Regional Aviation Demand and Alternative Scenarios
Regional Aviation Strategic Plan

Airport Advisory Committee
RASP Subcommittee

December 10, 2009

Revised Draft
Meeting Agenda

1. Project Overview and Schedule

2. Regional Aviation Demand
   - Economic background
   - Historic air service trends
   - Factors moving forward

3. Base Case Scenario

4. Alternative Scenarios
### RASP Project Overview

#### Three Phase Work Plan Culminating in mid-2010

**Phase I**
- **Data Gathering and Model Development**
- **March – Oct 2009**

**Phase 2**
- **Identification and Assessment of Potential Strategies**
- **Fall 2009 – Spring 2010**

**Phase 3**
- **Regional Aviation Strategic Plan**
- **Spring – Fall 2010**

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- **Project coordination**
- **Stakeholder outreach support**
- **Task-specific documentation and deliverables**

**Key Phase I deliverables (www.sdrasp.com)**
- Regional Aviation Demand Forecasts (Subcommittee meeting #1)
- Inventory and Strategic Assessment (Subcommittee meeting #2)
- Demand/capacity analyses (Subcommittee meeting #3)
- System optimization strategies (Subcommittee meeting #3)
Near-term Schedule and Work Plan

Project Is On Schedule

<table>
<thead>
<tr>
<th>Month</th>
<th>Task Deliverable</th>
</tr>
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<tbody>
<tr>
<td>June</td>
<td>Airport System Capacity</td>
</tr>
<tr>
<td>August</td>
<td>Demand Model</td>
</tr>
<tr>
<td>September</td>
<td>Airport System Baseline</td>
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<td>October</td>
<td>“Toolkit”</td>
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<tr>
<td>November</td>
<td>Alternative Concept and Evaluation</td>
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</tbody>
</table>

SCHEDULE MILESTONES
- Blue circle: Ad Hoc Meeting
- Red circle: RASP Subcommittee Meeting
- Green triangle: Task Deliverable
Summary of Regional Demand Findings

Demand Findings Influence the Alternative Scenarios Considered

- San Diego has experienced above average growth compared to Los Angeles, Mexico, and the U.S. as a whole
- Except for LAX, aviation growth in Southern California is significantly influenced by low cost carriers’ business model
- Although SDIA has good domestic air service at competitive airfares, some San Diego County residents choose to use airports in the LA region and Mexico
- RASP strategies and alternatives should be considered in the context of the larger region surrounding San Diego County
- Both Tijuana International Airport (TIJ) and California High Speed Rail (HSR) are potential contributors to meeting future demand
  - Impact of TIJ dependent on U.S.-Mexican economic conditions; convenience of the border-crossing process; and fare differentials between U.S. and Mexican airlines
  - Impact of HSR depends on integration with the greater transportation network
Historic Growth in Aviation Demand

SDIA Is One of the Faster Growing Airports in the Region

Annual Passenger Enplanements
Southern and Baja California Airports

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<td>SDIA</td>
<td>3.2%</td>
<td>3.8%</td>
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<td>LAX</td>
<td>1.6%</td>
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<td>TIJ</td>
<td>N/A</td>
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<td>SNA</td>
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<td>LGB</td>
<td>4.1%</td>
<td>12.7%</td>
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<tr>
<td>BUR</td>
<td>2.4%</td>
<td>2.3%</td>
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</tbody>
</table>

Sources: Jacobs Consultancy based on T100, Census data, and Bureau of Economic Analysis, September 2009.

Note: TIJ data only available from 2001-2008; enplanements estimated to be 50% of total passengers.
Three letter airport codes defined on previous slide.
Regional Aviation Demand Characteristics

Growth in Per Capita Income Has Driven Enplanements Above Population Growth

Indexed Growth
San Diego Metropolitan Statistical Area (indexed to 1990)

Compound Annual Growth Rate
(1998-2007)

Sources: Jacobs Consultancy based on Landrum & Brown analysis, FAA Terminal Area Forecast, Bureau of Economic Analysis, September 2009.
Notes: Real GDP CAGR is for 2001-2006; San Diego MSA aligns with San Diego County boundaries.
Air Service Background

Top 100 Destinations
San Diego International Airport

Ten Destinations (4 in CA) Account For More Than 40% of SDIA Outbound Traffic

Source: Jacobs Consultancy based on US DOT DB1B, September 2009.
Impact of Low Cost Carriers

Low Cost Carriers Dominate the Smaller Airports in the Region, including TIJ

Airline Market Shares
(Based on Seat Capacity in 2008)

North America

<table>
<thead>
<tr>
<th>Airline</th>
<th>LAX</th>
<th>SAN</th>
<th>SNA</th>
<th>ONT</th>
<th>BUR</th>
<th>LGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest (LCC)</td>
<td>42%</td>
<td>29%</td>
<td>55%</td>
<td>69%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>United</td>
<td>15%</td>
<td>11%</td>
<td>18%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>American</td>
<td>15%</td>
<td>11%</td>
<td>18%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Other Airlines</td>
<td>51%</td>
<td>35%</td>
<td>41%</td>
<td>31%</td>
<td>13%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Mexico

<table>
<thead>
<tr>
<th>Airline</th>
<th>LAX</th>
<th>SAN</th>
<th>SNA</th>
<th>ONT</th>
<th>BUR</th>
<th>LGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volaris (Mexican LCC)</td>
<td>50%</td>
<td>5%</td>
<td>11%</td>
<td>10%</td>
<td>15%</td>
<td>26%</td>
</tr>
<tr>
<td>Mexicana</td>
<td>10%</td>
<td>7%</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Aeromexico</td>
<td>15%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Other Airlines</td>
<td>26%</td>
<td>42%</td>
<td>35%</td>
<td>31%</td>
<td>30%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Sources: Jacobs Consultancy based on US DOT DB1B, OAG data, September 2009.
Notes: Column width proportional to total annual seat capacity from that airport; includes international demand.
LCC = Low Cost Carrier

Low Cost Carriers Dominate the Smaller Airports in the Region, including TIJ
Impact of Low Cost Carriers

Southwest Airlines Has Driven the Majority of Passenger Growth at SDIA Since 1990

Annual Passenger Enplanements
San Diego International Airport

- **Southwest**
  - Compound annual growth = 7.2%
  - 38% of annual passenger enplanements in 2008

- **Other Airlines**
  - Compound annual growth = 1.4%
  - 62% of annual passenger enplanements in 2008

Source: Jacobs Consultancy based on T100, September 2009.
Note: Enplanements from T100 are slightly different from figures provided by SDCRAA.
Impact of Low Cost Carriers

At SDIA, Southwest Airlines Has Grown Primarily by Adding New Routes

Seats Offered
Southwest Airlines (Millions)
San Diego International Airport

67% of Southwest Airlines growth since 1990 is from new routes

1990 Existing Route Growth 
New Routes 2008
1.5 5.0

Seats Offered
All Other Airlines (Millions)
San Diego International Airport

Legacy Carriers substantially reduced services to LAX

1990 Existing Routes Growth New Routes 2008
1.2 0.8 0.4 7.4 6.9

Source: Jacobs Consultancy, based on US DOT DB1B, September 2009.
Impact of Low Cost Carriers

Southwest Competes Vigorously with Other Airlines

**A** Jan 07 – Virgin America announces SFO hub and plans to enter SAN-SFO market

**B** May 07 – Southwest announces plans to reestablish service at SFO, and plans to reintroduce SAN-SFO

**C** Aug 07 – Southwest launches SAN-SFO service at an introductory one-way fare of $39

**D** Feb 08 – Virgin America launches SAN-SFO service

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**SFO Route Competition from San Diego International Airport**

Sources: Jacobs Consultancy based on US DOT DB1B, OAG, September 2009.
Air Service Background – Los Angeles International Airport

Many San Diego County Residents Choose to Connect at LAX for Frequency or Destination

San Diego County Passengers’ Destinations Connecting at LAX

- Destinations with <2 daily freq (95%) includes: HNL, JFK, MCO
- Domestic (34%)
- Pacific (40%)
- Atlantic (17%)
- Mexico (3%)
- Other (6%)

- 107,280 (17%)
- 140,100 (23%)
- 247,380 (41%)
- 30,290 (5%)

- 325,193 (54%)

The Majority of San Diego County Residents Traveling to Mexico Use Tijuana International

**Originating Airports for San Diego County Residents Traveling to Mexico (2006)**

<table>
<thead>
<tr>
<th>Airport</th>
<th>Daily Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIJ</td>
<td>78,000</td>
</tr>
<tr>
<td>SDIA</td>
<td>46,800</td>
</tr>
<tr>
<td>LAX</td>
<td>7,800</td>
</tr>
<tr>
<td>ONT &amp; SNA</td>
<td>647,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>780,000</strong></td>
</tr>
</tbody>
</table>

**Number of Destinations and Daily Departures to Mexico (2009)**

<table>
<thead>
<tr>
<th>Airport</th>
<th>Mexican Destinations</th>
<th>Daily Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIJ</td>
<td>21</td>
<td>50</td>
</tr>
<tr>
<td>SDIA</td>
<td>1</td>
<td>1-2</td>
</tr>
<tr>
<td>LAX</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>ONT &amp; SNA</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

TIJ also includes non-stop service to Tokyo

Sources: Jacobs Consultancy, based on U.S. DOT DB18, Cross Border Terminal Study, OAG data, September 2009.

Notes: Air traffic to Mexico from SDIA in 2006 was approximately 78,000 passengers representing 10% of Market Information Data Transfer (MIDT) departure bookings. Cross Border Terminal Study estimates 475,000 (±75,000) TIJ enplanements are San Diego County residents.
Air Service Background – Tijuana Rodriguez International Airport

Significant Ground Access Time Is Associated with Using Tijuana International Airport

Distribution of Border Crossings by Point of Entry

- **San Ysidro**: 52%
- **Otay Mesa**: 34%
- **Tecate**: 14%

<table>
<thead>
<tr>
<th>Location</th>
<th>Into Mexico</th>
<th>Into the United States</th>
<th>Vehicle</th>
<th>Pedestrian</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Ysidro</td>
<td>&lt; 5 min</td>
<td>50 – 75 min</td>
<td>5 – 10 min</td>
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</tr>
<tr>
<td>Otay Mesa</td>
<td>&lt; 5 min</td>
<td>20 – 30 min</td>
<td>0 – 20 min</td>
<td></td>
</tr>
<tr>
<td>Tecate</td>
<td>&lt; 5 min</td>
<td>5 – 40 min</td>
<td>Closed</td>
<td></td>
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</tbody>
</table>

Demographic and Economic Outlook

Continued Economic Growth Projected for San Diego, Los Angeles and Mexico

San Diego / Los Angeles

Personal Income Growth Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$27,146</td>
<td>$28,546</td>
<td>$30,052</td>
<td>$30,980</td>
<td>$31,980</td>
<td>$32,734</td>
</tr>
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</table>

Regional GDP Growth Projection (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$129,107</td>
<td>$174,883</td>
<td>$208,980</td>
<td>$244,749</td>
<td>$280,139</td>
<td>$326,341</td>
</tr>
</tbody>
</table>

Mexico

National GDP Growth Projection (trillion US Dollars)

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<td>0.57</td>
<td>0.58</td>
<td>0.60</td>
<td>0.67</td>
<td>0.68</td>
<td>0.72</td>
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</tbody>
</table>

Sources: Jacobs Consultancy, based on SANDAG RTP, SCAG RTP, September 2009.
Paramus Post, based on Global Insight, January 2009.

Note: All figures are in real (1999) dollars.
Demand for Air Travel in the U.S. Correlates Strongly with Fluctuations in the Economy

- Recessionary periods and external “shocks” cause periodic downturns in aviation growth

- In the post-financial crisis environment, carriers have reduced capacity (10-15%) in an effort to keep fares high; notwithstanding cuts, the industry is projected to lose billions for 2009

- While 2009 third quarter financials improved, passenger growth and yields remain weak; a rebound is projected to be modest at best
Air Cargo / Corporate GA Outlook and Local Considerations

Growth Outlooks Differ for GA and Cargo; Each Prefers to Operate From SDIA

- **General Aviation**
  - All forecast show declines in piston aircraft but increases in turbojets and helicopters
  - Most corporate GA demand is associated with downtown San Diego; SDIA is the ideal geographic location
  - Recreational GA dispersed throughout County airports; does not negatively impact capacity
  - Forecast flight training exceeds Gillespie Field airfield capacity

- **Air Cargo**
  - Air cargo volumes down 20% since 2008; recovery likely to be slow
  - Majority of cargo at SDIA is accommodated on integrated / express carriers (90%) and originates or is destined for downtown San Diego; SDIA is the ideal geographic location
  - Integrated carriers employ a vast distribution networks requiring a centralized airport location
  - No County airports north of SDIA can accommodate air cargo aircraft; carriers unwilling to operate from facilities south of SDIA since increases delivery times to the demand base
## Previous Estimates of Regional Aviation Capacity

**Aviation Capacity Will Be an Issue in San Diego During the Planning Horizon**

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Key Capacity Findings</th>
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</thead>
<tbody>
<tr>
<td>Destination Lindbergh</td>
<td>2008</td>
<td>SDIA’s airfield will reach capacity between 2020 and 2025 likely resulting in airline market responses, including schedule changes, up-gauging to slightly larger aircraft, etc.</td>
</tr>
</tbody>
</table>
| SAN PLAN: Southern California Airport Capacity | 2008 | LAX will reach its policy constrained limit of 78M annual passengers as early as 2015  
Orange County (SNA) and Long Beach (LGB) have reached legal constraints  
Burbank (BUR) may reach its capacity as early as 2025  
SDIA could experience severe congestion by 2020 |
| FAA: Capacity Needs in the National Airspace System | 2007 | SDIA and the San Diego metropolitan area would need additional aviation capacity by 2025  
FAA's determination included NextGen improvements and planned improvements by the authority at that time  
FAA recommended the type of multi-modal planning that is integral to RASP |
| San Diego International Airport Aviation Activity Forecasts | 2004 | SDIA runway capacity will constrain growth between 2015 - 2022  
SDIA runway congestion will not allow further growth 2021 - 2030  
Without new investments, SDIA may experience a cumulative loss of between 5 – 30M passengers over the forecasted period |
Definition of the Base Case

RASP Base Case – “Do nothing” alternative upon which benefits and impacts of other scenarios will be compared against

- Base Case will consider:
  - “Approved” and funded improvements
  - Reasonably foreseeable market-driven reactions to address demand
  - Capacity constraints at LA region airports

Base Case will not include construction of major new facilities, policy options, or artificial constraints on demand
Definition of the Base Case

SDIA Capacity Constraints Will Result in Multiple “Reactions” Between 2025 and 2030

A. Accommodation of some San Diego demand at LA region airports
B. Accommodation of some regional demand at Tijuana International Airport
C. Increased, but limited commercial service at McClellan-Palomar; continued turboprop service (around 30 seats) due to runway length
D. Federally-mandated slot controls at SDIA result in higher fares, some up-gauging, and higher load factors
E. Some international wide-body flights at SDIA due to LAX capacity constraints and increasing drive times to LA region
Definition of the Base Case

Current SDIA Policies and Planned Near-term Improvements Will Be Incorporated

- Continued accommodation of existing user groups (commercial, cargo, corporate GA), and prohibition on departures at night
- Airfield constraint “caps” activity near 2030 or around 28M passengers
- T-2 West 10 gate addition in 2013
- Destination Lindbergh recommendations for “Opening Day”
  - North Side Intermodal Transit Center (ITC) sized to accommodate 400-600K annual transit passengers
  - Linkage to trolleys (Blue and Orange lines), Coaster/Amtrak, and MTS
  - Consolidated rental car facility
  - Dedicated on-airport roadway for busses connecting ITC and south side terminals
  - 2015 transit ridership goals 6% per SANDAG assumptions
- Surface improvements per SANDAG’s RTP – “Revenue Constrained Scenario”
Many Complicated Factors Constrain Implementation of Alternatives

Forces Requiring Preparation of the RASP

Aviation Activity Growth
SDIA Capacity Limitations
Need to Sustain Economic Growth

Factors Working Against Regional Airport System Solutions

Regulatory Factors
No single controlling entity to implement solutions
No regulatory mechanisms to relocate activity segments

Political Factors
NIMBY
Pre-conceived notions regarding effectiveness (or lack) of solutions
Consensus among stakeholders is difficult

Technical Factors
Lack of appropriate existing facilities
Regional demand characteristics
Benefit-cost considerations of major capital improvements
Summary of Alternatives

Four Families of Scenarios for Subcommittee Consideration and Input

1. Commercial Passenger Optimization
2. Tijuana Enhancements
3. California High Speed Rail
4. Air Cargo and GA Optimization
Next Steps

1. Compile and assess all input – then finalize Scenarios for detailed consideration and modeling (December - February 2010)

2. Prepare costs estimates, implementation phasing strategies, and other factors related to each Scenario (January 2010)

3. Utilize the regional demand model to assess impacts on regional demand and benefits (February 2010)

4. Prepare preliminary findings for March 2010 Subcommittee meeting