Evaluation of Community Proposals for LAX North Downwind Arrival Routes

Presentation to LAX/Community Noise Roundtable
January 8, 2020

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Introduction

- The LAX/Community Noise Roundtable requested that LAWA engage a consultant to provide an assessment of two community proposed alternatives to the LAX North Downwind Arrival Routes

- LAWA solicited proposals and contracted with CSDA to provide the requested assessment

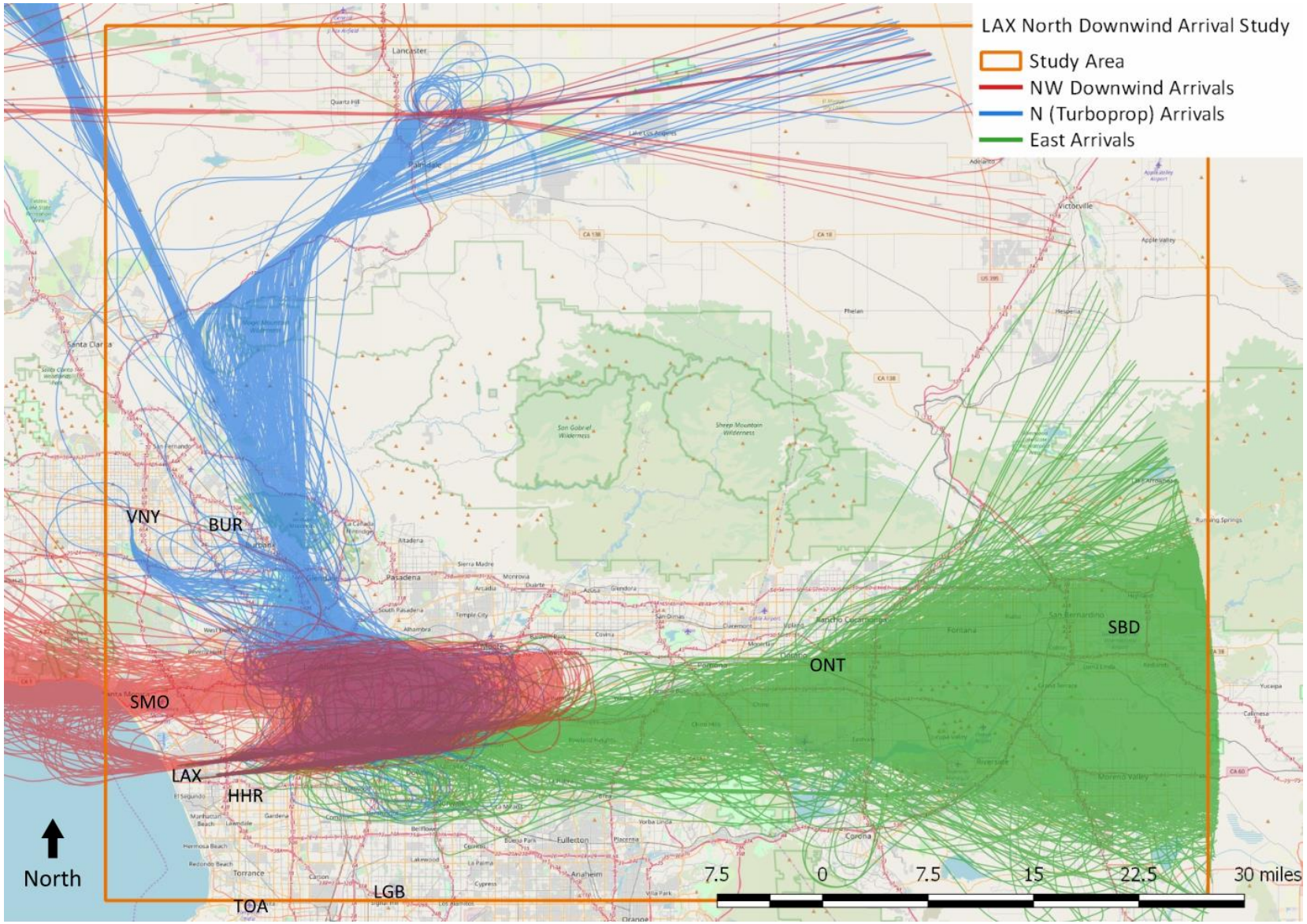
Project Objectives

Conduct technical assessment and noise/emissions evaluation for two proposed alternate LAX North Downwind Arrival Routes

- Option A:
  - Task 1: Airspace Analysis / Technical Assessment of Proposed Alternative
  - Task 2: Noise / Emissions Modeling of Alternative as compared to Existing Route

- Option B:
  - Task 1: Airspace Analysis / Technical Assessment of Proposed Alternative
  - Task 2: Noise / Emissions Modeling of Option B was not conducted as option was determine to be infeasible

Study Area



- Three primary arrival paths from East, North, and Northwest
- Map shows typical tracks, color-coded by arrival direction
- Radar tracks for several days from Oct 2018, Jan 2019, Mar 2019, and Aug 2019

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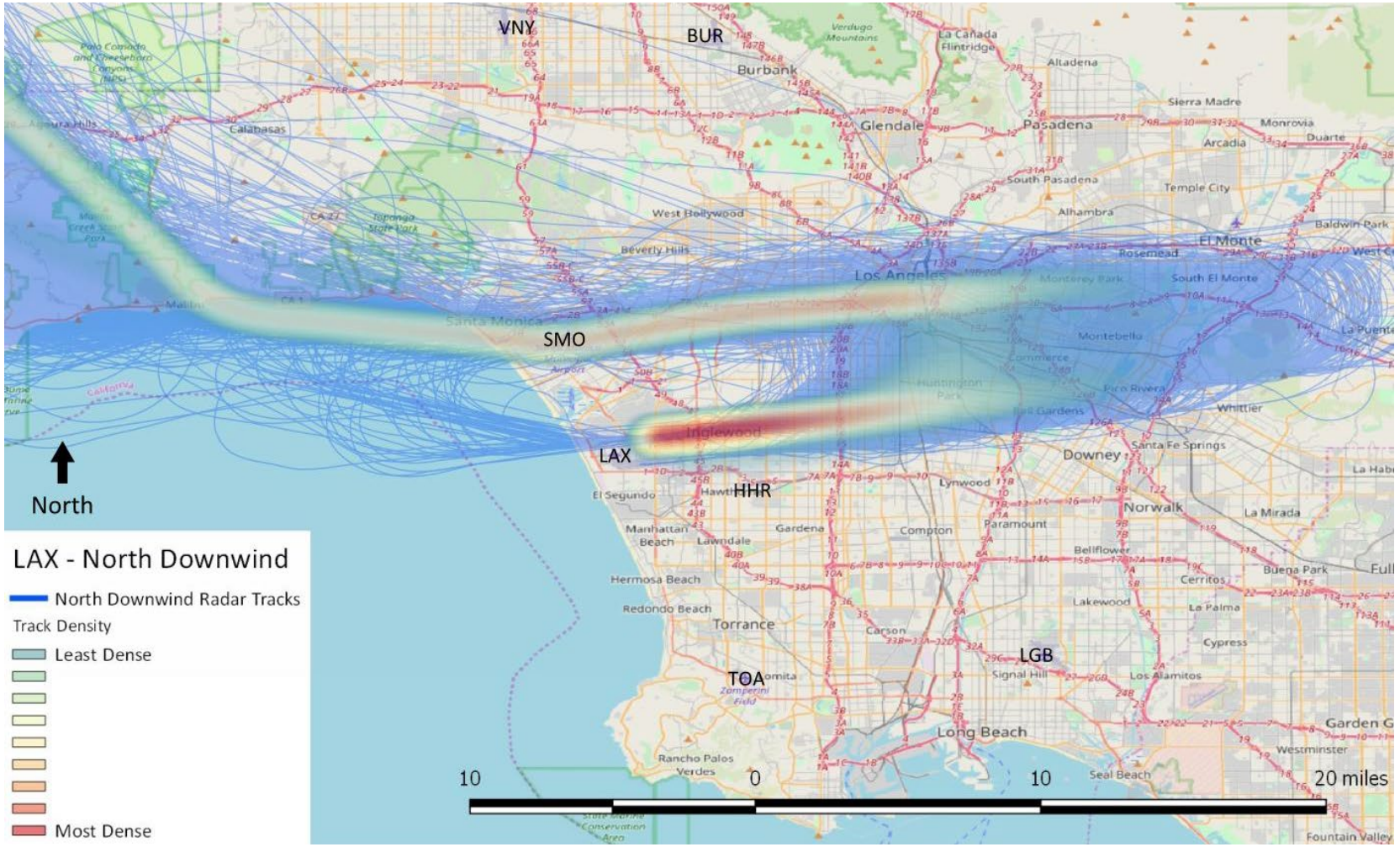
Existing North Downwind Arrivals



- Heat/density map showing existing North Downwind arrivals
- Map consists of radar tracks for several days from Oct 2018, Jan 2019, Mar 2019, and Aug 2019

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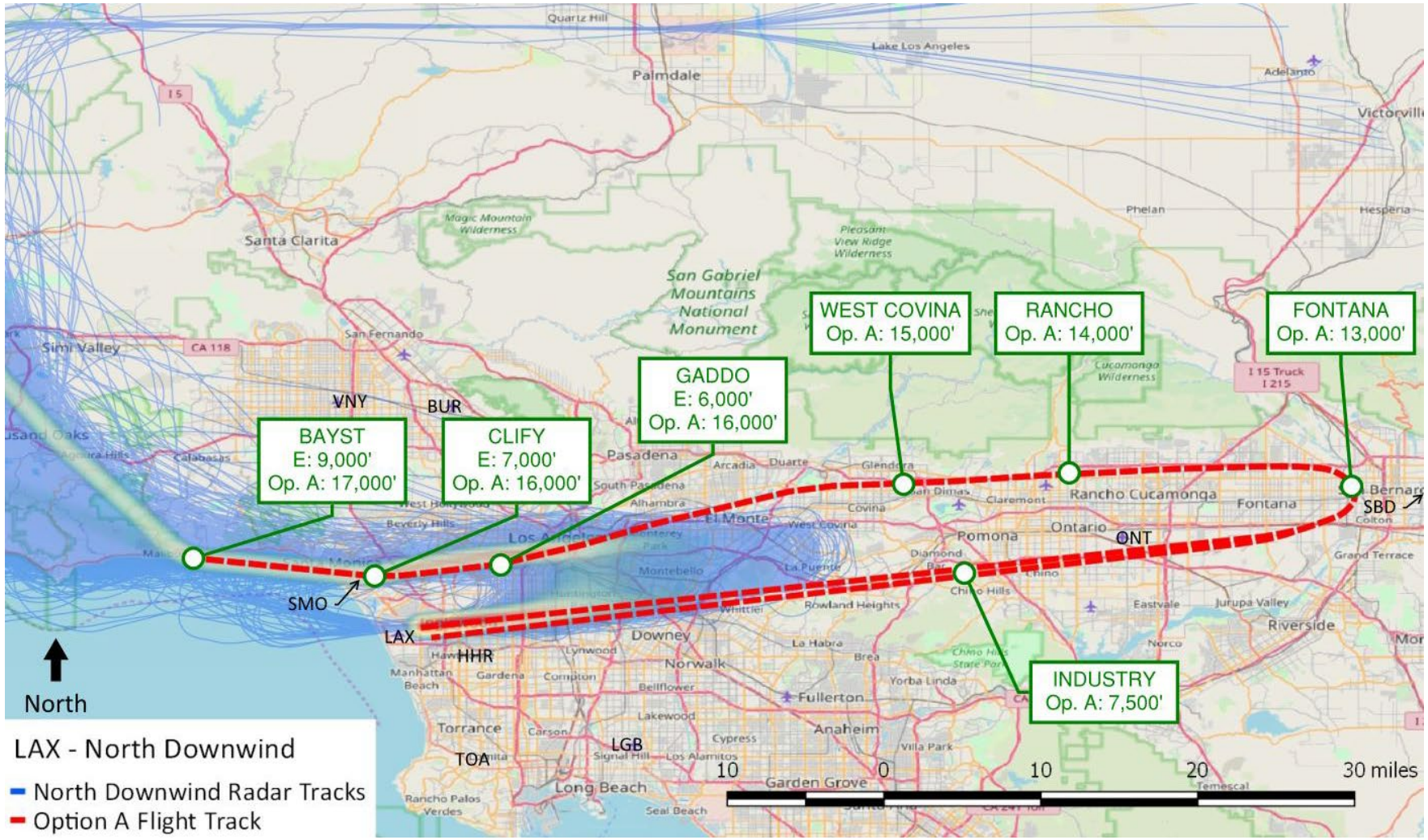
Community Proposal – Option A Proposed Route



E: Existing Altitudes
Op. A: Community Proposed Route/Altitudes

Option A consists of:

- Aircraft flying farther east and turning for final approach in San Bernardino County
- Raising aircraft altitudes
  - Existing and Proposed waypoint altitudes shown in green

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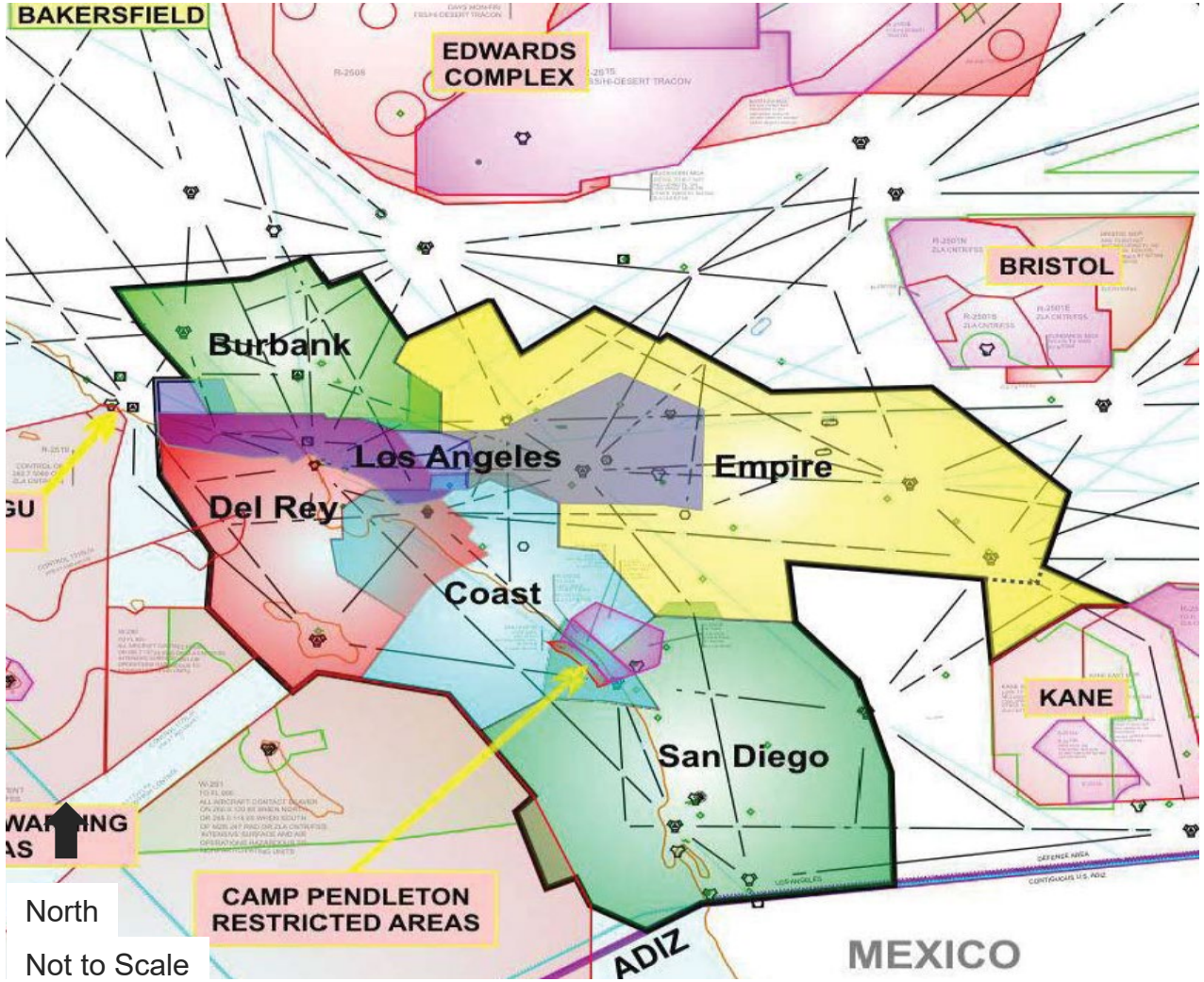
Option A: Task 1 - Technical Assessment



Source: FAA

Items Analyzed:

- FAA Airspace
  - Sectors Involved
  - Special Use/Restricted Airspace
- LAX Departures/Arrivals
- Ontario (ONT) Departures/Arrivals
- Long Beach (LGB) Departures/Arrivals
- Orange County/John Wayne (SNA) Arrivals
- BUR/VNY/SMO Departures/Arrivals

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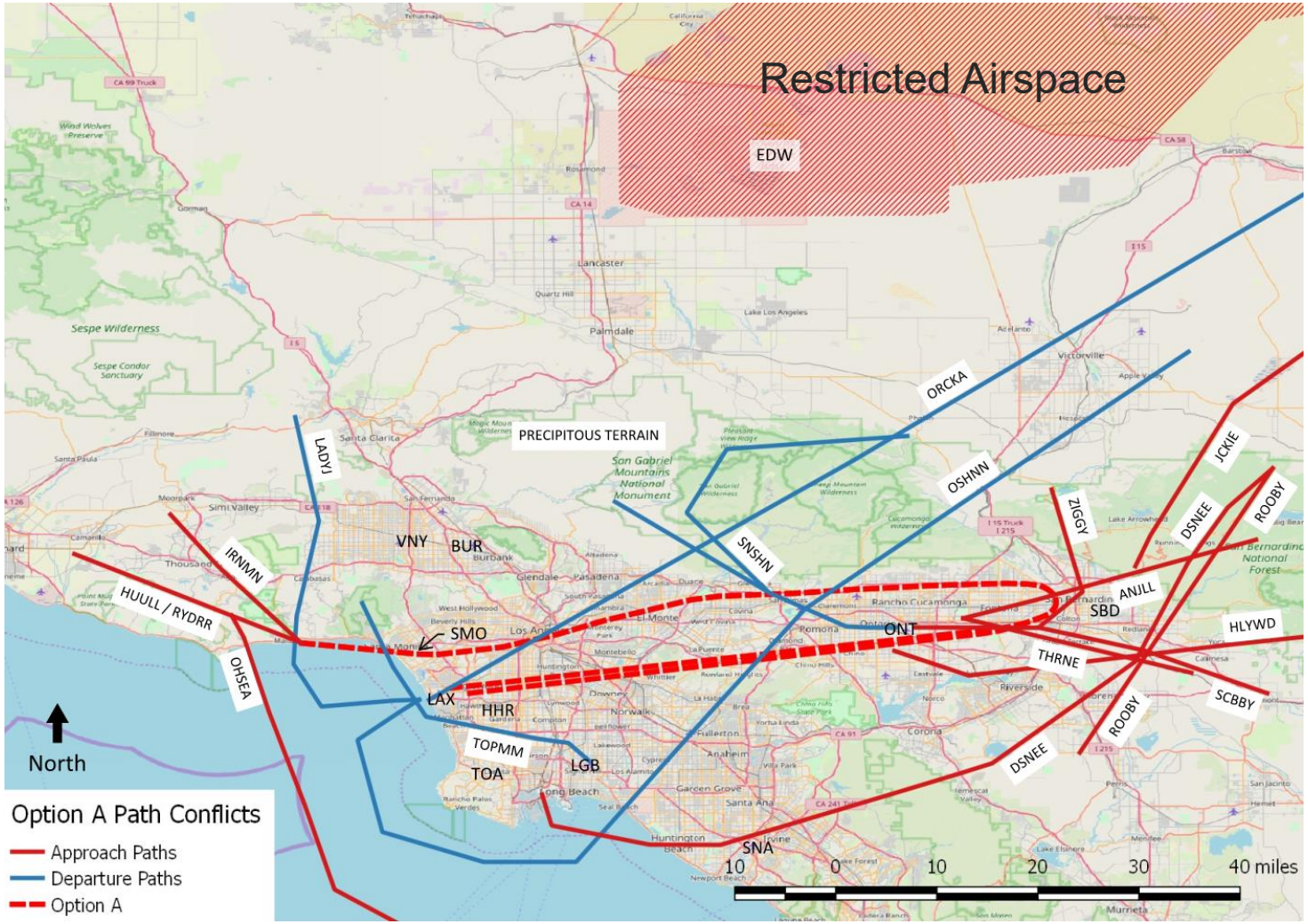
Option A: Task 1 - Technical Assessment



Findings:

- Potential conflicts with other existing procedures
- Revisions to various arrival/departure procedures are required:
  - SNA/LGB: OHSEA Arrival
  - LGB: TOPMM Departure
  - LAX Departures: ORCKA
  - ONT: SNSHN Departure
  - LAX Arrivals: ANJLL/HLYWD
- Revisions can take months to years to review and publish

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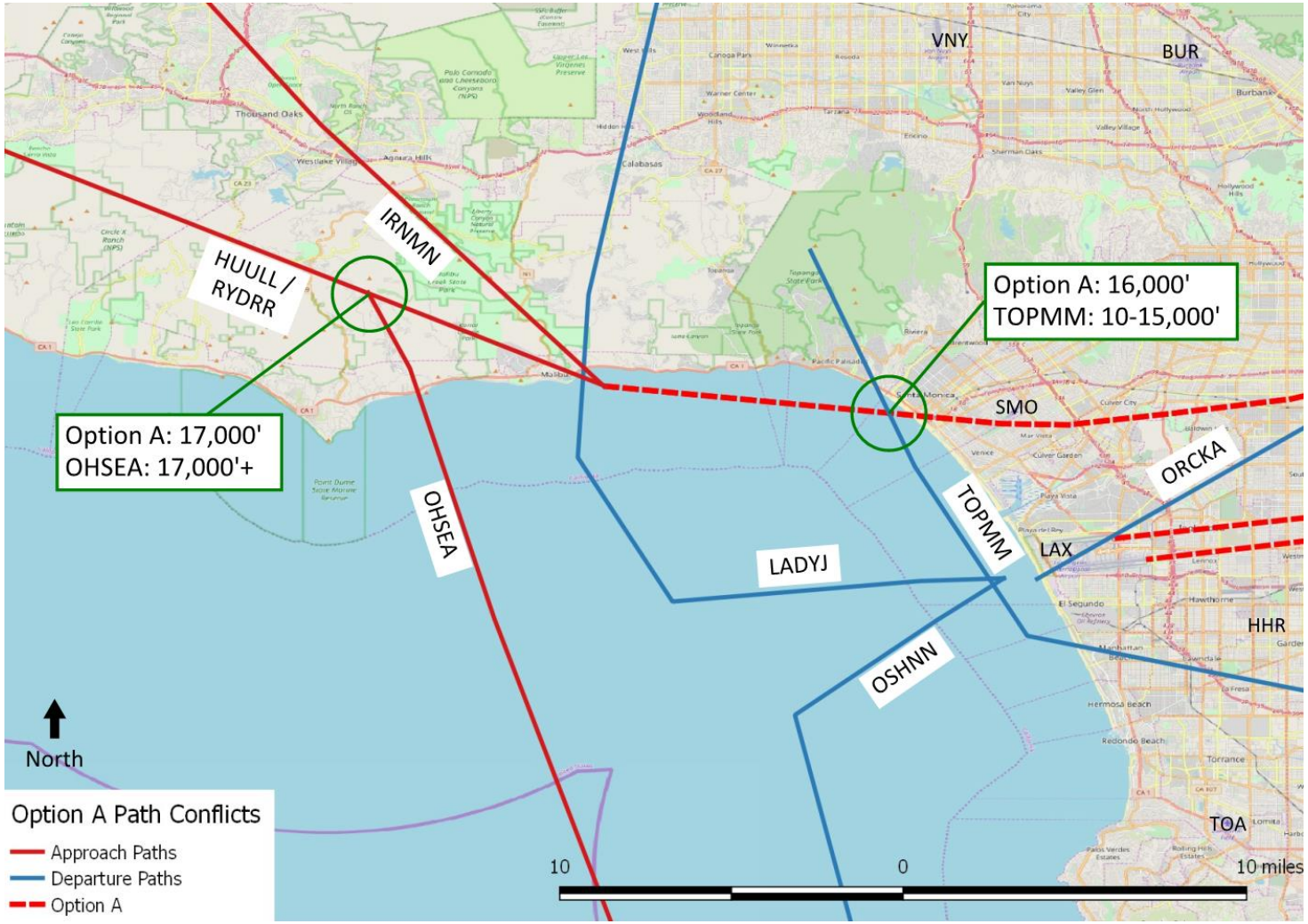
Option A: Task 1 - Technical Assessment



Potential Conflicts

- OHSEA: John Wayne (SNA)/Long Beach (LGB) Arrival
- TOPMM: Long Beach (LGB) Departure

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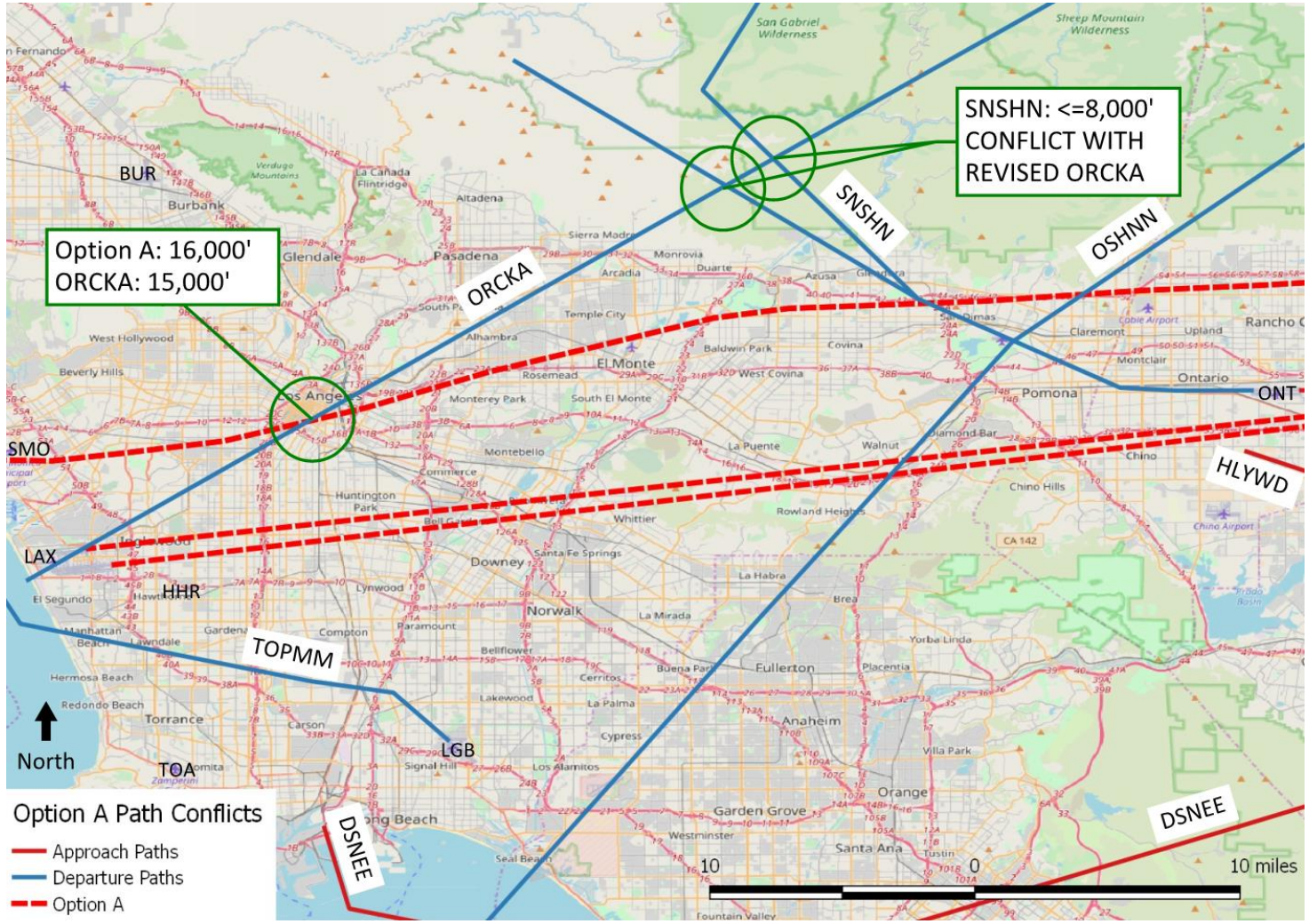
Option A: Task 1 - Technical Assessment



Potential Conflicts

- ORKCA: LAX Departure
- SNSHN: Ontario (ONT) Departure will conflict with revised ORCKA

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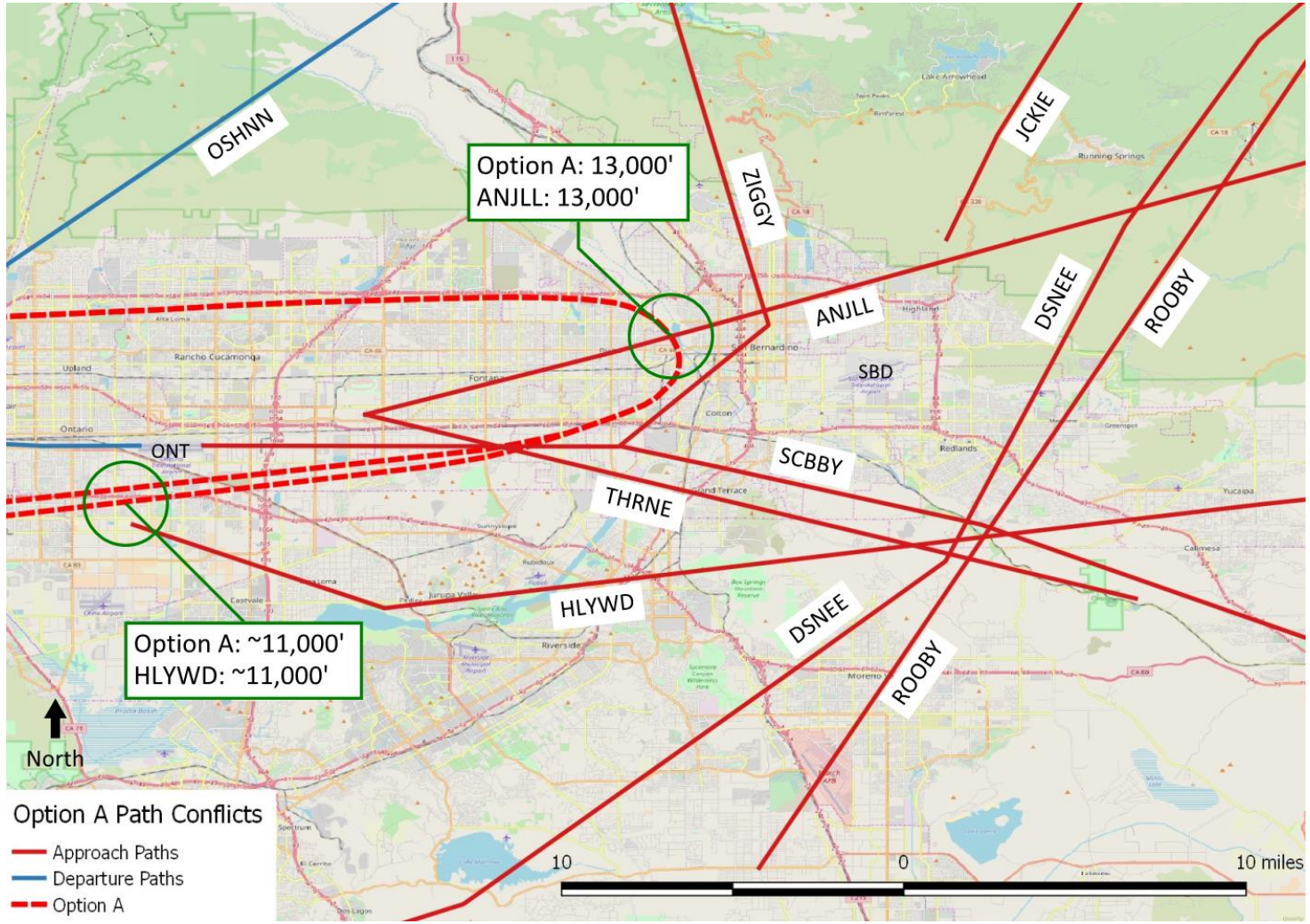

Potential Conflicts

- ANJLL: LAX Arrival (from East)
- HLYWD: LAX Arrival (from East)

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Option A: Task 1 - Technical Assessment

Table Showing Potential Conflicts of Option A Proposed Route with Other Published Procedures

Potential Conflicting Procedures	Altitude of Specific Procedure at Flight Path Crossing Point (feet, MSL)	NW Downwind Existing Altitude at Flight Path Crossing Point (feet, MSL)	NW Downwind Option A Proposed Altitude at Flight Path Crossing Point (feet, MSL)	Conflict?
OHSEA (SNA/LGB Arrival)	17,000+	9,000	17,000	Yes: Need to hold OHSEA arrivals above 18,000'.
LADYJ (LAX Departure)	7,000+	9,000	17,000	No
TOPMM (LGB Departure)	10-15,000	7,000	16,000	Yes: May need to hold TOPMM departures down [level off]
ORCKA (LAX Departure)	15,000	6,000	16,000	Yes: Need to hold ORCKA departures down [level off]
SNSHN (ONT Departure)	<=8,000	N/A	15,000	Yes: Need to hold SNSHN down to stay below ORCKA [level off]
OSHNN (LAX Departure) – Crossing at N. Downwind Path	17,000+	N/A	14-15,000	No
OSHNN (LAX Departure) – Crossing at Final Approach Path	16,000	N/A	7,500	No
ANJLL/HLYWD (LAX Arrival)	13,000 / 11,000	N/A	13,000 / 11,000	Yes: Option A downwind must be held at or below 12,000' / 10,000
SCBBY/ZIGGY/JCKIE (ONT Arrivals)	5,000	N/A	13,000	No
THRNE (BUR, SMO, VNY Arrivals)	10,000	N/A	12,000	No

Option A: Task 1 - Technical Assessment

Findings (continued):

- Increased controller and Traffic Management workload (multiple ATC sectors/controllers); increased complexity/sequencing
- Increased usage/congestion of Class B / C airspace
- Increased cockpit workload (more radio communication, flight time, +70 nm); lowered operational efficiency
- Likely impact cargo and/or passenger capacity due to additional fuel and reserve required for extra 70 nm
  - Conflicts with 14 CFR Part 150 "Does not impose undue burden on interstate and foreign commerce."

Option A: Task 2 - Noise Assessment

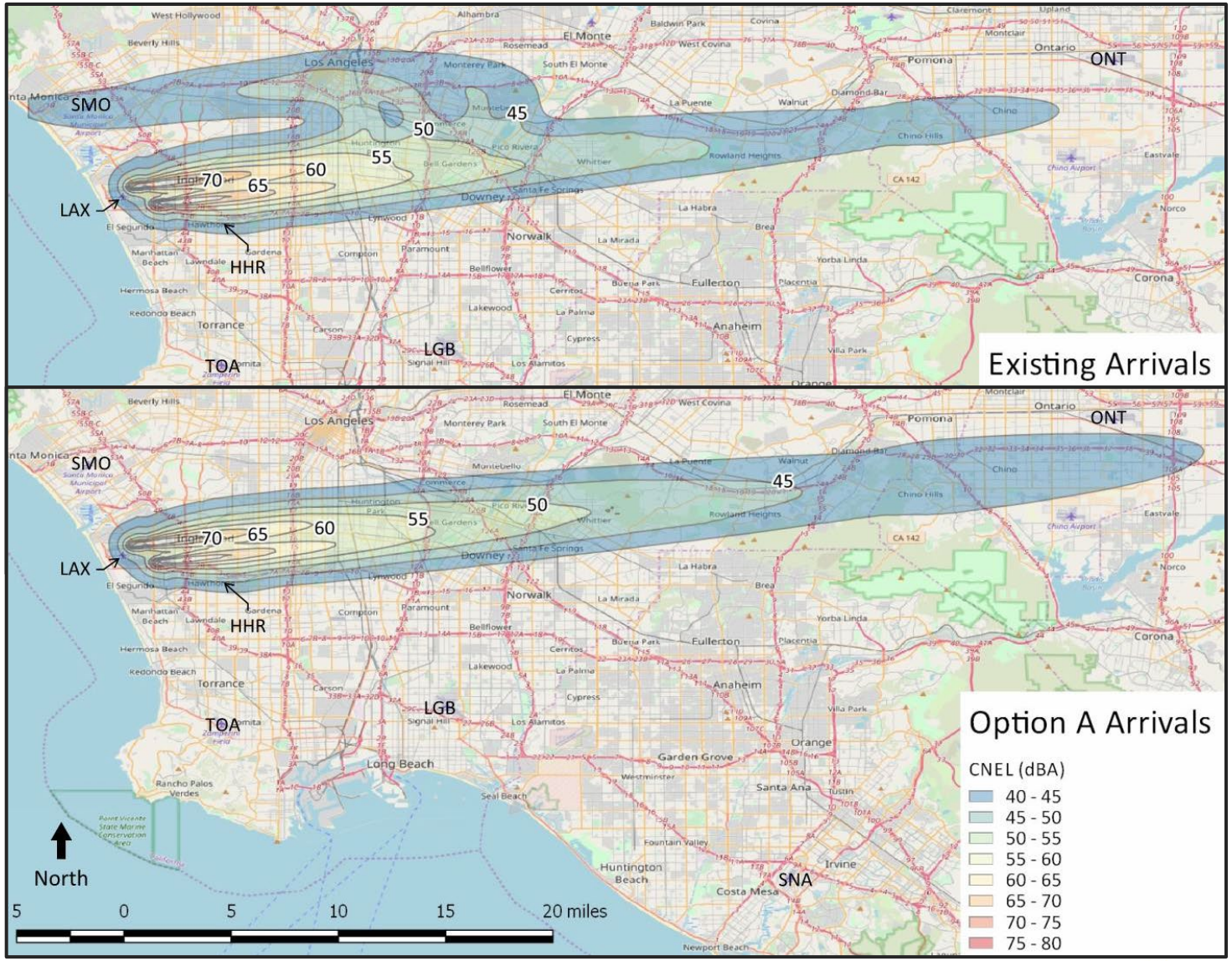
Data Analysis:

- 12 Months of Radar Arrival Data (9/18 – 8/19)
- North Downwind Average Operations
  - 344 Daily Arrivals
    - 281 Daily Arrivals on 24R
    - 63 Daily Arrivals on 24L
  - 69% Daytime, 18% Evening (7p-10p), 13% Nighttime (10p-7a)
- Included East arrivals (ANJLL, HLYWD) and N (turboprop) arrivals
- AEDT has a limitation of only calculating arrival noise and emissions up to 6,000 feet
  - To override this limitation, flight profile was manually extended to 40k feet for the B737-700 aircraft type (most common aircraft type at LAX) for all arrivals

Option A: Task 2 - Noise Assessment

Noise modeling to compare existing and proposed route consisted of:

- 344 NW daily arrivals (ops)
- 462 E daily arrivals (ops)
- Using 737-700 aircraft to represent all aircraft types
- Average annual day of noise predicted (used by FAA/State of CA)
- CNEL Noise Metric (5 dBA penalty in evening, 10 dBA penalty at night)



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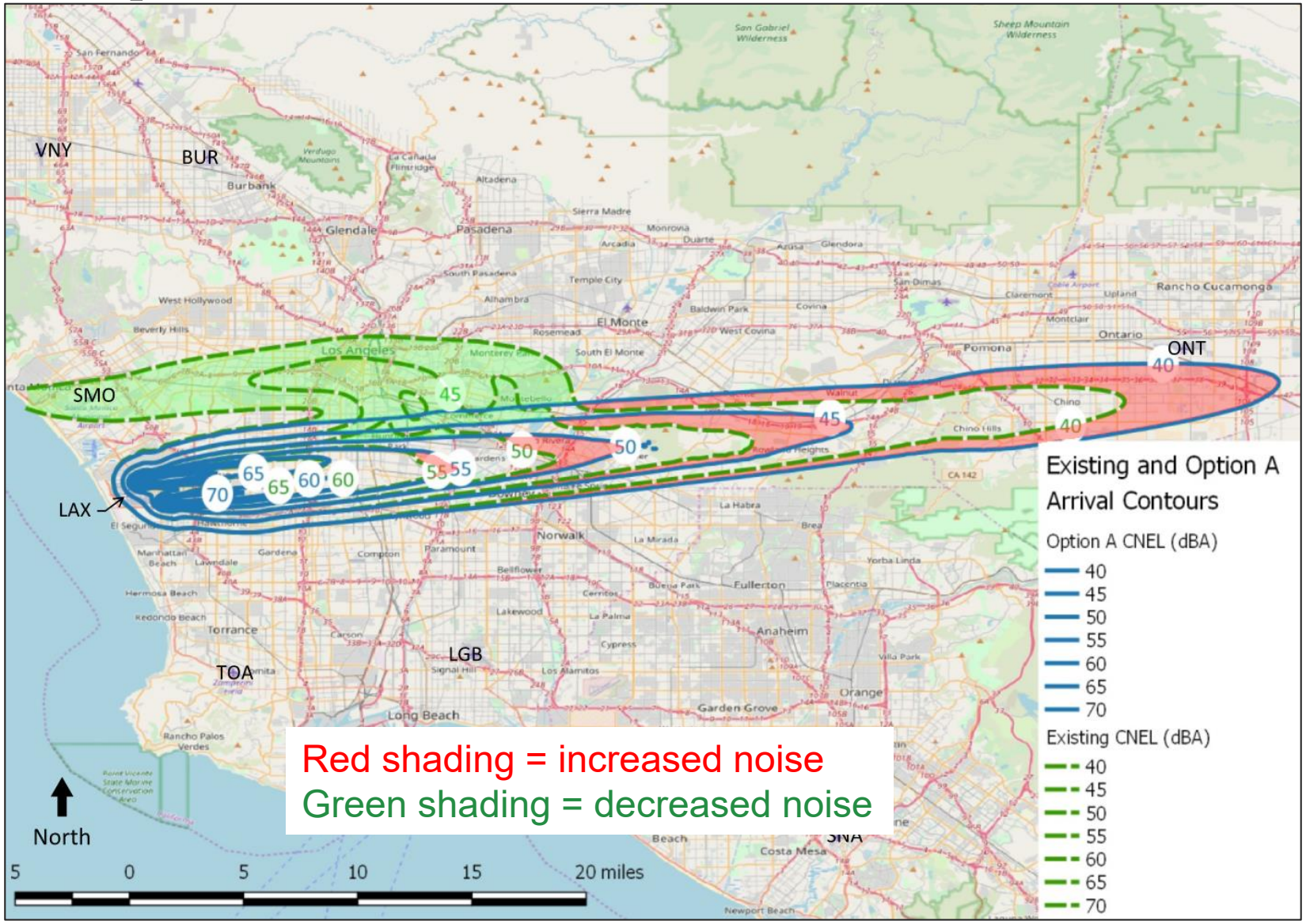
Option A: Task 2 - Noise Assessment



Findings:

- Decrease of noise for communities along existing north downwind route
- Increase of noise for communities farther east
- Not consistent with the Roundtable's no shifting of noise policy

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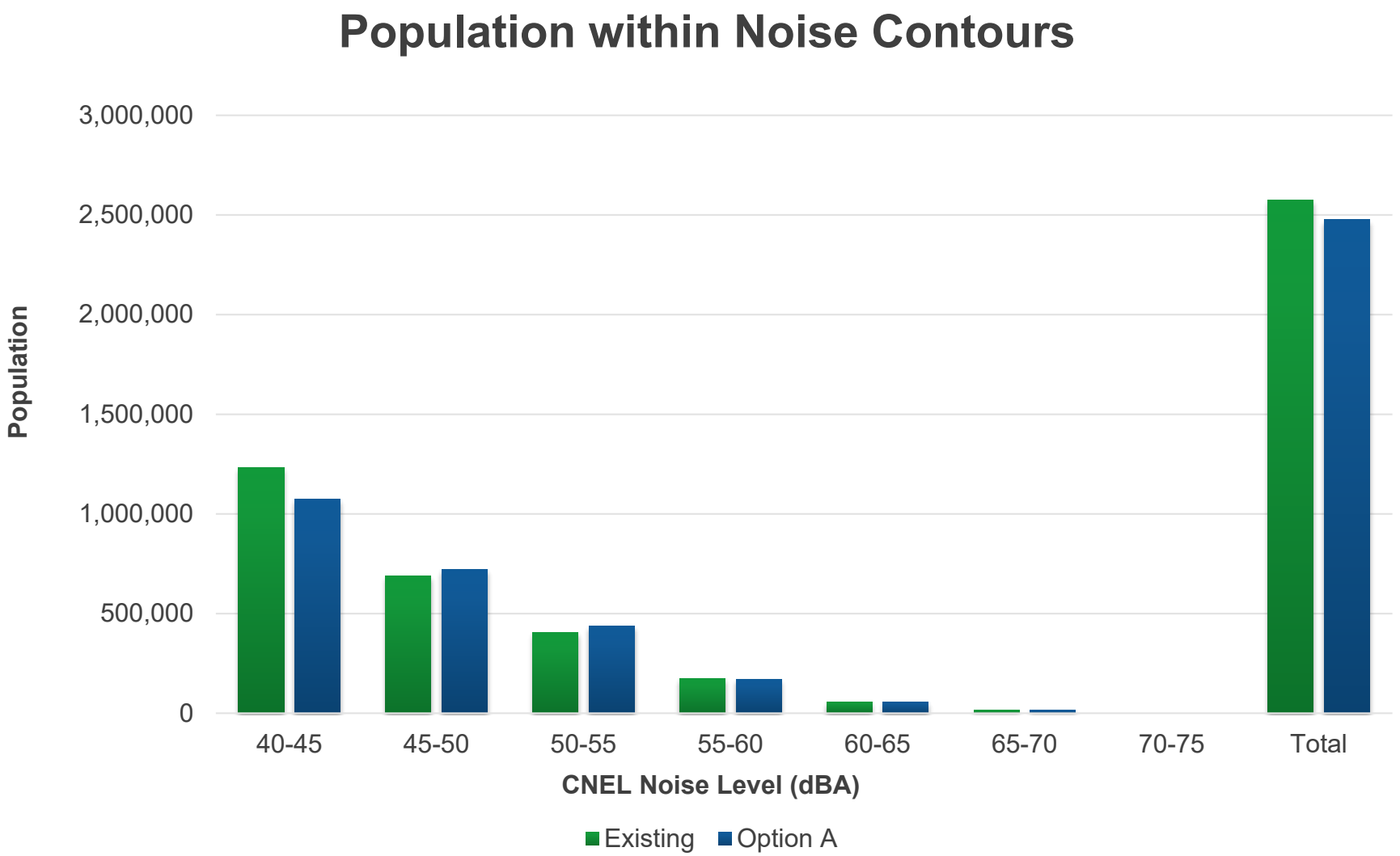
Option A: Task 2 - Population within Noise Contours



Findings:

Analysis based on 2010 Census data

- Similar number of people in Existing Contours and Option A Contours
  - 2.575 Million people in Existing Contours
  - 2.476 Million people in Option A Contours
- New people affected by noise

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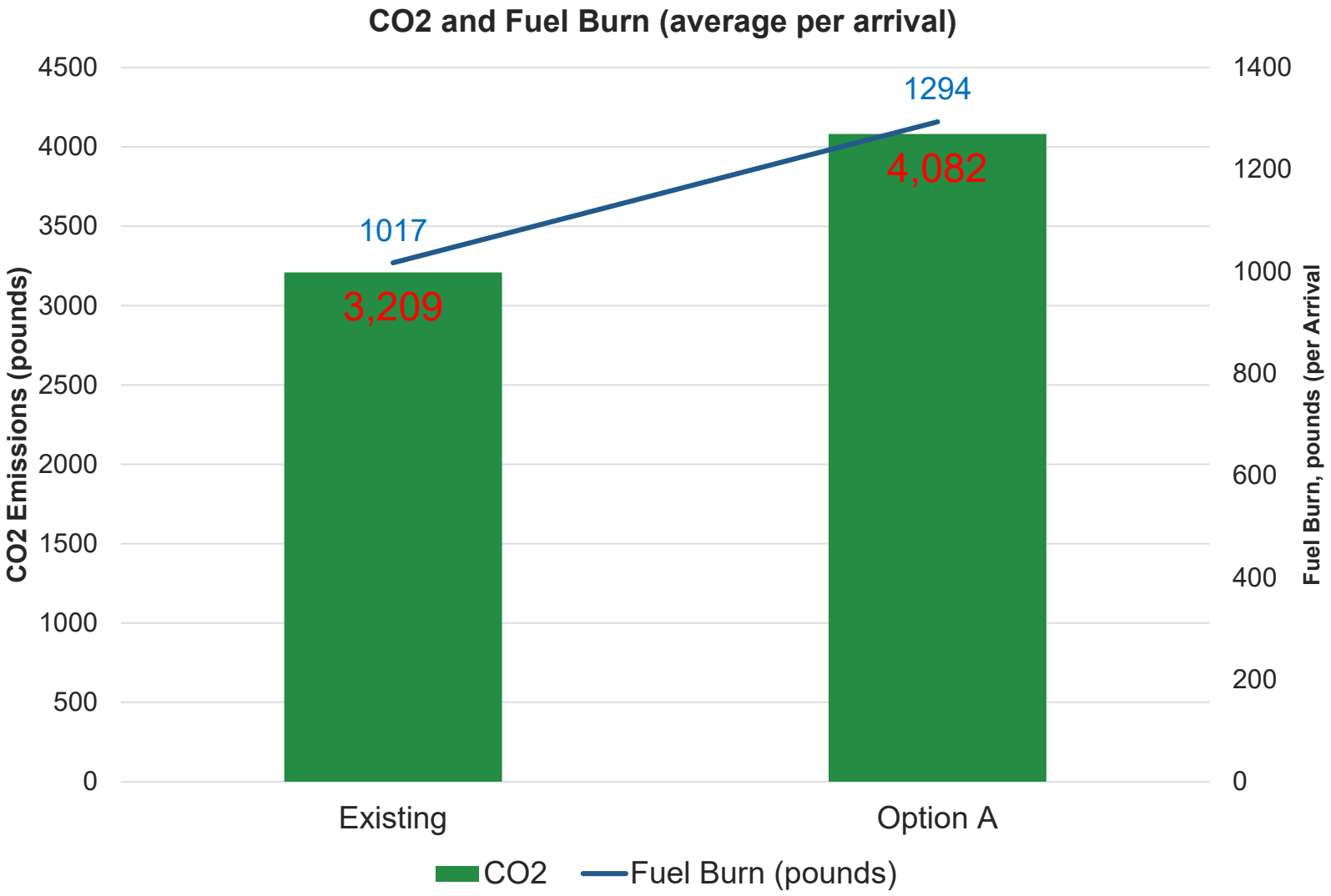
Option A: Task 2 - Fuel Burn Assessment



Findings:

Results from modeling B737-700 in the AEDT

- Existing: 3,209 pounds CO_2 for last leg of flight
- Option A: 4,082 pounds of CO_2 for last leg of flight
- Increased fuel burn of 276 pounds/flight

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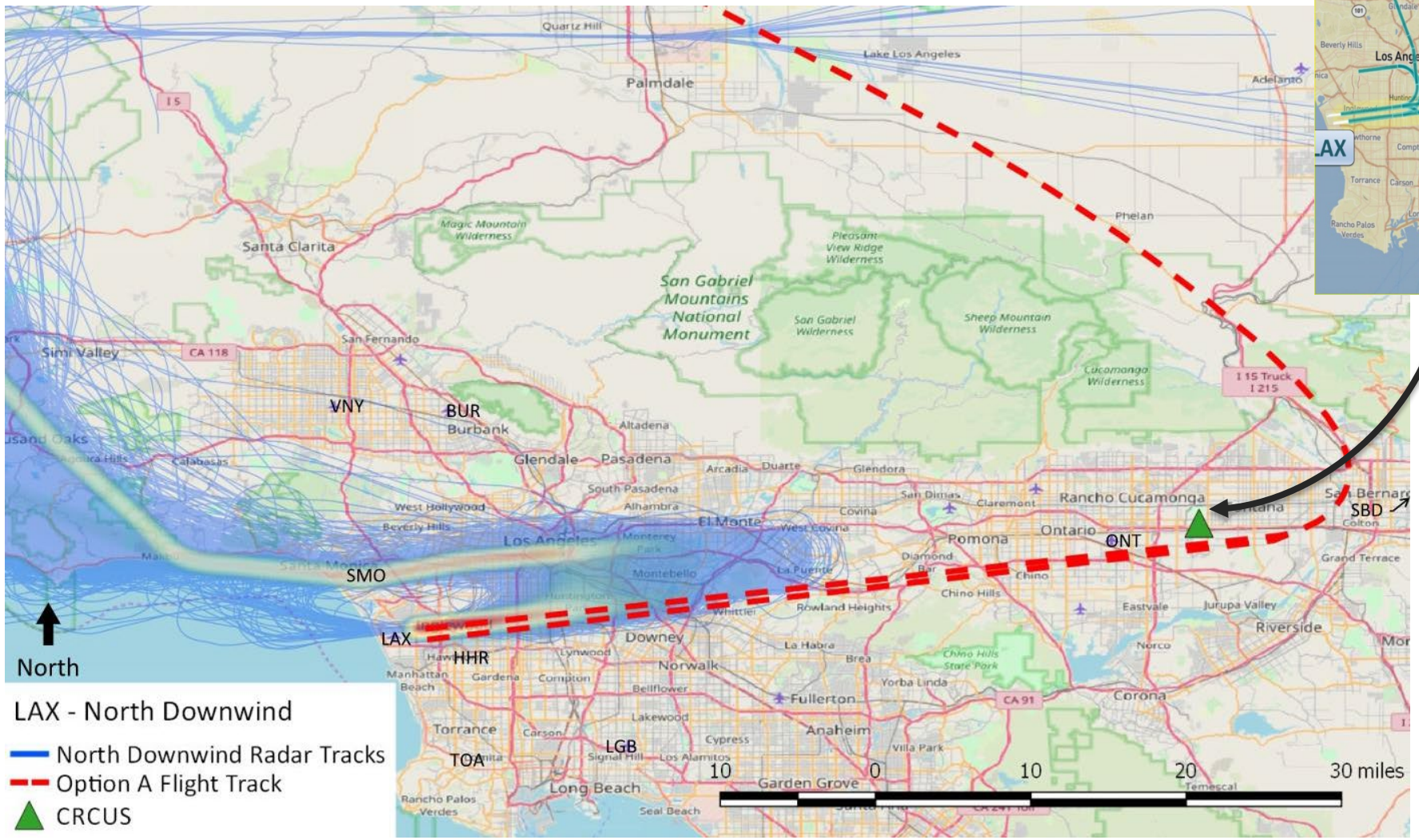
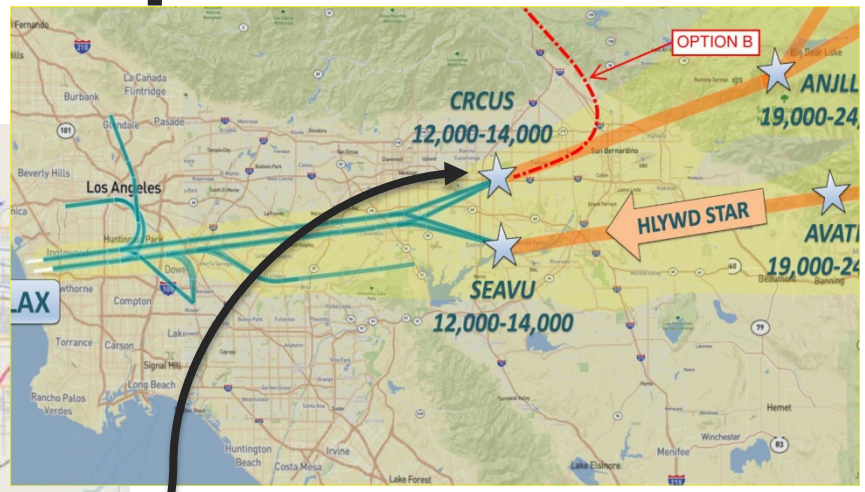
Community Proposal – Option B Proposed Route





Option B consists of moving North Downwind arrivals from current location to High Desert/Palmdale area where arrival traffic will merge at CRCUS waypoint for final approach.

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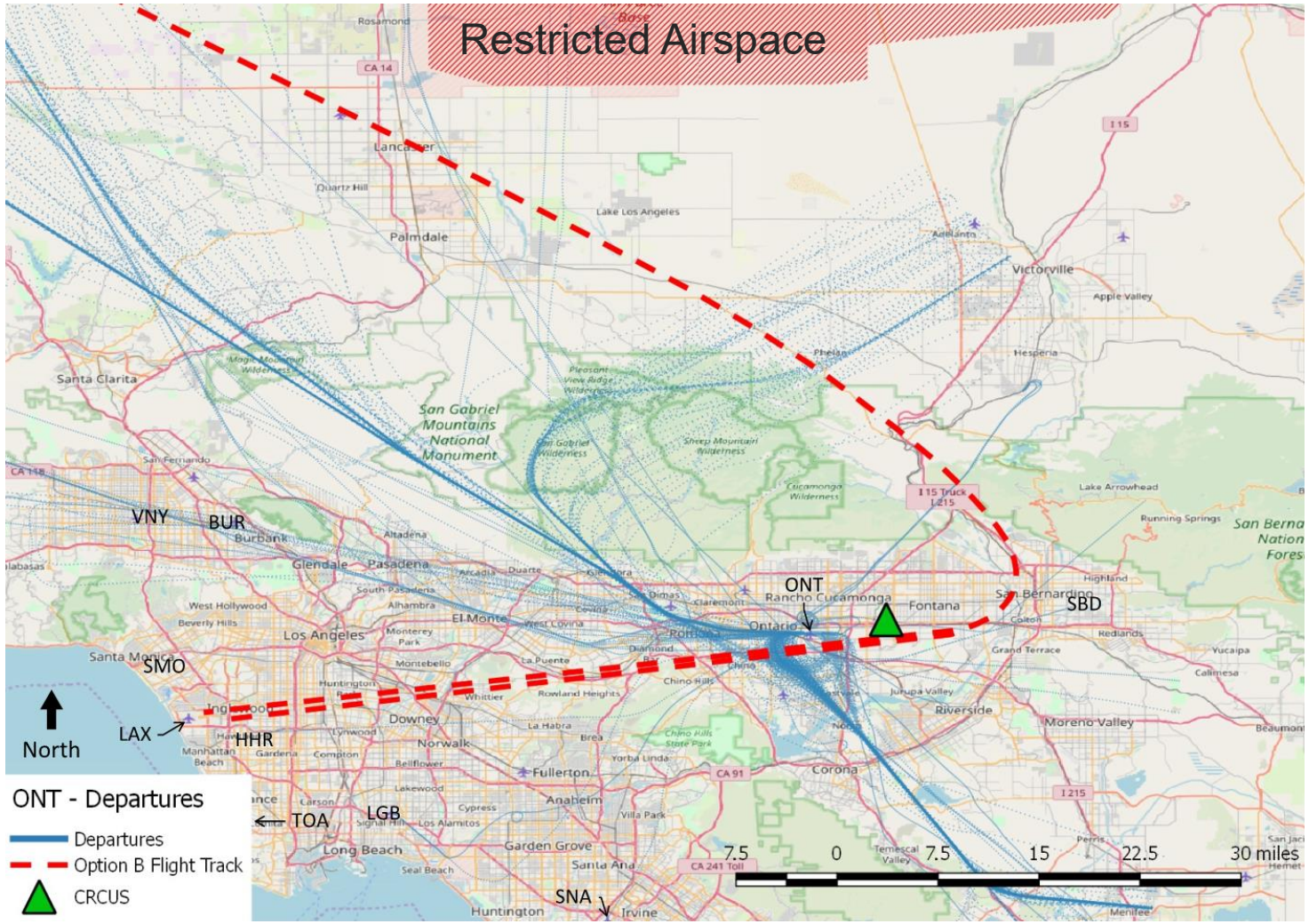
Option B: Task 1 - Technical Assessment



Items Analyzed:

- Ontario (ONT) departures/arrivals
- Orange County/John Wayne (SNA) Arrivals
- LAX Arrivals/Departures
- Special Use (Restricted) Airspace: Edwards AFB
- Traffic Management with respect to Arrivals from the East (at CRCUS) to 25L, multiple Air Traffic Control Centers involved

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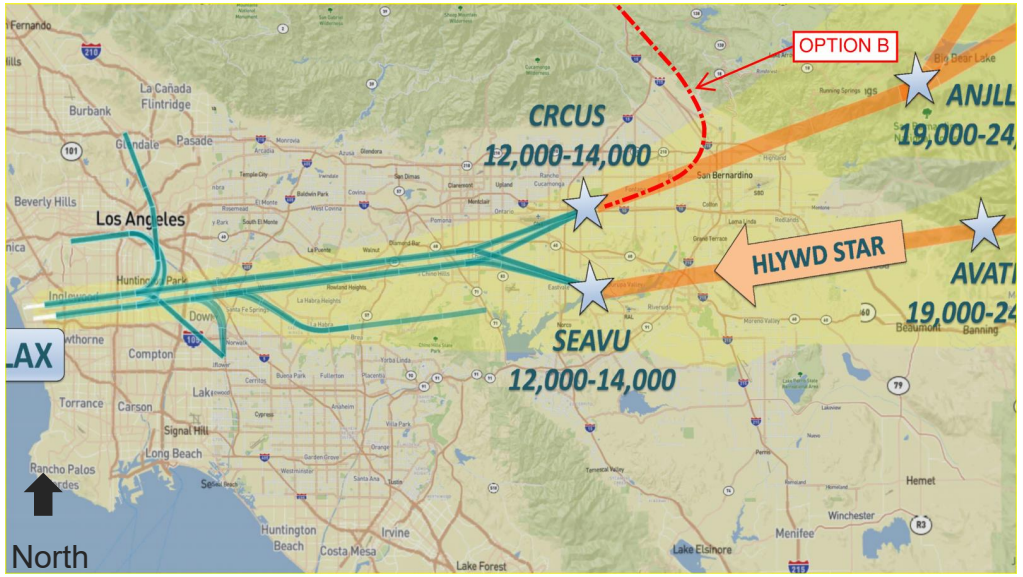
Option B: Task 1 - Technical Assessment



Not to Scale

Source: FAA

Findings:

- Increased controller/Traffic Management workload (Controller now has to sequence Option B arrivals with East arrivals)
- Increased usage/congestion of Class B / C airspace
- Increased cockpit workload (flight time, +60 nm for N arrivals, +110 nm for Oceanic arrivals)
- Revised LAX arrival/departure procedures required W/NW of Airport
- Not all flights could/would use Option B (e.g., oceanic from Asia/HI)

Option B: Task 1 - Technical Assessment

Findings (continued):

Oceanic Arrivals

- Estimated increased track length of 110 nautical miles for Oceanic arrivals
- Approximately 14% of North Downwind arrivals (~48 arrivals/day) are Oceanic (from HI/Asia) per June 2019 FAA (PBN) data and 12 month radar data
- Likely impact cargo and/or passenger capacity due to additional fuel and reserve required for extra 110 nm
  - Conflicts with 14 CFR Part 150 "Does not impose undue burden on interstate and foreign commerce."
- **Require large-scale (Metroplex) redesign of SoCal airspace in order to move all aircraft on N. Downwind to Option B Proposed Route; not considered feasible**
- As a result, noise/emissions analysis was not performed
  - Noise impacts would be similar to Option A, regardless

Conclusions

- Both Proposals will cause aircraft to burn additional fuel and produce more emissions to reduce noise which is prohibited per 14 CFR Part 150.35
- Both Proposals will result in a loss of close-in sequencing to final and result in a decrease of efficiency / acceptance rate for RWY 24R (14 CFR Part 150.35)
- Large-scale airspace redesign process (e.g., Metroplex) is required for Option B (and possibly for Option A) that involves creating new procedures, conducting Environmental Assessments, and performing other necessary related functions.
- It will be very difficult to obtain acceptance of these proposals from the following entities due to the increased airspace conflicts, increased controller/pilot workload, increased emissions, increased fuel burn, increased noise for new communities, and the impact on the LAX arrival acceptance rate:
  - FAA, Air Traffic Controllers, and National Air Traffic Controllers Association (NATCA)
  - Airlines and Airlines for America (A4A)
  - Southern California Airspace Users Work Group (SCAUWG)

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Conclusions (continued)

- Both Proposals will create new/additional noise exposure for other communities and constitute a shifting of noise, which is not consistent with the Roundtable's no shifting of noise policy
- Proposals to shift noise were rejected by the FAA in other jurisdictions:
  - "This recommendation would shift aircraft noise from one community to another. The FAA cannot support creation of such a procedure without consensus from all affected communities." –FAA Response to SJC South Flow Arrivals, May 2019.
  - "The FAA does not support the establishment of an approach from the east as it would be extremely difficult due to the terrain, and would shift aircraft noise to a different community." -FAA Response to SJC South Flow Arrivals, May 2019.
  - "San Jose International Airport Reverse Flow: Aircraft Arrivals. Reverse flow conditions at SJC have arrival aircraft at lower altitudes to the west of SJC. Can these arrivals be shifted to the east of SJC?" "Not endorsed since this shift of arrivals equates to a shifting of noise to another community." –Select Committee on South Bay Arrivals, FAA Response, July 2017
- Based on all these factors, it is highly unlikely that the FAA would adopt either of the Community Proposals

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QUESTIONS?