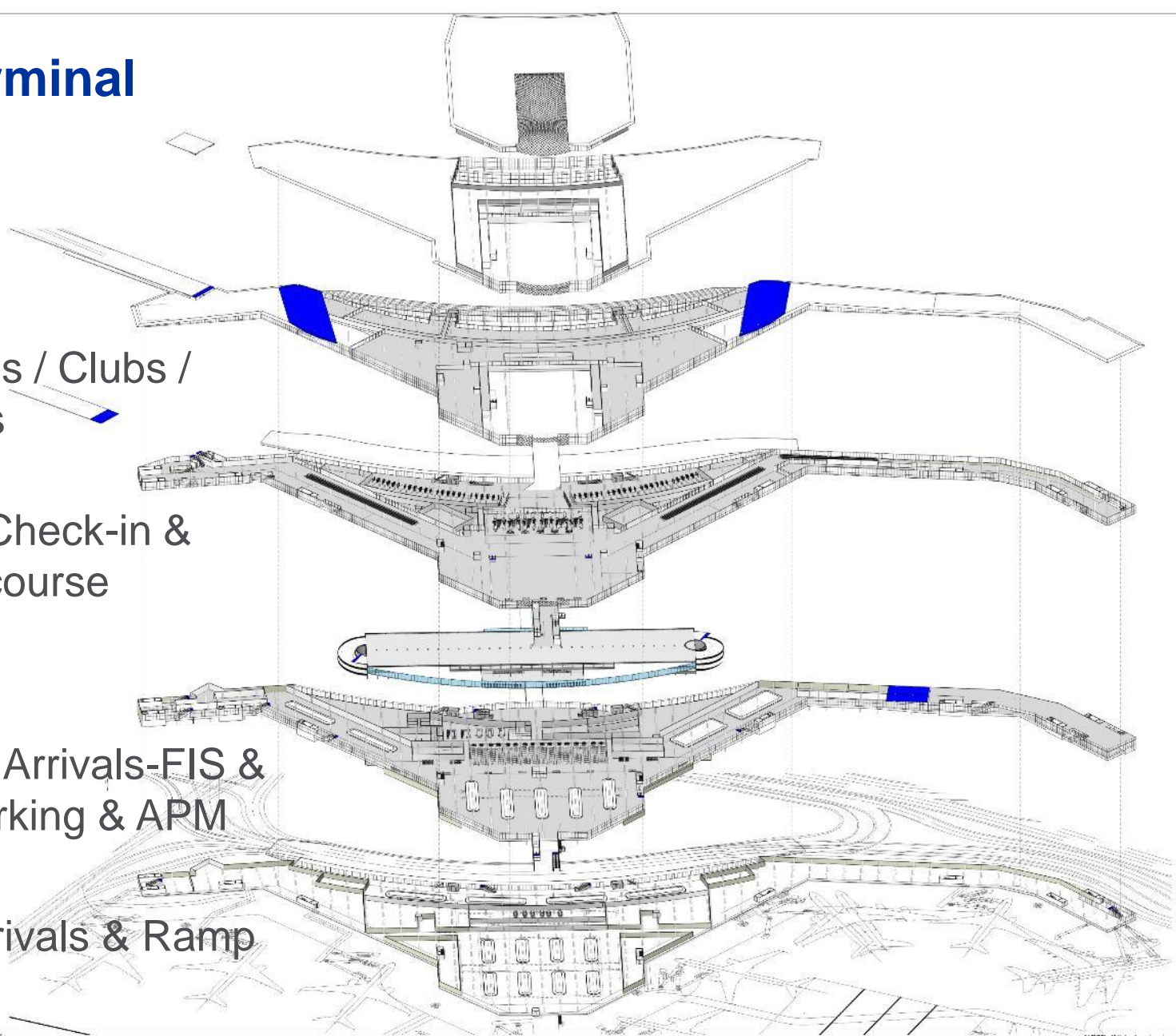
Level 5 MEP Rooms

Level 4 Airline Offices / Clubs /
Concessions

Level 3 Departures Check-in &
Airside Concourse

Level 2 International Arrivals-FIS &
Bridge to Parking & APM

Level 1 Domestic Arrivals & Ramp
Operations



Preliminary Building Floor Area Calculations

FUNCTION	Floor Area SF
Air Clubs & Lounges	57,680
Baggage Handling	122,540
Check-in Hall	33,720
Circulation	234,220
Concessions	77,390
FIS/Sterile Corridors	260,490
Gate Holdroom Lounges	75,940
MEP Rooms	66,790
Offices	88,280
Restrooms, Service, Storage	46,410
TSA Security Checkpoint	27,470
TSA CBIS/CBRA & Support	18,330
TOTAL	1,109,260

LEVEL	Floor Area SF
Level 1 Arrivals	232,020
Level 2 International Arrivals & FIS	330,210
Level 3 Departures & Concourse	319,700
Level 4 Airline Offices & Clubs, Concessions	190,230
Level 5 MEP Rooms	37,100
TOTAL	1,109,260

Terminal Issues to be Investigated



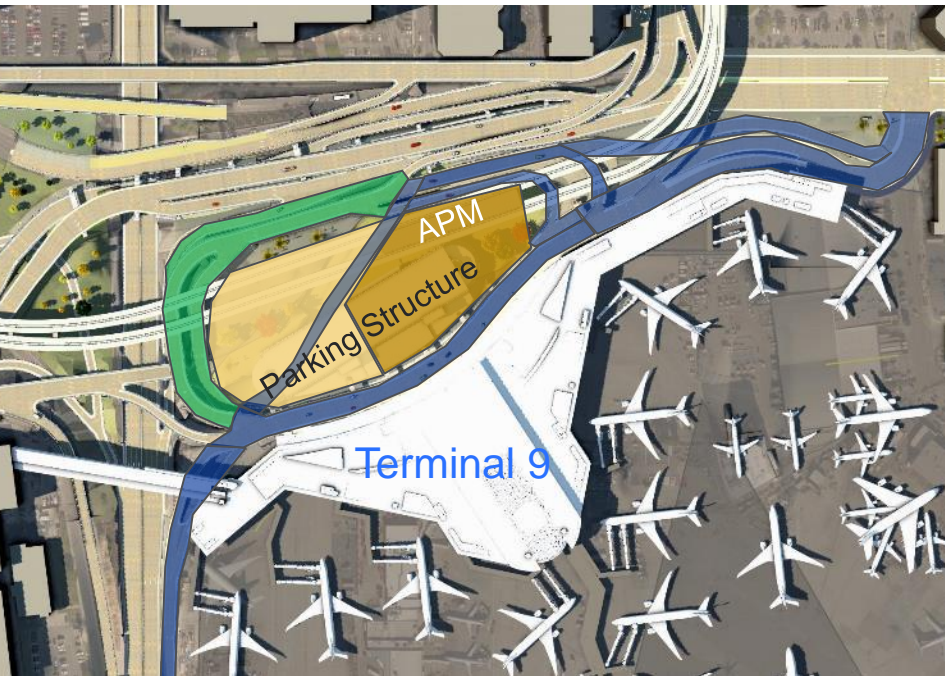
- Review stacking of the building for alternatives
 - FIS on top floor
- Passport first instead of bag first
- Bridge connection to APM – vertical transition in terminal or in station
- Terminal 7/8 vertical core connection to Terminal 9 bridge
- Overall passenger flow review

T9 Parking Garage

- Road phasing impacts garage
- Integration with APM Station allows for initial garage to be viable
- If stand alone, garage isn't viable until roads are complete

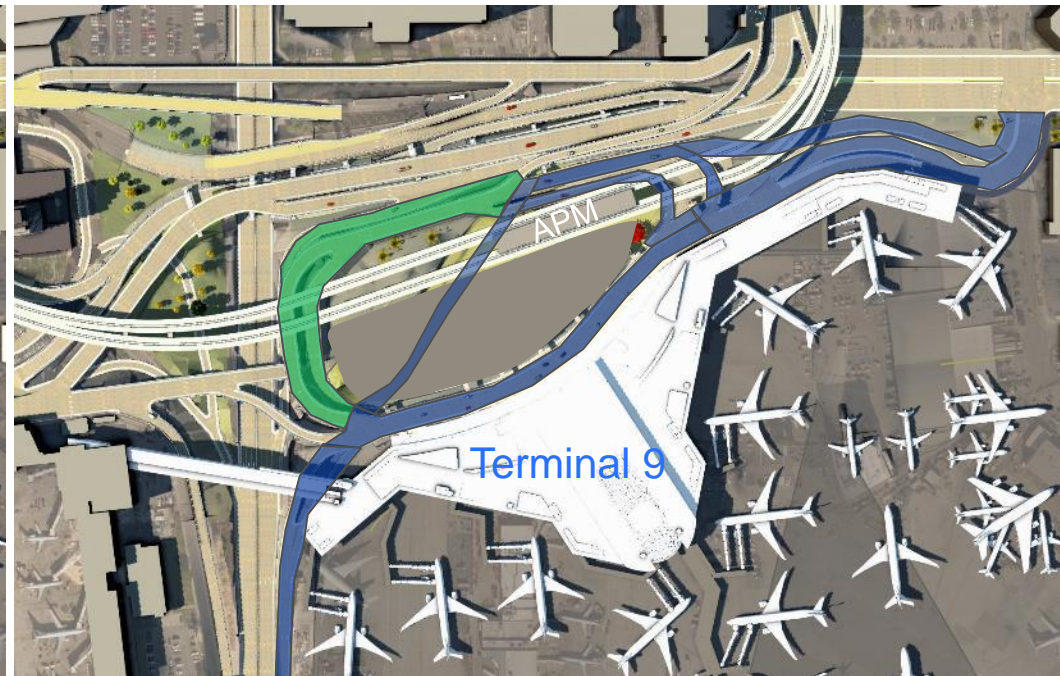
APM Phased Option

1500-2100 spaces

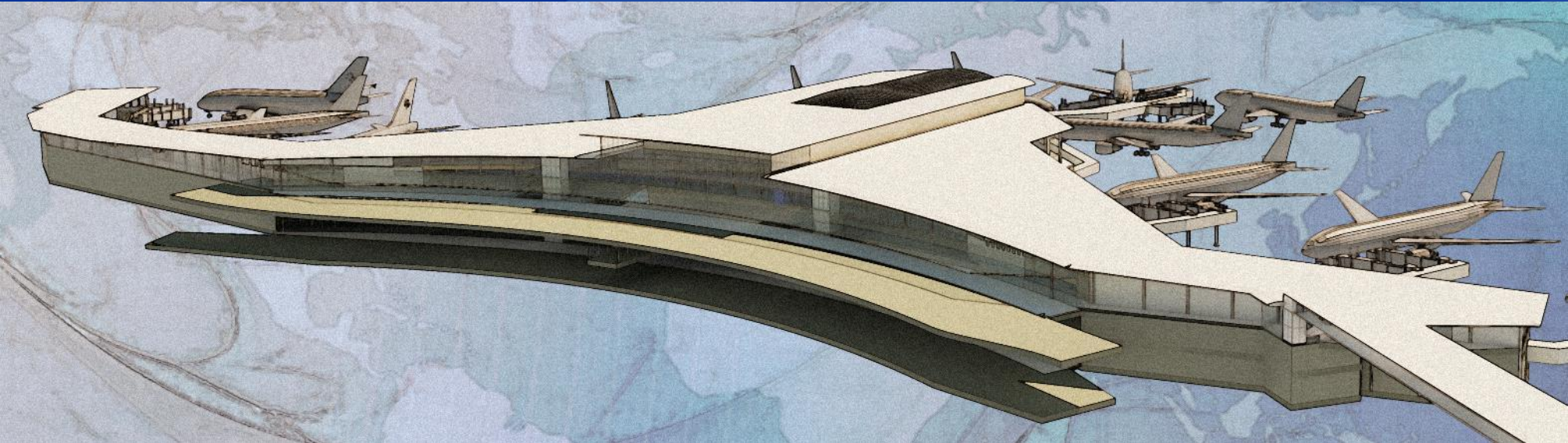


Stand Alone Option

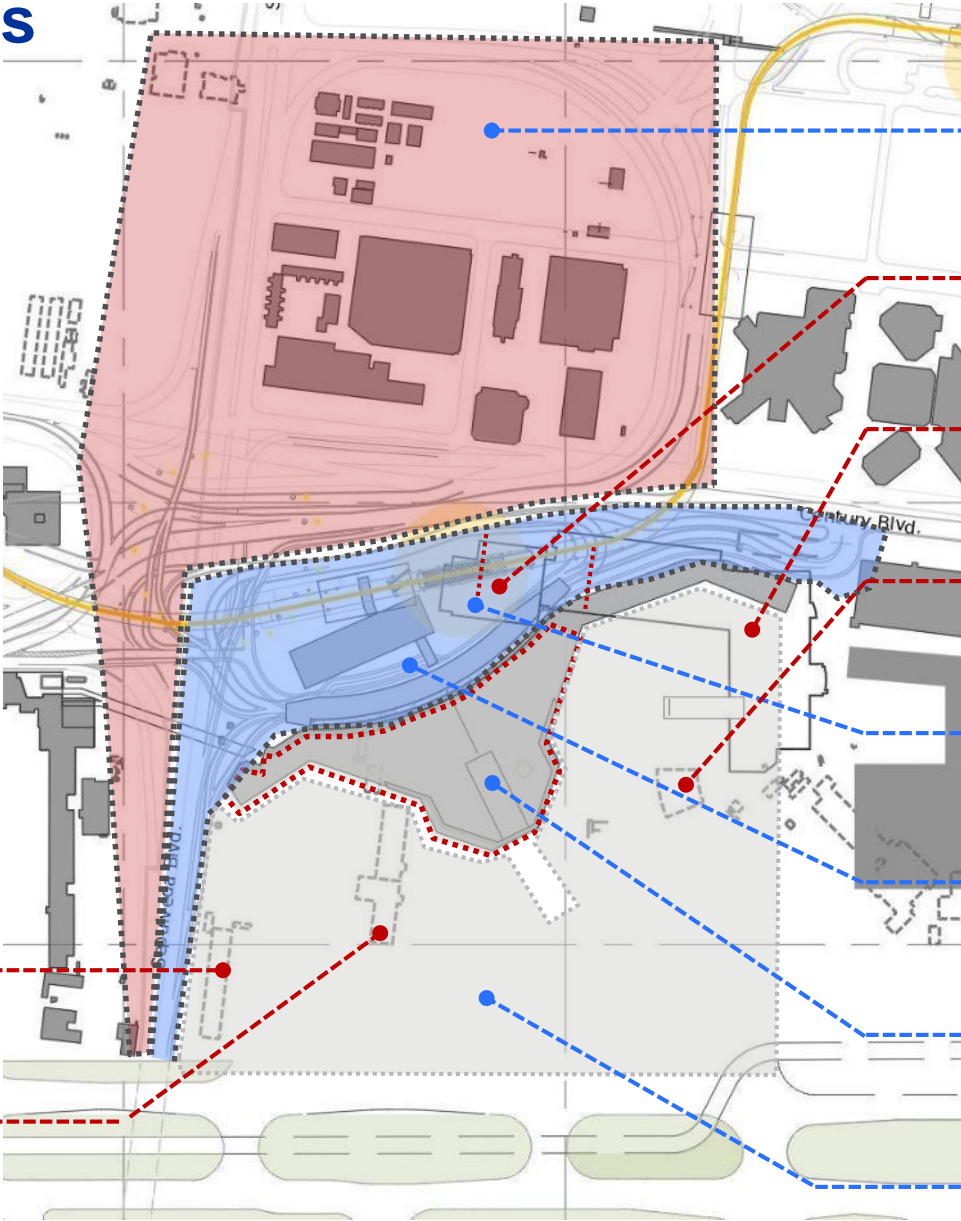
1000 spaces



Program Schedule



Key Milestones



Roads
LAMP/T9 Phased

Delta/Raytheon Demolished
July 2019

Mercury Cargo Demolished
Sep 2023

LAWA Records Demolished
Jan 2021

Garage Construction
July 2022 - Jan 2027

Roads Construction
Jan 2021 – Aug 2024

Terminal Construction
Jan 2021 – Aug 2024

Apron Construction
Sep 2021 – Apr 2024

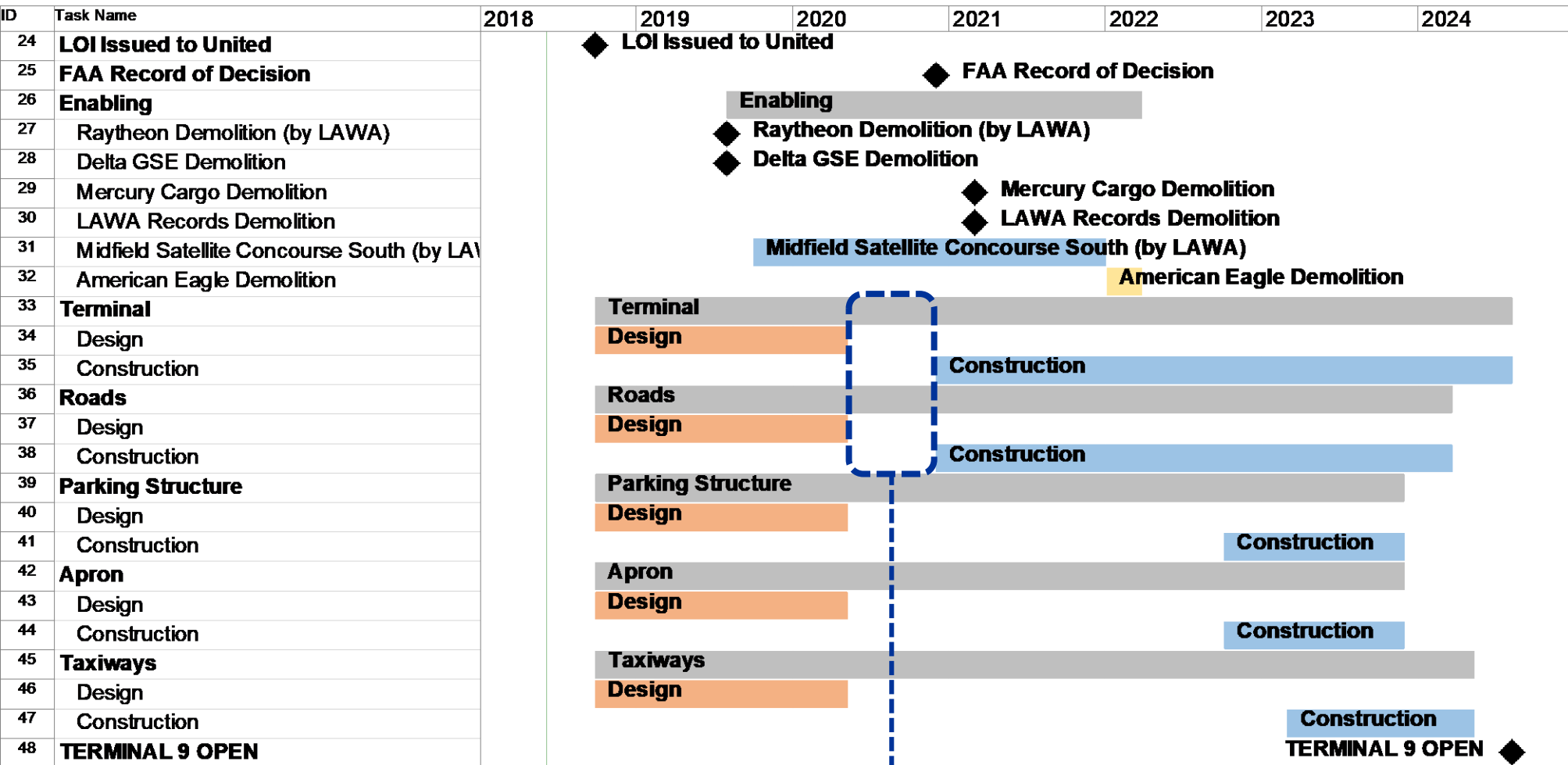
Delta GSE Demolished
July 2019

AA Eagle Demolished
July 2021

Management Schedule

ID	Task Name	Start	Finish	2019				2020
				Q2	Q3	Q4	Q1	Q2
1	PDB	5/7/18	9/14/18	PDB				
2	Draft PDB Issued to LAWA	5/7/18	5/7/18	◆ Draft PDB Issued to LAWA				
3	Terminal Refinement	5/7/18	7/27/18	Terminal Refinement				
4	Final Draft PDB Issued to LAWA	8/3/18	8/3/18	◆ Final Draft PDB Issued to LAWA				
5	LAWA Comments Due	8/24/18	8/24/18	◆ LAWA Comments Due				
6	LAWA Comment Resolution Session	8/31/18	8/31/18	◆ LAWA Comment Resolution Session				
7	Final PDB Production	9/3/18	9/14/18	Final PDB Production				
8	Final PDB Issued	9/14/18	9/14/18	◆ Final PDB Issued				
9	Letter of Intent	7/11/18	9/26/18	Letter of Intent				
10	Key Terms Discussions	7/11/18	8/7/18	Key Terms Discussions				
11	Draft Term Sheet	8/7/18	8/7/18	◆ Draft Term Sheet				
12	United Term Sheet Review	8/8/18	8/21/18	United Term Sheet Review				
13	Term Sheet Issue Resolution	8/22/18	8/28/18	Term Sheet Issue Resolution				
14	Final Term Sheet	8/28/18	8/28/18	◆ Final Term Sheet				
15	Board of Airport Commissioners Approval	9/20/18	9/20/18	◆ Board of Airport Commissioners Approval				
16	LOI Issued to United	9/26/18	9/26/18	◆ LOI Issued to United				
17	Lease	9/27/18	6/5/19	Lease				
18	First Draft	9/27/18	11/7/18	First Draft				
19	Additional Drafts and Reviews	11/8/18	3/13/19	Additional Drafts and Reviews				
20	Final Lease for Execution	3/13/19	3/13/19	◆ Final Lease for Execution				
21	Board of Airport Commissioners Approval	4/10/19	4/10/19	BOAC Approval ◆				
22	City Council Approval	5/22/19	5/22/19	◆ City Council Approval				
23	Lease Executed	6/5/19	6/5/19	◆ Lease Executed				

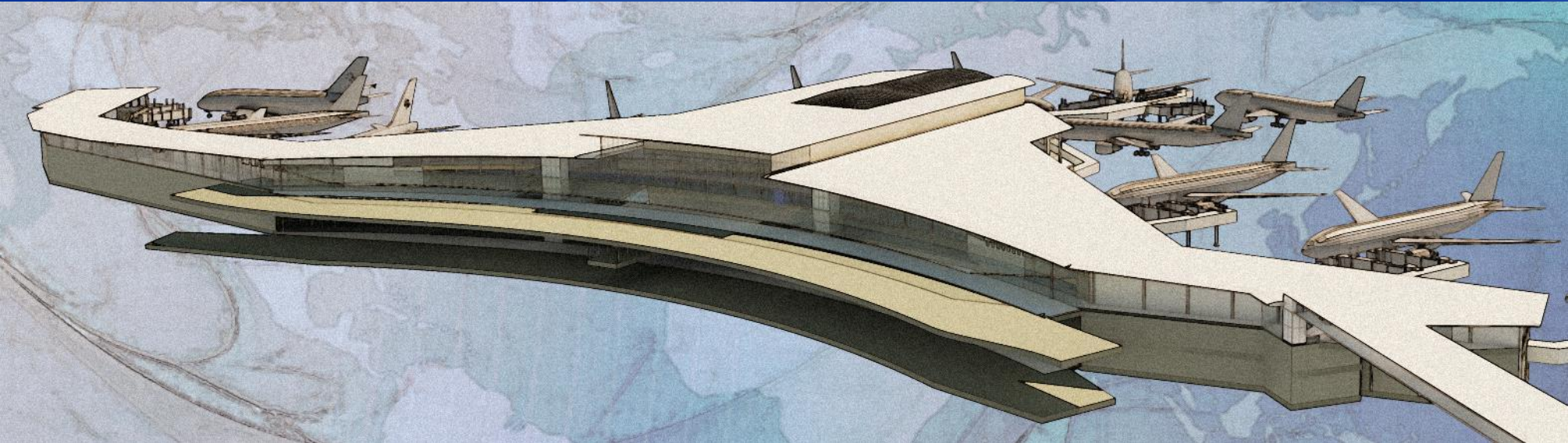
Design and Construction Schedule



Critical Schedule Issues

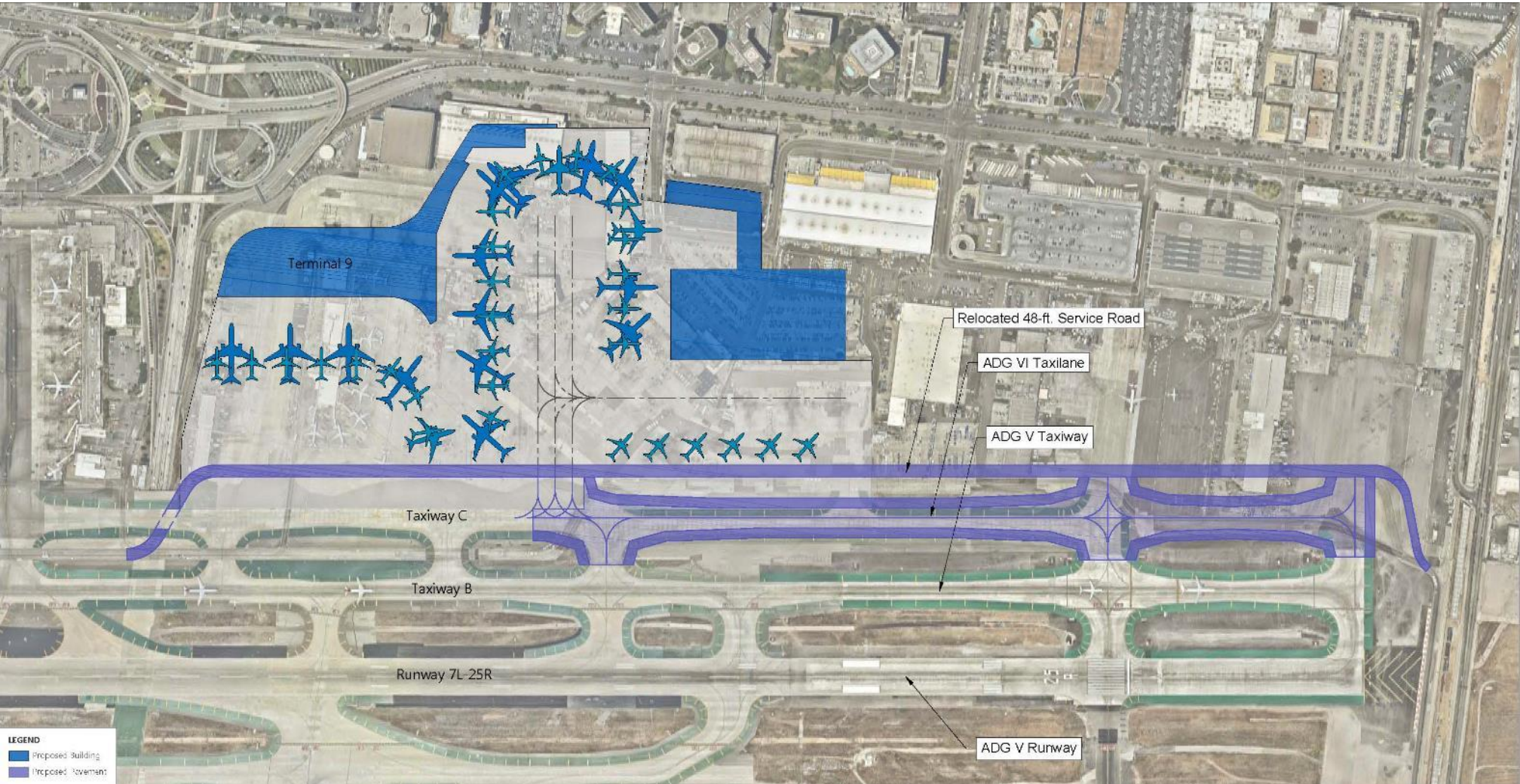
- Completion of Business Deal
- American Eagle Relocation
 - LAWA initiating design through an existing contract
 - Need to start construction on MSC-South before MSC-North completes
- Cargo Relocation
 - LAWA process will not meet the schedule
 - United can address half the requirement
 - LAWA recently indicated they have a solution for the other half

Airfield



Airfield Configuration 1C Allows A380 movement at T9

863' RW 7L/25R to VSR



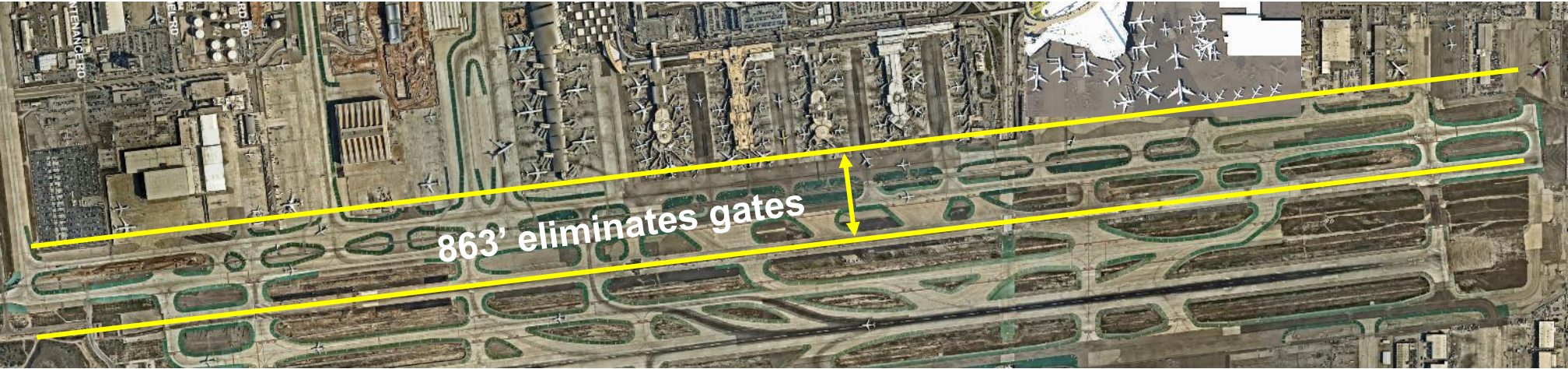
Separation from RW 7L-25 to be increased
Allows for A380 movements at T9

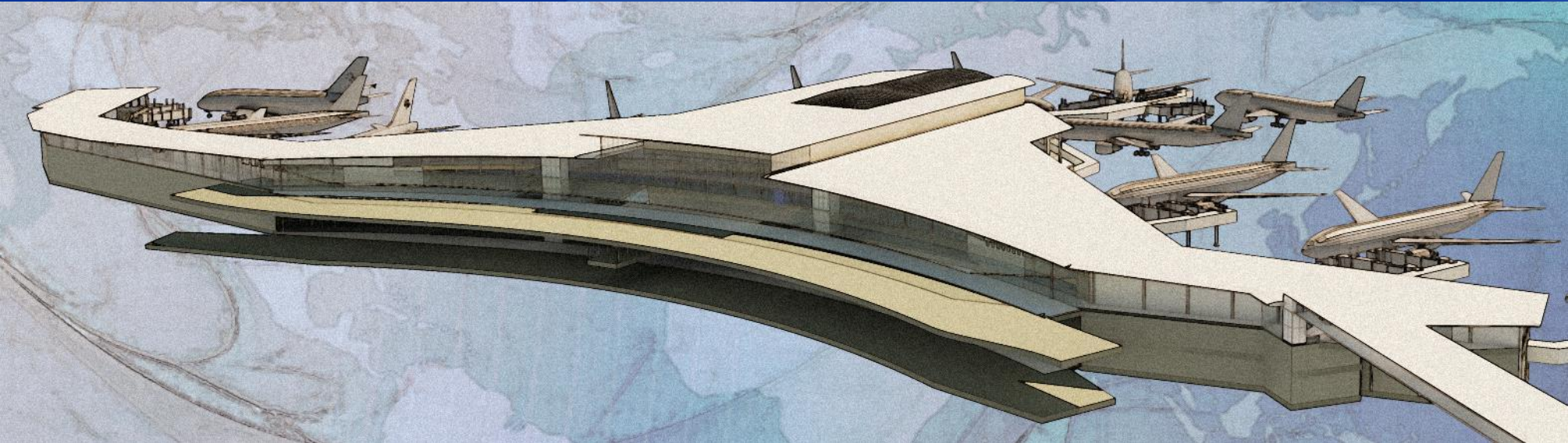
773' to 863'



863' meets FAA standards

Separation at 786' allows for A380 full length of B Increases RON potential





EXHIBIT

16



City of El Segundo

Office of the City Manager

October 18, 2018

[VIA U.S. MAIL AND E-MAIL]

Elected Officials:

Drew Boyles,
Mayor
Carol Firsirotu,
Mayor Pro Tem
Dr. Don Braun,
Council Member
Chris Pimentel,
Council Member
Scot Nicol,
Council Member
Tracy Weaver,
City Clerk
Crista Binder,
City Treasurer

Appointed Officials:

Greg Carpenter,
City Manager
Mark D. Hensley,
City Attorney

Department Directors:

Joseph Lillio,
Finance
Acting Human Resources
Chris Donovan,
Fire Chief
Charles Mallory,
Information Systems
Melissa McCollum,
Library Services
Sam Lee,
Planning and
Building Safety
Bill Whalen,
Police Chief
Ken Berkman,
Public Works
Meredith Pettit,
Recreation & Parks

www.elsegundo.org
www.elsegundobusiness.com
www.elsegundo100.org

Deborah Flint
Chief Executive Officer
1 World Way
Los Angeles, California 90045

Subject: El Segundo RSI Program

Dear Ms. Flint,

On July 17, 2018, the El Segundo City Council directed staff to terminate the City's Residential Sound Insulation (RSI) program and to work with Los Angeles World Airport (LAWA) on a process to transfer the RSI program to LAWA.

While the City has successfully insulated thousands of homes to reduce the noise impacts from LAX airport, there are still hundreds of eligible homes that have not been treated.

The City requests LAWA advise the City as to its plans to treat the remaining eligible homes. The City stands ready to assist to ensure a smooth transition. Please contact either myself at (310) 524-2301 or Director Sam Lee at (310) 524-2345 to discuss further.

Sincerely,

Greg Carpenter
City Manager

cc:

Mayor and Members of the City Council
Samantha Bricker, Deputy Executive Director
Sam Lee, Director of Planning and Building Safety

Lee, Sam

From: Lee, Sam
Sent: Friday, September 21, 2018 2:56 PM
To: 'OKUDA, KENDRICK'
Subject: El Segundo RSI program
Attachments: RSI press release 2018.pdf

Kendrick,

Attached is a press release describing termination of El Segundo's RSI program back in July 2018. There are few follow up items we'd like to discuss with you. Please provide available time/dates when you're available to meet in the next few weeks.

Thank you,

Sam Lee
Director of Planning and Building Safety
City of El Segundo
310-524-2345

FOR IMMEDIATE RELEASE

City of El Segundo Moves to End City-run Residential Sound Insulation Program

City looks forward to working with Los Angeles World Airports on a smooth transition to serve eligible El Segundo homeowners

EL SEGUNDO, California – July 19, 2018 -- The City of El Segundo today announced that the City Council has directed the city manager to work with Los Angeles World Airports (LAWA) on a process to transfer its Residential Sound Insulation (RSI) Program to LAWA so that those homeowners eligible under the current rules may have their homes sound insulated against noise from LAX. The airport, one of the world's busiest, is located immediately north of El Segundo's city limits, with the closest runway mere hundreds of feet from El Segundo residents.

"While the city has successfully insulated thousands of homes to reduce the impacts of LAX noise, changes in the way that the Federal Aviation Administrator is regulating the sound insulation program means that it is not a good use of city resources to continue the program," said Drew Boyles, the mayor of the city of El Segundo. "With today's announcement, we look forward to working with Los Angeles World Airports on transitioning the program to them so that eligible homeowners can have their homes better insulated against noise from LAX."

Since the inception of the Program in the mid-1980s, the City has sound insulated around two thousand homes. The funds for RSI come from the FAA and LAWA. The funds provide for basic upgrades to doors, windows and similar improvements.

When the Program started, El Segundo was able to implement a program that used these FAA and LAWA monies but allowed homeowners to pay, with their own funds, for upgrades (for example, more attractive doors and windows) to what the basic RSI program would pay for. El Segundo managed this process.

However, in recent years, FAA has decided that such owner upgrades were not permissible under federal regulations. Further, the FAA has required burdensome changes to El Segundo's contracting requirements before the City could continue the program. In addition, a recent rule provided that in order to be eligible, a home needs to be within a high-noise area and also that testing of the inside noise levels demonstrate that noise levels are high enough that the insulating will improve those levels.

Given these rules changes and others, the City Council determined that the City's management of the RSI Program did not provide good value for the resources expended and that LAWA, with its greater resources, would be better positioned to implement the new more basic RSI Program.

LAWA has insulated thousands of homes north of LAX, and transitioning the El Segundo program to LAWA will provide El Segundo residents access to these improvements as quickly as possible.

EXHIBIT

17



City of El Segundo

Office of the City Manager

November 14, 2018

[VIA U.S. MAIL AND E-MAIL]

Elected Officials:

Drew Bayles,
Mayor
Carol Pirstuk,
Mayor Pro Tem
Dr. Don Brann,
Council Member
Chris Pimentel,
Council Member
Scot Nicol,
Council Member
Tracy Weaver,
City Clerk
Crista Binder,
City Treasurer

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Mark D. Hensley,
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Chris Donovan,
Fire Chief
Charles Mallory,
Information Systems
Melissa McCollum,
Library Services
Sam Lee,
Planning and
Building Safety
Bill Whalen,
Police Chief
Ken Berkman,
Public Works
Meredith Pettit,
Recreation & Parks

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www.elsegundobusiness.com
www.elsegundo100.org

Dave Cushing
Manager
Federal Aviation Administration
Western-Pacific Region Airports Division
777 S Aviation Blvd, Ste 150
El Segundo, California 90245

Subject: El Segundo RSI Program

Dear Mr. Cushing,

On July 17, 2018, the El Segundo City Council directed staff to terminate the City's Residential Sound Insulation (RSI) program and to work with Los Angeles World Airport (LAWA) on a process to transfer the RSI program to LAWA.

While the City has successfully insulated thousands of homes to reduce the noise impacts from LAX airport, there are still hundreds of eligible homes that have not been treated.

Please contact either me at (310) 524-2301 or Director Sam Lee at (310) 524-2345 to discuss further.

Sincerely,

Greg Carpenter
City Manager

cc:

Mayor and Members of the City Council
Al Richardson, Assistant Manager
Mark Hensley, City Attorney
Sam Lee, Director of Planning and Building Safety

Lee, Sam

From: Lee, Sam
Sent: Friday, September 21, 2018 2:54 PM
To: 'dave.cushing@faa.gov'
Subject: El Segundo RSI program
Attachments: RSI press release 2018.pdf

Dave,

Attached is a press release describing termination of El Segundo's RSI program back in July 2018. There are few follow up items we'd like to discuss with you. Please provide available time/dates when you're available to meet. In the next few weeks.

Thank you,

Sam Lee
Director of Planning and Building Safety
City of El Segundo
310-524-2345

FOR IMMEDIATE RELEASE

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EXHIBIT

18



City of El Segundo

Office of the City Manager

September 18, 2020

Via E-Mail and U.S. Mail

Samantha Bricker
Chief Environmental and Sustainability Officer
Los Angeles World Airports
1 World Way
Los Angeles CA 90045
E-Mail: sbricker@lawa.org

RE: LAWA Compliance with 2020 Stipulated Variance for LAX

Dear Ms. Bricker:

On behalf of the City of El Segundo, I am writing to following up on efforts underway at Los Angeles World Airports ("LAWA") to comply with the 2020 Variance granted by CALTRANS to LAX. I have enclosed a copy for your ease of reference.

As noted in paragraph 2 of the Variance, LAWA is required to continue to implement its Aircraft Noise Mitigation Program ("ANMP"). The Variance also makes clear that in light of the City of El Segundo's decision to end its operation of a Residential Sound Insulation ("RSI") Program within its municipal boundaries, LAWA is responsible for implementing the ANMP for eligible El Segundo residences. LAWA's current ANMP contemplates and relies on RSI for eligible El Segundo residences. RSI is also an integral part of LAWA's Master Plan Mitigation Monitoring and Reporting Plan ("MMRP").

At your earliest convenience, please provide me with an update regarding the steps LAWA is taking to start its own RSI Program in El Segundo. The City of El Segundo is eager to cooperate and share information with LAWA as part of that effort. Specifically, we would like to understand what LAWA has already done as well as anticipated next steps, funding levels, and timeline/milestones. It is important that LAWA start this RSI Program in El Segundo promptly in order to demonstrate best efforts and meet the requirements of the Variance.

Additionally, I note that the Variance requires LAWA to timely provide specific information to the public in Quarterly Noise Reports. The last Quarterly Noise Report released by LAWA for LAX covered the third quarter of 2019. We are now nine months into 2020 and have yet to see a report for the last quarter of 2019 or any quarters of 2020. In other words, LAWA is not meeting the deadline of "45 days after the end of the calendar quarter" set by the Variance. Please let me know when we can expect this past-due information.

Elected Officials

*Drew Boyles,
Mayor*

*Chris Pimentel,
Mayor Pro Tem*

*Carol Pirsztuk,
Councilmember*

*Scot Nicol,
Councilmember*

*Lance Giroux,
Councilmember*

*Tracy Weaver,
City Clerk*

*Matthew Robinson,
City Treasurer*

Appointed Officials

*Scott Mitnick,
City Manager*

*Mark D. Hensley,
City Attorney*

Department Directors

*Barbara Voss,
Deputy City Manager*

*Melissa McCollum,
Community Services*

*Joseph Lillio,
Finance*

*Chris Donovan,
Fire Chief*

*Donna Peter,
Human Resources (Interim)*

*Charles Mallory,
Information Technology Services*

*Sam Lee,
Development Services*

*Bill Whalen,
Police Chief*

*Elias Sassoon,
Public Works*

Ms. Samantha Bricker
2020 Stipulated Variance for LAX
September 18, 2020
Page Two

El Segundo is always interested in reviewing LAWA's Quarterly Noise Reports and will be particularly interested in seeing the runway usage and other data described in paragraph 9 of the Variance. We note that LAWA's powerful new noise portal (<https://noiseportal.lawa.org/lax>) contains much of this information, which we assume will make it easier for LAWA to produce its Quarterly Noise Reports in a timely manner and include all the information required by the Variance.

Sincerely,



Scott Mitnick
City Manager
City of El Segundo

c: City Council

Enclosure: 2020 Variance granted by CALTRANS to LAX

EXHIBIT

19



October 1, 2020

VIA EMAIL & U.S. MAIL

Scott Mitnick
City Manager
City of El Segundo
350 Main Street
El Segundo, CA 90245

LAX
Van Nuys
City of Los Angeles

Re: LAX Noise Variance

Dear Mr. Mitnick:

Eric Garcetti
Mayor
Board of Airport
Commissioners

I have received your letter, dated September 18, 2020, in which you enclosed the Grant of Variance signed by Caltrans (“LAX Variance”). We are aware, and mindful, of LAWA’s obligations under the LAX Variance and are proceeding accordingly to comply with it.

Sean O. Burton
President

Valeria C. Velasco
Vice President

You have requested that we provide you with an update regarding the steps LAWA is taking to start the RSI Program in the City of El Segundo (“El Segundo”), as well as anticipated next steps, funding levels and timeline/milestones. While LAWA continues to move forward, due to the financial impacts of COVID 19, we are still assessing and formulating a financial program and next steps to comply with the LAX Variance. As we mentioned to you in previous discussions, we need to obtain the services of a Project Management/Construction Management firm to setup and then implement an RSI Program. LAWA needs to conduct a competitive process, and is therefore currently following the procedure for such process in order to select this firm. Please note that, other than the time period for completion of the RSI Program that is specifically stated in the LAX Variance, such variance does not require a specific timeline/milestones for the RSI Program. As agreed upon, LAWA will use its best efforts as provided under the LAX Variance.

Gabriel L. Eshaghian
Beatrice C. Hsu
Nicholas P. Roxborough
Dr. Cynthia A. Telles
Karim Webb

Justin Erbacci
Chief Executive Officer

With regard to the Quarterly Noise Reports, LAWA is in the process of preparing the reports. Unfortunately, staffing vacancies at the beginning of the year and the effects of the COVID-19 pandemic have resulted in a delay in submitting the Quarterly Noise Reports. LAWA is working to finalize these reports for submittal as soon as possible.

Sincerely,

Samantha Bricker

Samantha Bricker
Chief Sustainability and Revenue Management Officer
Los Angeles World Airports

cc: Kathryn Pantoja



EXHIBIT

20



City of El Segundo

Office of the City Manager

February 5, 2021

Via E-Mail and U.S. Mail

Samantha Bricker
Chief Environmental and Sustainability Officer
Los Angeles World Airports
1 World Way
Los Angeles CA 90045
E-Mail: SBRICKER@lawa.org

RE: LAWA Compliance with 2020 Stipulated Variance for LAX

Dear Ms. Bricker:

On behalf of the City of El Segundo, I am writing again to following up on efforts underway at Los Angeles World Airports ("LAWA") to comply with the 2020 Variance granted by CALTRANS for LAX. I have enclosed our prior correspondence about this issue for your ease of reference.

In my September 18, 2020 letter (enclosed), I asked you to provide me with an update regarding the steps LAWA is taking to restart the Residential Sound Insulation ("RSI") Program in El Segundo. In your October 1, 2020 response, you noted: "While LAWA continues to move forward, due to the financial impacts of COVID 19, we are still assessing and formulating a financial program and next steps to comply with the LAX Variance. As we mentioned to you in previous discussions, we need to obtain the services of a Project Management/Construction Management firm to setup and then implement an RSI Program. LAWA needs to conduct a competitive process, and is therefore currently following the procedure for such process in order to select this firm."

As we have discussed numerous times, the City of El Segundo is eager to see LAWA restart RSI in El Segundo as soon as possible. As such, please update me on all progress LAWA has made since your October 1, 2020 letter. I noticed that LAWA staff gave an RSI update to the LAWA Board of Airport Commissioners ("BOAC") Audit Committee at its special meeting on January 27, 2021, but I was disappointed that update did not include any new information about LAWA's work to restart RSI in El Segundo.

Additionally, as you know, the Variance requires LAWA to timely provide specific information to the public in Quarterly Noise Reports. The last Quarterly Noise Report released by LAWA for LAX covered the fourth quarter of 2019. We are now well into 2021 and have yet to see any reports from 2020. In other words, LAWA continues not to meet the deadline of "45 days after the end of the calendar quarter" set by the Variance. You have previously indicated that this past-due information will be released, but it is not yet available. I have asked El Segundo's attorneys to advise Caltrans of this delay.

Sincerely,

Scott Mitnick
City Manager

Enclosures:

1. September 18, 2020 letter to Samantha Bricker
2. October 1, 2020 letter from Samantha Bricker

1332777.1

Elected Officials

Drew Boyles,
Mayor

Chris Pimentel,
Mayor Pro Tem

Carol Pirsztuk,
Councilmember

Scot Nicol,
Councilmember

Lance Giroux,
Councilmember

Tracy Weaver,
City Clerk

Matthew Robinson,
City Treasurer

Appointed Officials

Scott Mitnick,
City Manager

Mark D. Hensley,
City Attorney

Department Directors

Barbara Voss,
Deputy City Manager

Joseph Lillio,
Chief Financial Officer

Melissa McCollum,
Community Services Director

Sam Lee,
Development Services Director

Chris Donovan,
Fire Chief

Donna Peter,
Human Resources Director
(Interim)

Charles Mallory,
IT Director

Bill Whalen,
Police Chief

Elias Sassoon,
Public Works Director

EXHIBIT

21

FILED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Date: 8/20/20

BEFORE THE DEPARTMENT OF TRANSPORTATION
OF THE STATE OF CALIFORNIA

By Christina M. Saeed
Administrative Hearings Clerk

In the Matter of the Noise Variance
Application of:

CITY OF LOS ANGELES,
DEPARTMENT OF AIRPORTS
FOR LOS ANGELES INTERNATIONAL
AIRPORT (LAX)

Applicant

GRANT OF VARIANCE

With respect to the above entitled matter, the State of California, Department of Transportation, Division of Aeronautics (hereinafter the "Department") makes the following findings of fact and determinations of the issues and renders its decision as follows:

The City of Los Angeles, Department of Airports, known as Los Angeles World Airports (hereinafter "LAWA"), requested from the Department a variance for Los Angeles International Airport (hereinafter "LAX") from the Noise Standards contained in California Code of Regulations (hereinafter "CCR"), Title 21, subchapter 6. The State of California, under statute, has airport noise standards that govern the operation of airports operating under a valid permit issued by the Department. (Public Utilities Code section 21669.) The noise standards are contained in the CCR, Title 21, section 5000, et seq. The stated purpose of the noise standards is "to accomplish resolution of existing noise problems in communities surrounding airports and to prevent the development of new noise problems." (Section 5010.)

Section 5012 of the noise standards states the following:

The standard for the acceptable level of aircraft noise for persons living in the vicinity of airports is hereby established to be a community noise equivalent level of 65 decibels. The standard forms the basis for the

1 following limitation. No airport proprietor of a noise problem airport shall
2 operate an airport with a noise impact area based on the standard of 65 dB
3 CNEL unless the operator has applied for or received a variance as
prescribed in Article 5 of this subchapter.

4 The Department finds that granting a variance to LAX is justified and appropriate according to
5 the conditions and factors in sections 5053 and 5057. The Department further finds that it is not
6 technologically or economically feasible during the period of the next variance to reduce LAX's noise
7 impact area to zero. The Department further finds that LAX is extremely valuable to the Los Angeles
8 region.

9 The City of El Segundo, the County of Los Angeles, the City of Inglewood and LAWA have
10 been engaged in good faith negotiations to reach an agreement for a Stipulated Variance regarding
11 LAWA's request to the Department for a variance for LAX. The terms and conditions contained in the
12 Stipulated Variance are reasonable and will advance the purposes of the CCR, Title 21, subchapter 6.

13 ORDER

14 State of California, Department of Transportation, Division of Aeronautics hereby grants the
15 application of the City of Los Angeles, Department of Airports, known as Los Angeles World Airports
16 for a variance from the requirements of the California Code of Regulations, Title 21, Subchapter 6,
17 section 5012, subject to the terms and conditions contained in the Stipulated Variance as follows:

BEFORE THE DEPARTMENT OF TRANSPORTATION
OF THE STATE OF CALIFORNIA

Regarding Variance Application of:

CITY OF LOS ANGELES,
DEPARTMENT OF AIRPORTS
FOR LOS ANGELES INTERNATIONAL AIRPORT (LAX)

STIPULATED VARIANCE REGARDING LAX

WHEREAS,

1. On January 10, 2014, the City of Los Angeles Department of Airports, also known as Los Angeles World Airports ("LAWA"), requested from the California Department of Transportation ("Caltrans") a variance for Los Angeles International Airport ("LAX" or "Airport") from the Noise Standards contained in California Code of Regulations ("CCR"), Title 21, subchapter 6.
2. LAX currently operates under an Order regarding a stipulated variance, issued and made effective February 13, 2011.
3. The City of El Segundo and LAWA have been engaged in good faith negotiations to reach an agreement for a Stipulated Variance regarding LAWA's request to Caltrans for a variance for LAX ("Stipulated Variance").
4. The County of Los Angeles and the City of Inglewood have no objections to the Stipulated Variance.
5. The terms and conditions contained in this stipulation for a variance are reasonable and will advance the purposes of subchapter 6 of Title 21 of the California Code of Regulations.

NOW, THEREFORE, it is stipulated that Caltrans should grant the application of the City of Los Angeles Department of Airports for a variance for LAX, subject to the following terms and conditions:

1. This Stipulated Variance shall be for a period of three years from the effective date of the Order by Caltrans.

2. LAX shall continue to implement its Aircraft Noise Mitigation Program (ANMP).¹ LAX, with the assistance of the affected jurisdictions (the County of Los Angeles, City of Inglewood and City of El Segundo), shall update the entire ANMP from time to time to ensure that it reasonably represents the mitigation and funding programs that are in place, being implemented, or proposed for future implementation. The ANMP, which is governed by FAA Part 150 and LAWA's Supplemental Funding Policy (Board Resolution 21481), as may be amended from time to time, shall be designed to ultimately fund the mitigation of all incompatible land uses within the noise impact boundary as defined in the State Noise Standards. LAX shall use its best efforts to complete the acoustic treatment portion of the total ANMP for all affected jurisdictions within nine years from the effective date of the Order by Caltrans, although local programs operated by the County of Los Angeles and City of Inglewood may progress more or less quickly, based on the capabilities of those jurisdictions. In light of the City of El Segundo's decision to end its operation of the Residential Sound Insulation Program within its municipal boundaries, during the term of this Stipulated Variance, LAX shall be responsible for implementing the ANMP for eligible El Segundo residences. LAX shall use its best efforts to continue to streamline its supplemental funding program application processes in order to accelerate the disbursement of funds to local jurisdictions participating in the program.
3. LAX, with the assistance of the County of Los Angeles and the City of Inglewood, shall prepare an annual update of the numbers and tabular information within the ANMP that show the total annual funding available for noise mitigation within each affected jurisdiction and the annual performance of each jurisdiction in its efforts to achieve the mitigation of incompatible land uses. However, nothing in this Stipulated Variance obligates LAX to implement a specific type of noise mitigation as it relates to the City of El Segundo. LAX continues to have the options accorded under Title 21 of the California Code of Regulations, Section 5014. In the event that the County of Los Angeles and/or the City of Inglewood is unable or unwilling to assist LAX in updating this information, LAX shall proceed using the best information available and shall document the use of estimated information in the update. LAX shall include this updated information with its second quarter "quarterly report" information that it sends to the County of Los Angeles pursuant to the reporting requirements within the State Noise Standards.
4. LAX shall continue in full force and effect, the implementation and enforcement of the following existing noise abatement policies² to the extent of its authority:

- a. No turns before the shoreline;

¹ Although LAWA is the operator, the "terms and conditions" in the Stipulated Variance reference "LAX" in order to indicate the airport affected, since LAWA operates more than one airport.

² These policies are articulated in the section of the LAX Rules and Regulations entitled "Section 13, Noise Abatement".

- b. Over-ocean operations between 0000 and 0630, weather permitting;
 - c. Helicopter noise mitigation policies;
 - d. Preferential runway use policies;
 - e. Imperial Terminal procedures; and
 - f. Maintenance run-up restrictions.
5. To facilitate compliance with its "no turns before the shoreline" policy, LAX shall use its best efforts to reduce the number of early turns by continuing to work with the Federal Aviation Administration ("FAA") and pilots to address the various causes for early turns. These efforts shall include, without limitation, continuing to consider emerging technologies that assist with the precise definition of the shoreline that assist pilots in maintaining a straight bearing upon departure, and that otherwise prevent early turns.
 6. Within three years from the effective date of the Order by Caltrans, LAX shall update its April 11, 2014 Report on Implementation of the Preferential Runway Use Policy at LAX to reevaluate conditions related to compliance with the policy, how the policy is implemented, and means for improving compliance. LAX will consult with operators, the FAA, and the LAX/Community Noise Roundtable as necessary in performing this analysis. LAX will draft an update to the 2014 report which may include recommendations for actions that may lead to better policy compliance and/or implementation.
 7. Within 45 days after the end of the calendar quarter, LAX shall provide the information to the County of Los Angeles that the County needs to prepare its Quarterly Reports of Noise Monitoring. LAX shall include a brief report regarding the implementation of each of the conditions to this Stipulated Variance with the noise monitoring information forwarded each quarter. With its second calendar quarter information, LAX shall additionally include the information as described in condition 3 above.
 8. Concurrent with its submittal to Caltrans of any proposed new or modified noise monitoring plan or system pursuant to CCR, title 21, section 5033, LAX shall provide the County with a copy of its submittal for review and consideration. LAX shall cooperate with the County in any reasonable request of the County for review or audit of LAX's noise monitoring system for compliance with the requirements of the State Noise Standards consistent with section 21669.4, subdivision (b), of the California Public Utilities Code.
 9. LAX will include in each quarterly report tabular data and graphical illustrations describing and comparing the level and type of usage for each runway at LAX during the quarter. Specifically, the report shall include: (a) the average number of arrivals and departures conducted daily in each direction on each runway during all hours and during nighttime hours (10 p.m.-7 a.m.); and (b) percentage of arrivals and departures conducted

on each runway in each direction during all hours and nighttime hours (10 p.m.-7 a.m.). LAX shall also include in its quarterly reports, as soon as practicable, the average number of arrivals and departures conducted daily by aircraft type (e.g., wide-body, narrow-body, regional jet) and model (e.g., Boeing 747) on each runway during all hours and during nighttime hours (10 p.m.-7 a.m.). Data used to calculate the average numbers referenced above shall be retained for at least three years and shall be made available to the public upon request. LAX shall also provide the runway usage data contained in its quarterly reports to the FAA for the FAA's use in monitoring air traffic runway usage that could potentially result in a shift in noise.

10. LAX shall continue to conduct nightly monitoring with respect to its maintenance run-up curfew. LAX shall maintain records of its monitoring and enforcement activities. LAX shall include in each quarterly report information regarding monitoring and enforcement activities undertaken during the quarter. Specifically, the report shall include: (a) a brief description of LAX's curfew monitoring efforts; (b) the time, date and location of each curfew violation as well as the company performing the maintenance run-up; and (c) follow-up and/or enforcement actions taken by LAX in response to curfew violations.
11. LAX shall take reasonable steps to ensure that the Airport's noise complaint hotline has the capability of providing a live answer as appropriate, and shall ensure that any complaints left as voicemail messages are retrieved and responded to appropriately in a timely manner.
12. This Stipulated Variance excuses LAX from meeting the requirement that there be no noise impact area based upon the airport noise standards identified in CCR, title 21, Section 5012 for the term of the Stipulated Variance. However, in the event that LAX violates any of the above terms or conditions, such conduct shall constitute a cause for the termination or further conditioning of this Stipulated Variance. Also, pursuant to Public Utilities Code sections 21669.2, subdivision (a), and 21669.4, subdivision (b), and CCR, title 21, section 5022, it is the function of the county wherein the airport is located to enforce the state noise regulations.

(CONTINUED)

13. The above provisions of this Stipulated Variance are subject to FAA rules, regulations, legal requirements and approvals, including but not limited to, airport guidance regarding the use of airport revenue for sound insulation.

CITY OF LOS ANGELES

MICHAEL N. FEUER, City Attorney
RAYMOND ILGUNAS, General Counsel
TIM DAZE, Assistant General Counsel

Dated: 5/1/, 2020

By: Rosario Tobias
ROSARIO TOBIAS
Deputy City Attorney
Attorneys for City of Los Angeles (Los Angeles
Department of Airports, also known as Los Angeles
World Airports)

CITY OF EL SEGUNDO

SHUTE, MIHALY & WEINBERGER

Dated: _____, 2020

By: _____
OSA WOLFF
Attorneys for the City of El Segundo

COUNTY OF LOS ANGELES

MARY C. WICKHAM
County Counsel

Dated: _____, 2020

By: _____
RORY ALLEN
Attorneys for the County of Los Angeles

(SIGNATURE PAGE CONTINUES)

13. The above provisions of this Stipulated Variance are subject to FAA rules, regulations, legal requirements and approvals, including but not limited to, airport guidance regarding the use of airport revenue for sound insulation.

CITY OF LOS ANGELES

MICHAEL N. FEUER, City Attorney
RAYMOND ILGUNAS, General Counsel
TIM DAZE, Assistant General Counsel

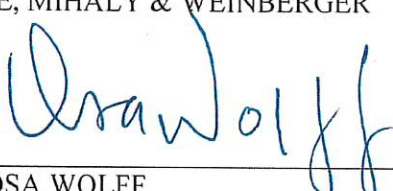
Dated: _____, 2020

By: _____
ROSARIO TOBIAS
Deputy City Attorney
Attorneys for City of Los Angeles (Los Angeles
Department of Airports, also known as Los Angeles
World Airports)

CITY OF EL SEGUNDO

SHUTE, MIHALY & WEINBERGER

Dated: March 9, 2020

By: 
OSA WOLFF
Attorneys for the City of El Segundo

COUNTY OF LOS ANGELES

MARY C. WICKHAM
County Counsel

Dated: _____, 2020

By: _____
RORY ALLEN
Attorneys for the County of Los Angeles

(SIGNATURE PAGE CONTINUES)

13. The above provisions of this Stipulated Variance are subject to FAA rules, regulations, legal requirements and approvals, including but not limited to, airport guidance regarding the use of airport revenue for sound insulation.

CITY OF LOS ANGELES
MICHAEL N. FEUER, City Attorney
RAYMOND ILGUNAS, General Counsel
TIM DAZE, Assistant General Counsel

Dated: _____, 2020

By: _____
ROSARIO TOBIAS
Deputy City Attorney
Attorneys for City of Los Angeles (Los Angeles
Department of Airports, also known as Los Angeles
World Airports)

CITY OF EL SEGUNDO

SHUTE, MIHALY & WEINBERGER

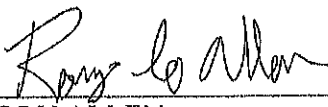
Dated: _____, 2020

By: _____
OSA WOLFF
Attorneys for the City of El Segundo

COUNTY OF LOS ANGELES

MARY C. WICKHAM
County Counsel

Dated: April 24, 2020

By:  _____
RORY ALLEN
Attorneys for the County of Los Angeles

(SIGNATURE PAGE CONTINUES)

CITY OF INGLEWOOD
BUCHALTER LAW FIRM

Dated: 3/4, 2020

By: Barbara Lichman
BARBARA LICHMAN
Attorneys for the City of Inglewood

1 TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

2 The foregoing and attached hereto, is a copy of the Decision of the State of California, acting by
3 and through the Department of Transportation, Division of Aeronautics, in the matter of the noise
4 variance application of the City of Los Angeles, Department of Airports, as known as Los Angeles
5 World Airports for the Los Angeles International Airport.

6
7 This decision shall become effective 14 August 2020.

8
9
10 IT IS SO ORDERED this 14th day of August, 2020.

11
12 By Amy Choi
13 AMY CHOI,
14 State of California, Department of Transportation,
15 Chief of the Division of Aeronautics
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EXHIBIT

22

ESTIMATED DAILY ROADWAY CAPACITY

Master Plan Roadway Classification	Number of Roadway Lanes (a)	Estimated Daily Roadway Capacity (b)
Major Arterial	8LD	70,000
Secondary Arterial (Six Lane Divided)	6LD	53,000
Collector (4-Lane Divided)	4LD	40,400
Collector 4-Lane	4LU	31,000
Collector 2-Lane	2LU	14,000
Local	2LU	10,000

- (a) 8 LD = Eight (8) lanes divided
 6 LD = Six (6) lanes divided
 4 LD = Four (4) lanes divided
 4 LU = Four (4) lanes undivided
 2 LU = Two (2) lanes undivided

(b) Estimated Daily Roadway Capacity at Level of Service "E" is considered to be the carrying capacity of the roadway. Numbers indicate vehicles per day for roadway system planning. Volume to Capacity (v/c) ratios are computed on the basis of LOS E capacity. If the v/c ratio exceeds 1.00, the roadway LOS would be F. A v/c ratio between 0.81 and 0.90 indicates LOS D, and a v/c ratio between 0.91 and 1.00 indicates LOS E.

Note: It is the goal of the City of El Segundo to achieve and maintain LOS D or better on the City's arterials. The City considers LOS C to be desirable and LOS D to be marginally acceptable for roadway segments. LOS E and LOS F are not acceptable.