

Strategic Assessment & Demand Model Overview

Regional Aviation Strategic Plan

Airport Advisory Committee
RASP Subcommittee

June 11, 2009



Revised Draft

Overview / Objectives

Subcommittee Meeting Objectives

1. Review inventory and strategic assessment findings
2. Provide input to the project team regarding key findings
3. Confirm the strategy and approach moving forward

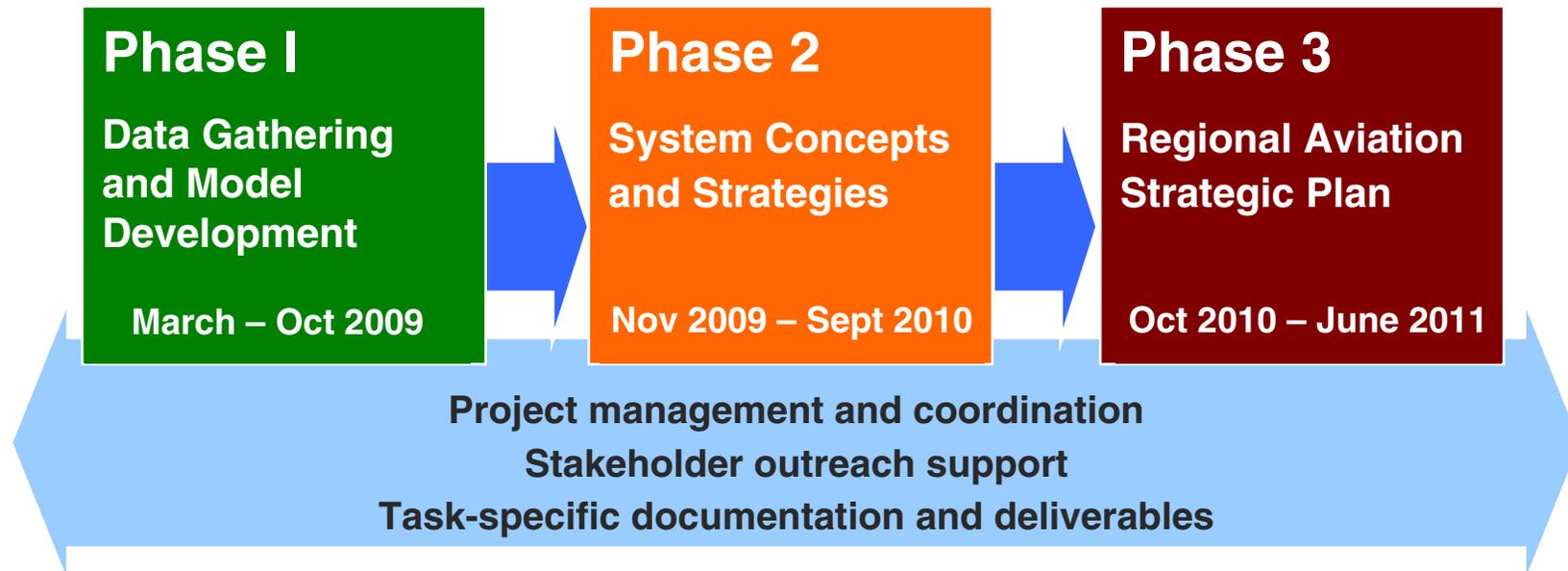
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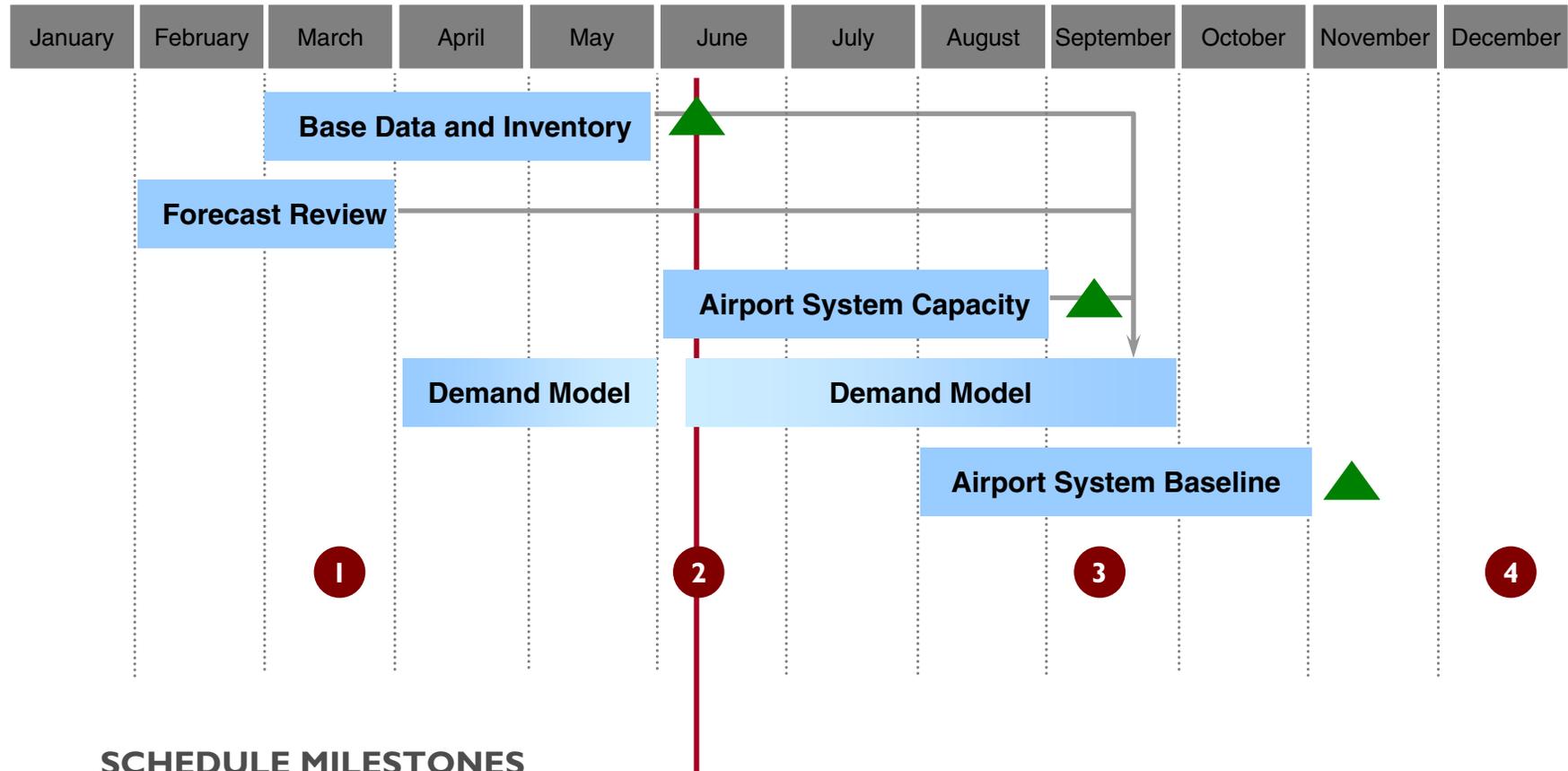
RASP Project Overview

30-month Work Plan Culminating in June 2011



Phase I Schedule

Phase I Will be Completed Fall 2009; Phase II Will Be Accomplished Nov 2009 – Sept 2010

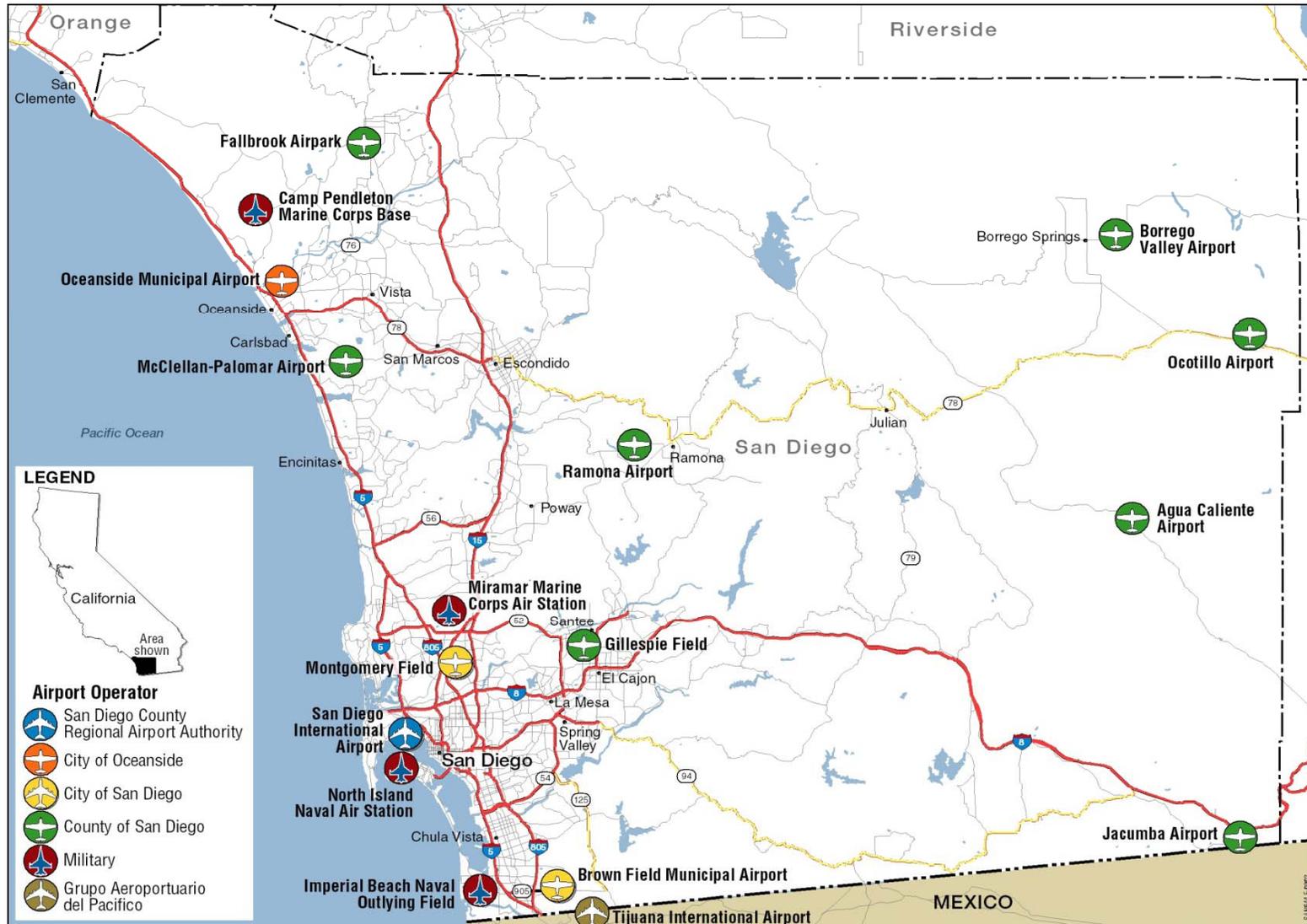


SCHEDULE MILESTONES

-  RASP Subcommittee Meeting
-  Task Deliverable / Working Paper



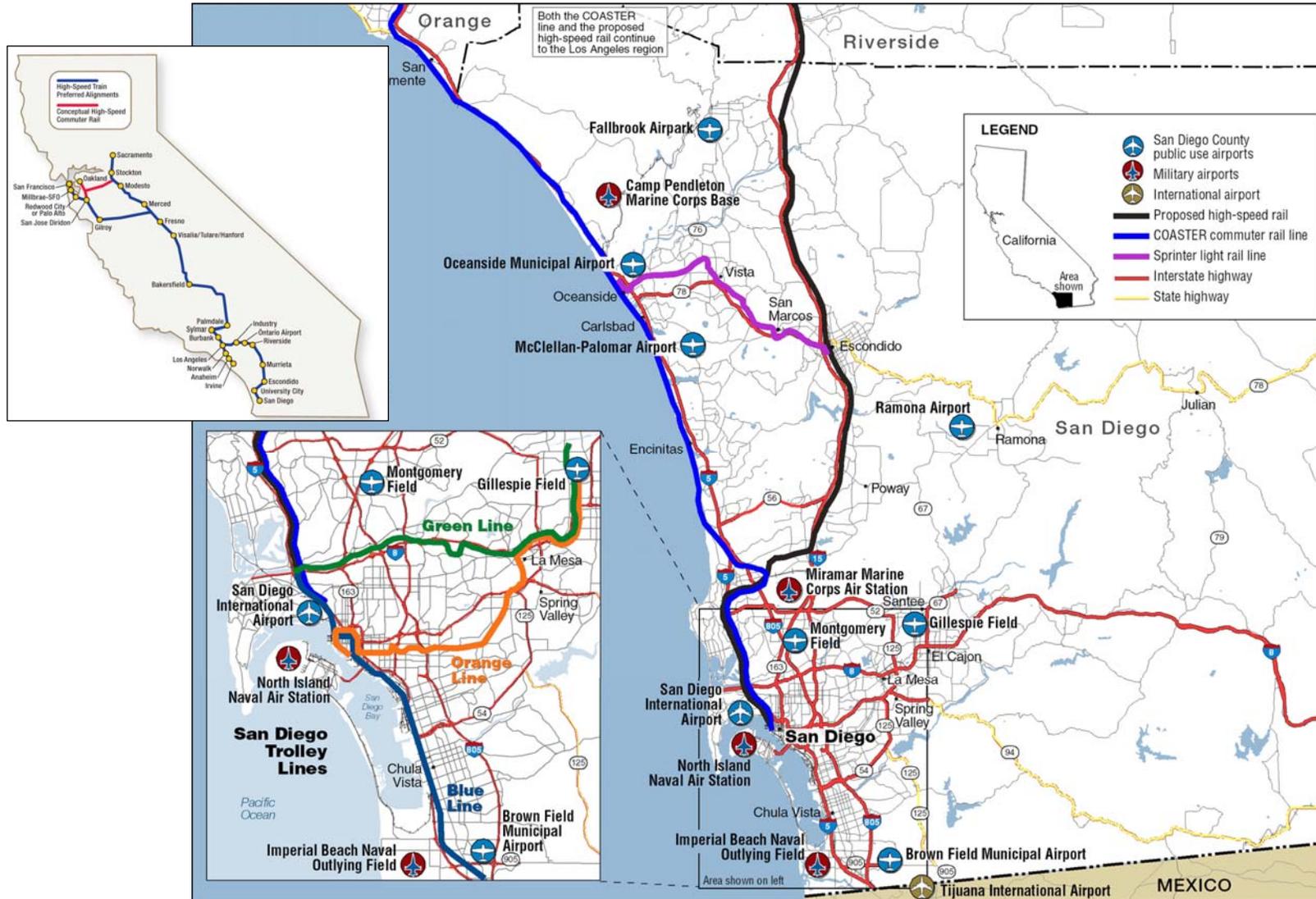
Study Area / Airports in San Diego County



Note: Tijuana International Airport not located in San Diego County.



San Diego County Ground Transportation Network



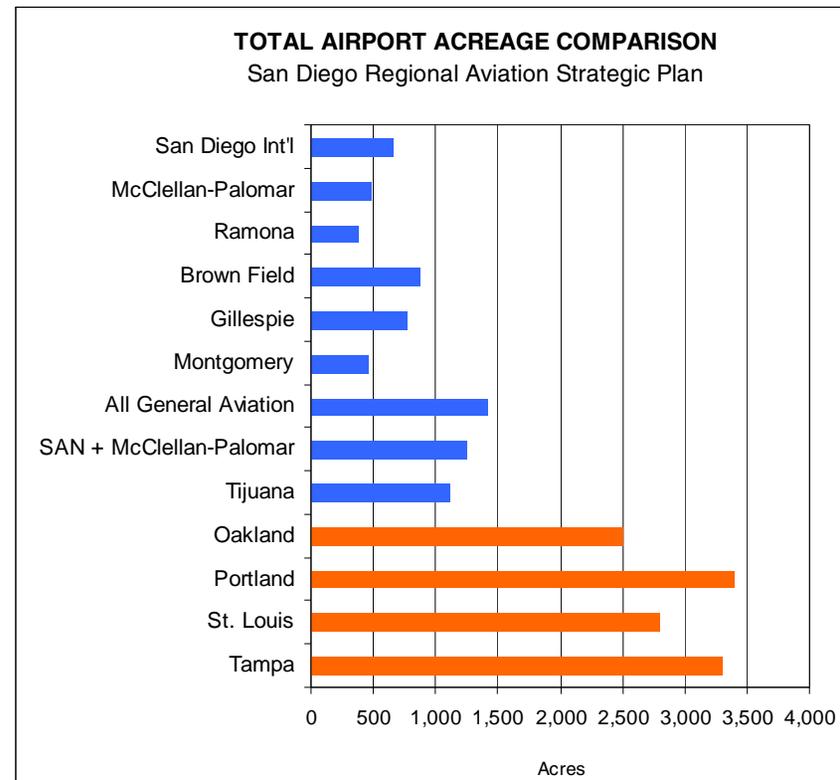
Source: 2030 San Diego Regional Transportation Plan: Pathways to the Future, SANDAG, 2007.



Study Area Attributes

San Diego County Includes Numerous “Constraints” Affecting Aviation Activity

- **Second most populous county in the state; over 3 million residents accounting for 8% of the state’s population**
- **Only two airports certified by the FAA for commercial airline service – San Diego International and McClellan-Palomar**
- **San Diego International has one of the smallest footprints of any metropolitan airport; other public use airports are GA facilities with various expansion constraints**
- **Airports with available land are not located near the population / economic base**
- **Generally bound on the east by rising terrain which precludes and/or complicates airport development**
- **One of the busiest and complex airspace regions in the U.S.**
 - Numerous competing and conflicting interests (commercial, military, corporate, recreational, etc.)
 - Multiple airports in close proximity (12 public use and 4 military bases with aviation activity)
 - Special use and international airspace



Study Challenges and Objectives

The RASP Is Driven by Complicated Objectives

- **Economic objectives** – Ensure continued community/county/regional growth and development
- **Strategic objectives** – Optimize airport system and other transportation assets
- **Environmental objectives** – Reduce noise and other emissions, enhance land use compatibility, etc.
- **There are many stakeholders with a vested interest in the outcome**
 - Agencies – FAA, SANDAG, Caltrans, MTS
 - Multiple airport sponsors – SDCRAA, San Diego County, City of San Diego, Oceanside, and potentially Mexico
 - Local communities and the public
- **No single entity has sole authority to implement recommendations, although many interests are part of the process and participating via the Subcommittee**



Study Challenges and Objectives

Additional Physical Factors and Planning Challenges Will Influence RASP Outcomes

- Recent increases in interregional and international commuting, more people working in San Diego live in Riverside and Imperial counties, Baja, and Mexico
 - Potential for future high-speed and commuter rail to connect San Diego to other airports in southern California; possibility for high-speed passenger rail to alleviate some short-haul demand at San Diego County airports, freeing up capacity
 - The highest use of all aviation infrastructure is possible only with an integration of air and ground (i.e., intermodal strategies)
- RASP objective is not to “*force traffic*” but to “*optimize assets*” across the County’s growing areas
 - *RASP is unique in that it intends to bring together what has typically been considered separate modal infrastructures to help ensure the region’s decisions are made in an integrated fashion*



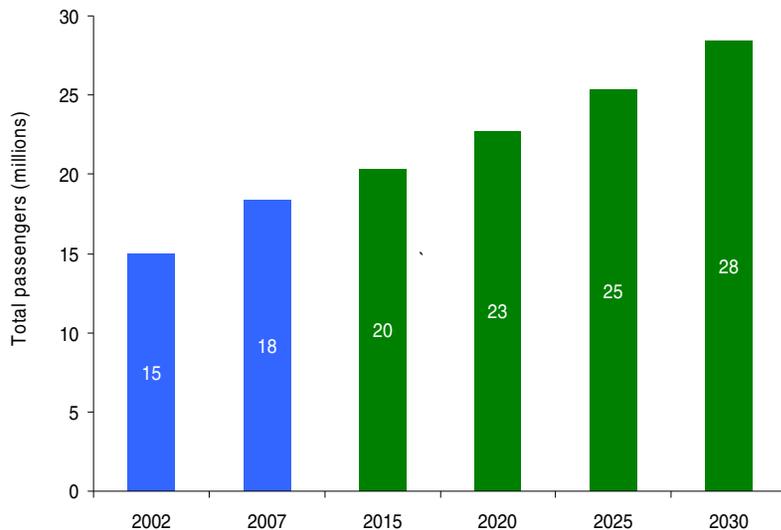
Baseline Regional Forecast Summary (2007 – 2030)

Unconstrained Commercial Passenger Activity is Forecast to Grow Approximately 1.9%

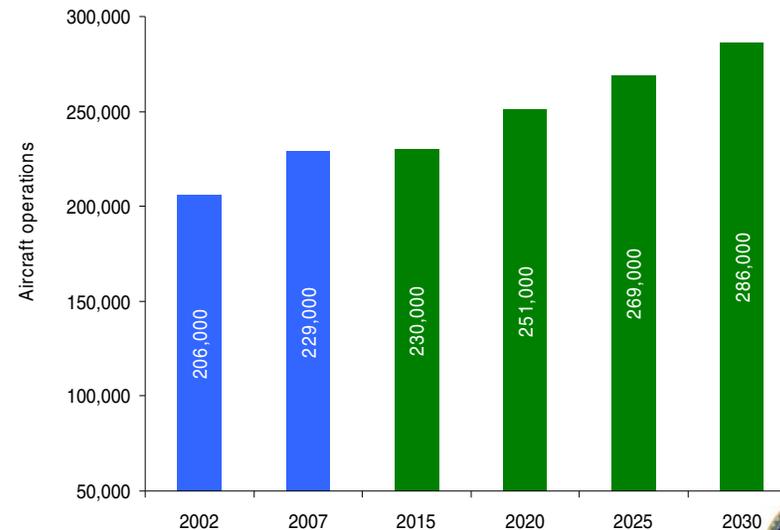
- Passenger forecast based on regression of domestic O&D passengers against personal income and airline yield; assumptions regarding fuel prices incorporated into future fares
- Assumes load factors increase; continued deployment of narrow body jets; small regional jets replaced by larger regional jets; and wide body jets increase as international activity grows

- Majority of commercial operations will be accommodated at San Diego International, where the passenger forecast is driven principally by passenger's starting and ending their travel in San Diego (over 90% of passengers in 2007)
- By 2030 McClellan-Palomar projected to accommodate 0.4% of total commercial passengers and a quarter of commuter passengers

Forecast Total Passengers

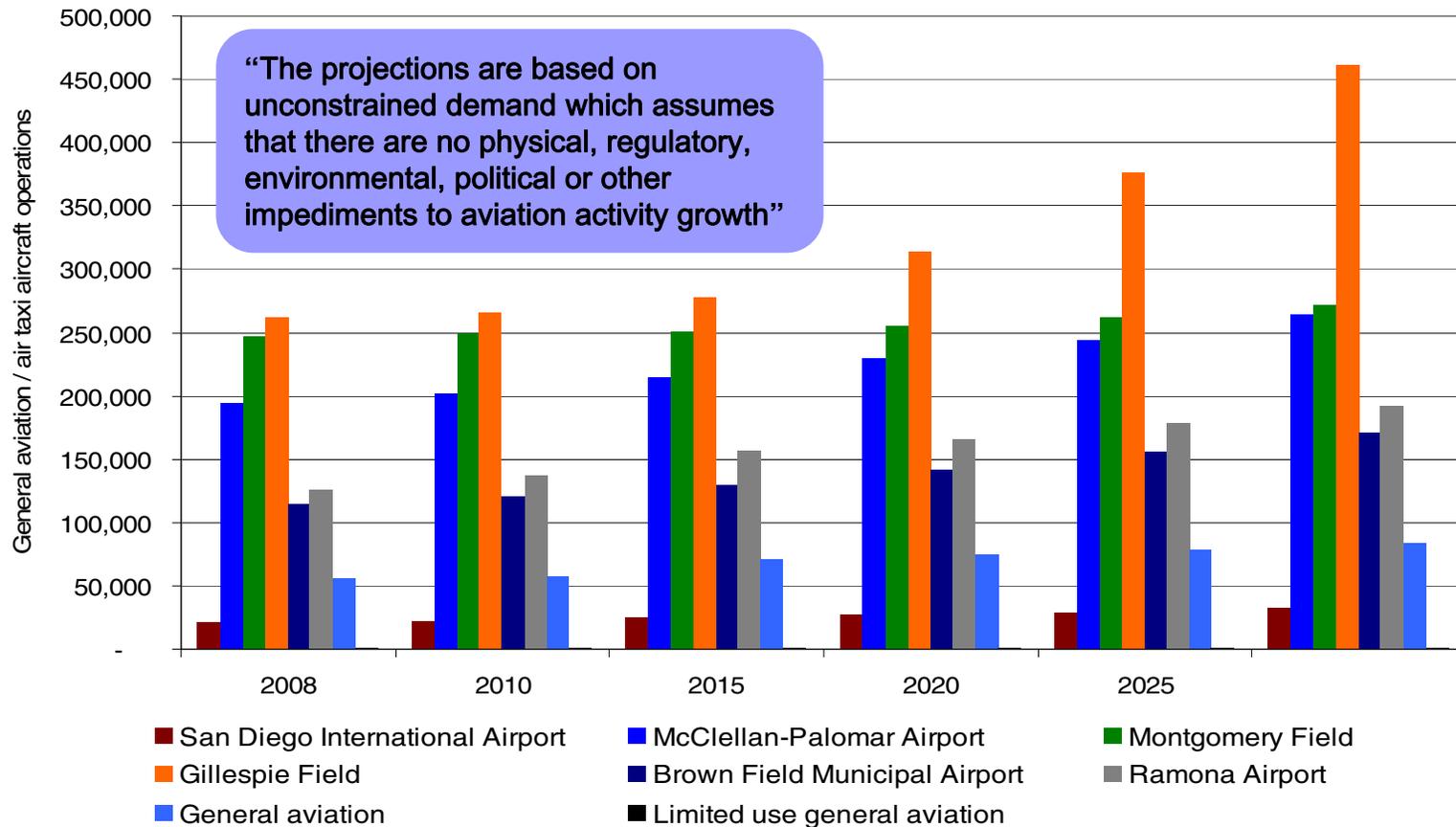


Forecast Passenger Aircraft Operations



Baseline Regional Forecast Summary (2007 – 2030)

Unconstrained General Aviation Operations are Forecast to Grow From 1.0M to 1.5M



Notes: General aviation airports include Borrego Valley, Fallbrook, and Oceanside.
 Limited use general aviation airports include Agua Caliente, Ocotillo, and Jacumba airports.
 Airfield capacity constraints are not considered for forecast operations.
 Source: Landrum & Brown Inc., *RASP Forecast*, December 2008.



BASELINE FACILITIES DATA
Regional Aviation Strategic Plan
San Diego County Regional Airport Authority

	San Diego International (SAN)			McClellan-Palomar (CRQ)			Montgomery Field (MYF)			Brown Field Municipal (SDM)			Gillespie Field (SEE)			Ramona (RNM)		
Airport Activity Statistics																		
Annual Enplanements Annual Operations	Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030	
	(Baseline)	(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	
Annual Enplanements	9.2 Million	14.1 Million	15.5 Million	46,909	50,000	426,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual Operations	229,486	309,800	363,400	212,023	268,700	279,900	222,492	271,800	--	145,661	175,900	281,500	295,652	461,000	489,600	164,699	193,000	242,100
Regional Forecast Facility Improvement and Operational Assumptions	Baseline Scenario assumes construction of new gates, airfield improvements, auto parking, and roadway improvements beginning in 2009. Continued deployment of narrow body jets; replacement of small regional jets to larger regional jets; increased use of wide body jets as international activity grows; projected increase of load factors. High Scenario enplanement forecast reflects lower fuel prices more than Baseline Scenario.			Baseline Scenario assumes SkyWest will continue to serve LAX and replace EMB120 aircraft with CRJ200 (or similar) aircraft in 2013. Planned 38,000 square feet of new hangar space developed in 2009. High Scenario assumes Runway extension to accommodate CRJ200, EMB170, EMB190 and 72-seat Q400 or similar aircraft without restrictions (no indication of length required). Markets potentially served in addition to LAX include: LAS, PHX, DEN, and SFO.			None Identified			High Scenario assumes planned 340 acre development in association with Distinctive Projects Company is implemented. Development includes additional hangar capacity to accommodate 290 additional based aircraft; full occupancy realized.			High Scenario assumes planned 70 acre Cajon Air Center development is implemented with 55 acres of new aircraft storage hangars; full occupancy realized. Majority of additional based aircraft would originate from outside San Diego County (as opposed to other County airports). Forecasts represent unconstrained conditions, and activity levels may exceed current capacity.			High Scenario assumes planned development of the Ramona Air Center in 2017-2019, including 56 private hangars and 40 public hangars; full occupancy realized.		
Airport Facilities																		
FAA NPIAS Designation	Large Hub Primary Commercial			Non-Hub Primary Commercial			Reliever			Reliever			Reliever			Reliever		
California Aviation System Plan Designation	Primary Commercial Hub			Primary Commercial Non-Hub			Metropolitan GA			Regional GA			Regional GA			Regional GA		
Total Airport Acreage	661			487			456			880			775			378		
FAA Airport Reference Code	D-V			B-II			B-II			D-IV			B-II			B-II		
Runway Data	9/27 - 9,401			6/24 - 4,897			5/23 - 3,400 10L/28R - 4,577 10R/28L - 3,400 Runway strength limited to aircraft weighing less than 20K lbs.			8L/26R - 7,972 8R/26L - 3,180			9L/27R - 5,341 9R/27L - 2,737 17/35 - 4,147			9/27 - 5,000 (Paved)		
Instrument Approach	Runway 9: ILS CAT I Runway 27 Non-precision			Runway 24: ILS CAT I			Runway 28R: ILS CAT I			Non-precision			Non-precision			Non-precision		

Tijuana-Rodriguez (TIJ)		
Historical 2007	Forecast 2030	
	(Baseline)	(High)
2.3 Million 56,200	4.4 Million Approx. 70,000	6.9 Million --
Not Included in the regional forecast		
N/A		
N/A		
1,112		
ICAO 4E		
9/27 - 9,711 10/28 - 8,200 CLOSED		
Runway 9: ILS		

	Oceanside Municipal (OKB)			Fallbrook Community (L18)			Borrego Valley (L08)			Ocotillo (L90)			Agua Caliente (L54)			Jacumba (L78)		
Airport Activity Statistics																		
Annual Enplanements Annual Operations	Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030		Historical 2007	Forecast 2030	
	(Baseline)	(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	(Baseline)		(High)	
Annual Enplanements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual Operations	14,128	18,200	36,500	33,286	43,200	--	26,251	22,400	--	800	800	--	4,400	4,400	--	325	325	--
Regional Forecast Facility Improvement and Operational Assumptions	High Scenario assumes Airport Property Ventures will take over management of airport; 100 new hangars developed for additional based aircraft.			None Identified			None Identified			None Identified			None Identified			None Identified		
Airport Facilities																		
FAA NPIAS Designation	General Aviation			General Aviation			General Aviation			Not in NPIAS			Not in NPIAS			Not in NPIAS		
California Aviation System Plan Designation	Regional GA			General Aviation			General Aviation			General Aviation			General Aviation			General Aviation		
Total Airport Acreage	236			290			246			351			160			131		
FAA Airport Reference Code	B-I			B-I			B-II			B-I			B-I			B-I		
Runway Data	6/24 - 2,712 Runway strength limited to aircraft weighing less than 12K lbs.			18/36 - 2,160 Runway strength limited to aircraft weighing less than 12K lbs.			8/26 - 5,011			9/27 - 2,475 (Dirt) 13/31 - 4,210 (Dirt)			11/29 - 2,500 Runway strength limited to aircraft weighing less than 12K lbs.			7/25 - 2,510 (Gravel) Runway strength limited to aircraft weighing less than 12K lbs.		
Instrument Approach	Non-precision			Non-precision			Non-precision			None (visual only)			None (visual only)			None (visual only)		

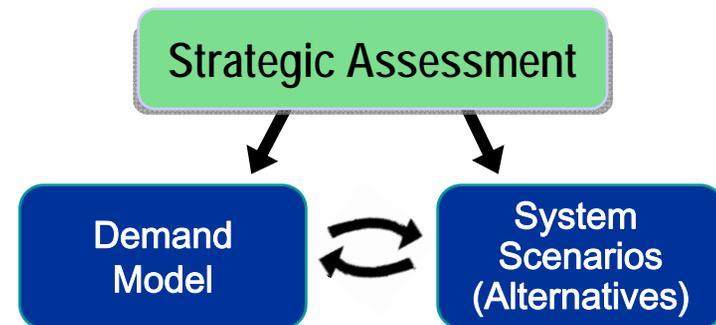
Notes: NPIAS = National Plan of Integrated Airport Systems
N/A = Not Applicable
Sources: Forecast data—San Diego County Regional Aviation Strategic Plan - Aviation Demand Forecasts, Landrum & Brown, Inc., December 2008.
Airport facility data—National Plan of Integrated Airport Systems, FAA, 2008.
Tijuana-Rodriguez data—Cross Border Terminal - Market Demand Study, Infrastructure Management Group, Inc., 2006.

Strategic Assessment

The Strategic Assessment is a Cornerstone of the RASP

- The primary objective of the Strategic Assessment is to *identify those airports that should be considered for additional uses/opportunities to optimize the region's aviation system*
- Additional objectives include:
 - Develop an understanding of the airport system dynamics
 - Collect key inventory and baseline data for ensuing tasks
 - Gather information that will be utilized in the development and evaluation of alternative scenarios
 - Offer opportunities to understand stakeholder needs and issues
 - Provide a forum to initiate discussions with committees and other stakeholders on RASP issues and opportunities

- The strategic assessment prepared for each airport is organized along on the following:
 - **Existing** airport facility Strengths (S) and Weaknesses (W) with regard to accommodating its current market
 - **Future** airport Opportunities (O) and Threats (T) with respect to accommodating future regional aviation demand
- The Strategic Assessment ties together the modeling and system scenarios



STRATEGIC ASSESSMENT SUMMARY MATRIX
Regional Aviation Strategic Plan
San Diego County Regional Airport Authority

Revised Draft

	Commercial Service		FAA Designated Reliever				General Aviation			Not in FAA NPIAS			Tijuana-Rodriguez TIJ
	San Diego International SAN	McClellan-Palomar CRQ	Montgomery Field MYF	Brown Field Municipal SDM	Gillespie Field SEE	Ramona RNM	Oceanside Municipal OKB	Fallbrook Community L18	Borrego Valley L08	Ocotillo L90	Agua Caliente L54	Jacumba L78	

Current Market/Role													
Ownership/Control	San Diego Regional Airport Authority	San Diego County	City of San Diego	City of San Diego	San Diego County	San Diego County	City of Oceanside	San Diego County	U.S./Mexico partnership				
GA - Small/Recreational and Training	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—
GA - Large/Corporate Jet and Air Taxi	✓	✓	✓	✓	✓	✓	—	—	—	—	—	—	✓
Air Carrier - Commuter	✓	✓	—	—	—	—	—	—	—	—	—	—	✓
Air Carrier - Mainline	✓	—	—	—	—	—	—	—	—	—	—	—	✓
Air Cargo	✓	—	✓	—	—	—	—	—	—	—	—	—	✓

Facility Assessment/Accommodation of Current Users													
Primary Regional Access	1.5 mi from I-5	2 mi from I-5	2 mi from CA 163	3 mi from I-805	1 mi from CA 67	20 mi from I-15	2 mi from I-15	10 mi from I-15	14 mi from CA 78	<1 mi from CA 78	37 mi from I-8	2 mi from I-8	3 mi from I-5
Airfield - Runway Length	9,401' Paved	4,897' Paved	4,577' Paved 3,400' Paved	7,972' Paved 3,180' Paved	5,341' Paved 4,147' Paved	5,000' Paved	2,712' Paved	2,160' Paved	5,011' Paved	4,210' Dirt 2,475' Dirt	2,500' Paved	2,510' Gravel	9,711' Paved
Instrument Approach	R/W 9: ILS/CAT I, R/W 27R Localizer	R/W 24: ILS/CAT I	R/W 28R: ILS/CAT I	Non precision	Non precision	Non precision	GPS	Non precision	GPS	None	None	None	R/W 9 ILS/CAT I; R/W 27R Localizer
Passenger Terminal Building	41 gates; 18M annual passengers	New terminal w/ 4 gates; 50K annual passengers	None	None	None	None	None	None	None	None	None	None	16 gates; 4M annual passengers
FBO/Corporate Terminal	Existing	Modern	Existing	Planned	Existing	Existing	None	Existing	Existing	None	None	None	Existing
Cargo Facilities	Existing	None	Limited	None	None	None	None	None	None	None	None	None	Existing

Possible Change In Role?

Possible Change In Role?

Development Potential													
Proximity to Users/Market Base (a)	3 mi from downtown San Diego	32 mi from downtown San Diego	8 mi from downtown San Diego	20 mi from downtown San Diego	23 mi from downtown San Diego	36 mi from downtown San Diego	40 mi from downtown San Diego	56 mi from downtown San Diego	90 mi from downtown San Diego	95 mi from downtown San Diego	75 mi from downtown San Diego	74 mi from downtown San Diego	25 mi from downtown San Diego
Runway Upgrade	Physical constraints	Runway extension to 6,000' possible	Physical and environmental constraints	On- and off-airport land available	Physical constraints	Environmental constraints	Physical constraints	On-Airport land available	Off-Airport land available	Off-Airport land available	Off-Airport land available	Off-Airport land available	Land available
On-Airport Land Available for Development	40 acres	Terminal upgrade possible; 10 acres	17 acres	257 acres	191 acres	130 acres	17 acres	45 acres	70 acres	238 acres	N/A	56 acres	166 acres
Proximity to Highway/Mass Transit	Close to I-5; bus service	Close to I-5; bus service	Close to I-805 and I-15; bus service	Close to I-805 and I-5; CA 905 ext. planned	CA 52 extension; link to 2 trolley lines	Planned improvements	Close to I-5; bus service	Access difficult; no mass transit	CA 905 extension; bus service				
Environmental Concerns/On-Airport	Some contaminated sites; habitat protection	Environmental contamination	Vernal pools, habitat protection	Vernal pools, habitat protection	No known	Extensive vernal pools	No known	No known	No known	No known	No known	No known	Unknown
Community Concerns	Noise and traffic congestion	Potential noise and development	Aircraft noise	Aircraft noise	Noise and community redevelopment	Potential future residential development	No known	No known	No known	No known	No known	No known	Social and inter-governmental issues

Summary

Summary

Consideration in the RASP													
<p>Should the airport be considered for additional uses/opportunities to optimize the region's aviation system?</p>	Consideration for additional uses/opportunities not expected; Destination Lindbergh established that SAN will reach capacity before 2030	Consideration for additional uses/opportunities should be considered in the RASP because of existing FAA certifications, proximity to population base, terminal infrastructure, and potential for runway extension	Consideration for additional uses/opportunities may be considered in the RASP because of proximity to population base and availability of land for passenger and cargo activity; physical and environmental barriers to runway extension/upgrade may prohibit accommodation of new user groups	Consideration for additional uses/opportunities should be considered in the RASP because of proximity to population base, existing runway length, and availability of developable land for terminal or cargo facilities	Consideration for additional uses/opportunities should be considered in the RASP because of proximity to population base, access to light rail, and availability of developable land to accommodate new user groups	Consideration for additional uses/opportunities should be considered in the RASP because of proximity to population base, projected population growth, and planned roadway improvements; potential environmental constraints may restrict development	Consideration for additional uses/opportunities should not be considered in the RASP because of lack of infrastructure, community opposition, and limited available land for development; significant constraints to runway extension	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities may be considered in the RASP because of proximity to population base and existing infrastructure; intergovernmental agreement required for cross border operation

(a) Proximity to downtown San Diego used as criterion in this matrix. Note: NPIAS = National Plan of Integrated Airport Systems

LEGEND Compatible Marginal Incompatible

San Diego International Airport (SAN)

FAA-designated Large-hub Primary Commercial Service Airport

- Non-stop service to over 35 domestic and 3 international markets (Canada and Mexico); passenger service provided by 14 domestic carriers, including 6 low-cost carriers and 2 seasonal carriers
- Approximately 237,600 operations and 18.3M total passengers in 2007
- Accommodates majority of regional cargo demand via passenger airlines (belly cargo) and 4 dedicated all-cargo carriers
- Single Runway 9-27 (9,401 feet) – considered the “busiest single runway” in the U.S.
- Located 3 miles west of downtown business district
- Vehicle access via Harbor Drive 1.5 miles south of Interstate 5
- Destination Lindbergh strategic planning project established a plan for the ultimate buildout of the airport while improving transit ridership and reducing surface traffic impacts
- Operated by the San Diego County Regional Airport Authority



Not to Scale



San Diego International Airport (SAN)

Facility Constraints will “Cap” Activity Sometime Between 2020 and 2030

▪ Strengths

- Convenient location 3 miles west of the downtown business district provides a strong origination and destination base
- Historically strong and consistent local economic drivers (e.g., military, tourism) result in a steady business and leisure passenger base
- Virtually the sole commercial air service provider in the County
- Efficient and customer-friendly facilities; high passenger satisfaction ratings

▪ Weaknesses

- Site constrained by neighboring land uses and environmental and natural obstacles making expansion difficult and expensive
- Terrain and obstacles in the approach and departure paths limit aircraft payloads in certain domestic and international markets
- Some outdated infrastructure will require costly upgrades and redevelopment in next 10 years
- Prohibition on takeoffs between 11:30 pm and 6:30 am limits potential service in certain international and domestic markets

▪ Opportunities

- Potential to serve additional long-haul domestic and international cities markets
- Leverage proximity to intercity and existing and planned public transportation (Amtrak, COASTER, light rail, HSR) to facilitate momentum for regional intermodal hub (Key component of Destination Lindbergh plan)
- On-airport land available for reconfiguration / optimization of infrastructure, including Teledyne-Ryan site available after remediation
- Construction of new gates, airfield improvements, roadway and parking improvements beginning in 2009 will improve efficiency and flexibility

▪ Threats

- Airfield constraints (single runway and inadequate airfield/taxiway infrastructure) will hinder growth sometime between 2020 and 2030
- Airport and demand base (passenger and cargo) located within the LAX catchment area
- Active and vocal community opposition, largely from noise exposure and vehicle traffic congestion, may challenge or delay planned improvements



McClellan-Palomar Airport (CRQ)

FAA-designated Non-hub Primary Commercial Service Airport

- Non-stop commuter service to Los Angeles (LAX); currently 7 flights per day; service provided by single carrier (Skywest / United Express)
- Primary market is high-end corporate GA activity with some recreational GA activity
- Approximately 94,000 passengers and 212,000 total (GA and commercial) aircraft operations in 2007
- Single Runway 6-24 (4,897 feet)
- Located approximately 32 miles north of downtown San Diego and 30 miles south of the center of Orange County
- Access via Palomar Airport Road, approximately 2 miles east of Interstate 5
- Operated by San Diego County



Not to Scale



McClellan-Palomar Airport (CRQ)

Facility Suitable for Corporate GA, But Limited Expansion Potential

▪ Strengths

- FAR Part 139 certification and existing commuter service already established
- Located near north county population centers
- New 18,000 sq ft terminal and support facilities constructed in 2009 include international customs building
- Strong on-airport tenant base – 4 FBO's (3 recently constructed or remodeled) and over 15 aviation-related on-airport businesses
- Relatively small area affected by cumulative noise exposure
- Commercial air service supported by mass transit (bus service only) providing access to north county locations and the COASTER

▪ Weaknesses

- Runway length prohibits regional jet and some GA aircraft from operating at maximum operational capabilities and limits service to markets < 500 miles
- Low levels of commercial activity; single airline (United Airlines) service to a single market (LAX)
- Cost to maintain FAR Part 139 status is not adequately offset by revenues generated by commercial operations

▪ Opportunities

- Potential 1,000-foot runway extension would provide reasonable departure capability for typical regional jet aircraft (CRJ200, EMB145) and larger corporate GA aircraft
- Proximity of COASTER provide opportunities to attract additional activity
- New terminal facility could be expanded to accommodate up to 240,000 annual passengers
- Potential for San Diego Metropolitan Transit System (MTS) to utilize excess parking facilities for a Park & Ride service

▪ Threats

- Significant and costly impediments to runway extensions; eastern extension would require landfill remediation; western extension not practical due to grade change
- On-Airport environmental obstacles and sensitive areas (landfills) would increase development costs
- Some opposition to airport expansion



Montgomery Field (MYF)

One of 4 FAA-designated Relievers to San Diego International

- **Primarily accommodates recreational GA activity**
- **Approximately 222,000 aircraft operations in 2007**
- **Runways**
 - Runway 10L-28R (4,577 ft)
 - Runway 10R-28L (3,400 ft)
 - Runway 5-23 (3,400 ft)
- **Airspace shared with MCAS Miramar; interaction is coordinated resulting in minimal impacts to current operations**
- **Located approximately 8.5 miles north of downtown San Diego**
- **Access provided via Aero Drive 2 miles from CA 163; nearby Interstates 805 and 15**
- **Operated by the City of San Diego**



Not to Scale

Montgomery Field (MYF)

Activity GA Facility with Development Restrictions That Limit Future Role

▪ **Strengths**

- Close proximity to downtown San Diego and large segments of the population base
- Parallel runways allow segregation of flight training (touch-and-go) operations from other operations
- Runway 10L-28R extended to 4,577 feet to reduce noise exposure for neighborhoods to the west (added length allows aircraft to reach higher altitudes before overflying residential areas)
- Convenient ground access provided via major state roads (CA 163) and interstates (I-15 and I-805)

▪ **Weaknesses**

- Operations limited to small GA aircraft due to the relatively short runway length (4,577 feet for departures and 3,400 feet for arrivals); and City Ordinance prohibiting operations by aircraft weighing more than 20,000 lbs.
- Noise abatement restrictions further restrict activity: daytime noise limit 88 dB CNEL 6:30 am to 11:30 pm; nighttime noise limit 70 dB CNEL 11:30 pm to 6:30 am

▪ **Opportunities – Available on-Airport land for redevelopment**

▪ **Threats**

- Significant impediments to extending primary Runway 10L-28R, including location of CA 163 and environmentally sensitive areas
- On-Airport environmental obstacles (vernal pools and protected plant species) may limit facility expansion and increase development costs
- Opposition from nearby residential areas based on aircraft noise, flight patterns, crash hazard areas, and potential expansion
- Miramar airspace may preclude future instrument operations or changes in airport operational patterns



Brown Field (SDM)

One of 4 FAA-designated Relievers to San Diego International

- Serves a mix of corporate and recreational GA activity
- Approximately 145,000 aircraft operations in 2007
- Parallel runways
 - Runway 8L-26R (7,972 ft)
 - Runway 8R-26L (3,180 ft) primarily used for training activity
- Located approximately 20 miles southeast of downtown San Diego; 1.5 miles north of the Mexican border
- Near Otay Mesa Port of Entry (POE), one of the busiest commercial land border POEs in the U.S.
- Primary access via Otay Mesa Rd (CA 905) 3 miles from Interstate 805
- Operated by the City of San Diego



Not to Scale

Brown Field (SDM)

Well-Equipped GA Facility With Land Available for Development

▪ Strengths

- Runway length sufficient to accommodate a wide-range of aircraft types, including most passenger air carrier and cargo aircraft
- Proximity to Otay Mesa Port of Entry, designation as a Foreign Trade Zone, and inclusion in the California Enterprise Zone Program attracts both aviation and non-aviation service providers
- Serves as a “first port of entry” for GA aircraft traveling from the Baja region of Mexican to California airspace, driving demand for U.S. Customs and FBO services
- Proximity to Interstate 805 and 125 provides access to the San Diego surface transportation network

▪ Weaknesses

- Limited GA/FBO facilities does not adequately support the primary GA market
- Efficient airport operations are complicated by Otay Mountain located directly east of the Airport; only effective instrument approach to runway 8L from the west
- Primary runway load bearing capacity limited to 175K lbs; hence operations currently limited to narrow-body aircraft (e.g. B-737, MD-80 etc.). Airfield dimensional critical, however, can accommodate larger aircraft

▪ Opportunities

- Both on- and off-airport land potentially available for future development
- Agreement with Distinctive Projects Company (private developer) to develop approximately 365 acres of available airport property; proposal includes:
 - New GA facilities – FBO/GA center, hangars
 - Helicopter FBO and City/County Fire Fighting services
 - San Diego Airspace Museum (part of Smithsonian)
- Location, airport facilities, and FTZ role could be leveraged to attract cargo, corporate, light industrial and other non-aviation development
- Planned roadway improvements will increase surface transportation access to the airport and nearby development

▪ Threats

- Residential areas to the west oppose airport expansion and have resisted prior airport development plans
- Airspace conflicts, including rising terrain and mountains to the east, San Diego International arrival path, and Mexican airspace could limit growth in activity



Gillespie Field (SEE)

One of 4 FAA-designated Relievers to San Diego International

- Primarily accommodates recreational GA activity; limited corporate activity
- Approximately 295,000 aircraft operations in 2007
- Significant flight school training activity; approximately 60% of total operations
- **Runways**
 - Runway 9L-27R (5,341 ft)
 - Runway 9R-27L (2,737 ft) – 9R planned 423-foot extension
 - Runway 17-35 (4,147 ft)
- **Located between El Cajon and Santee, approximately 23 miles northeast of downtown San Diego**
- **Access via Cuyamaca St. 3.5 mi. from CA 52 and Bradley Ave; 1 mi. from CA 67**
- **Operated by San Diego County**



Not to Scale



Gillespie Field (SEE)

Active and Well-Equipped GA Facility with Near-term Aviation-related Development Plans

▪ **Strengths**

- Substantial on-airport land available for development
- Orange and Green Trolley lines stop at Gillespie Field providing convenient public transportation between the Airport and downtown San Diego and many other locations
- Parallel runways allow segregation of training operations from itinerant operations

▪ **Weaknesses – Instrument approach capabilities complicated by surrounding military airspace and terrain**

▪ **Opportunities**

- El Cajon Plaza, a planned near-term 70-acre development, will provide opportunity to expand the tenant base; proposal includes additional indoor storage hangars and tie-down leaseholds; substantial interest expressed in leasing space
- Potential intermodal public transit link on the west side (connecting with the existing MTS trolley stop) could improve regional access
- Completion of CA 52 extension and interchange with CA 67 in 2010 will provide improved accessibility to the north side and ease congestion on surrounding roadways

▪ **Threats**

- Primary runway bordered by roads on both ends increasing the cost of a potential runway extension
- Historical opposition from nearby residential areas primarily due to flight training activity; airport expansion and increases in based aircraft/operations may conflict with community redevelopment initiatives



Ramona Airport (RNM)

One of 4 FAA-designated Relievers to San Diego International

- Primarily serves recreational GA activity
- Approximately 165,000 aircraft operations in 2007 (activity is 75% local flight training)
- Single Runway 9-27 (5,000 feet)
- Located approximately 36 miles northeast of downtown San Diego
- Primary access via Montecito Road and CA 67, 20 miles from Interstate-15
- Operated by San Diego County



Not to Scale

- **Strengths**
 - Strong on-Airport GA tenant base
 - California Department of Forestry (CDF) is a major anchor tenant
 - Available on-airport land for development
- **Weaknesses**
 - Terrain to the east precludes installation of an ILS to Runway 27
 - Potential for airspace conflicts between turbo-jet departures from Runway 27 and operations at MCAS Miramar
 - Not well connected to the San Diego surface transportation network
- **Opportunities**
 - Development of additional GA facilities (Ramona Air Center) currently under County review; other smaller airport development opportunities exist
 - Adjacent undeveloped land may be available for development
- **Threats**
 - Land immediately east of the Runway 27 is committed to low density residential uses, which could result in a physical barrier or community opposition (noise) to growth
 - Potential development restricted by largest vernal pools in northern San Diego County located in the grasslands surrounding the Airport



Oceanside Municipal Airport (OKB)

FAA-designated Public Use GA Airport

- Primarily serves recreational GA activity
- Approximately 14,000 aircraft operations in 2007
- Single Runway 6-24 (2,712 feet)
- Access via Airport Road from CA 76; 2 miles east of Interstate 5
- Located in the eastern section of the City of Oceanside, approximately 40 miles north of downtown San Diego
- Operated by the City of Oceanside



Not to Scale

- **Strengths**
 - Located in close proximity to North County and Orange County market base
 - Proximity to Interstate 5 and COASTER
- **Weaknesses**
 - Runway length and pavement strength limit use to small GA aircraft weighting less than 12,000 pounds; non compliance with FAA design standards
 - Airfield expansion constrained by a road and river to the west and commercial development to the east
 - 2003 settlement with Citizens for a Better Oceanside (CBO) limit potential to expand tenant base
- **Opportunities**
 - Proposal for Airport Property Ventures (APV) to lease the airport site and develop FBO and additional aircraft parking, as well as provide FAA-required design criteria
 - Leverage proximity of COASTER to provide viable alternative to access airport
- **Threats**
 - Camp Pendleton airspace may preclude future instrument operations or changes in airport operational patterns
 - Community opposition to airport operations



Fallbrook Community Airpark (L18)

FAA-designated Public Use GA Airport

- Primarily serves recreational GA aircraft
- Approximately 33,000 aircraft operations in 2007
- Single Runway 18-36 (2,160 feet)
- Located approximately 56 miles east-northeast of downtown San Diego
- Access via Mission Road, approximately 10 miles east of Interstate 15
- Operated by San Diego County



Not to Scale

- **Strengths – Located in close proximity to North county and Orange County market base**
- **Weaknesses**
 - Runway length and pavement strength limit use to small GA aircraft weighting less than 12,500 pounds
 - Borders MCB Camp Pendleton which prohibits unrestricted operations
 - Poor access infrastructure
- **Opportunities**
 - Open space for potential expansion of airfield and aviation facilities is available on existing airport property
 - Airport Master Plan has been completed and approved by the County Board of Supervisors. Airport projects include complete redevelopment of runway, taxiway and related pavement areas.
- **Threats – Camp Pendleton airspace may preclude future instrument operations or changes in airport operational patterns**



Borrego Valley Airport (L08)

Limited-use General Aviation Airport

- **Primarily serves recreational GA aircraft; gateway for tourists visiting Anza-Borrego Desert State Park**
- **Approximately 26,000 aircraft operations in 2007**
- **Single Runway 8-26 (5,011 feet)**
- **Located approximately 90 miles northeast of downtown San Diego**
- **Operated by San Diego County**



Not to Scale

- **Strengths**
 - Surrounded by vacant / airport-compatible land uses
 - Location near the Anza-Borrego State park attracts recreational GA activity to the airport
- **Weaknesses**
 - Lack of suitable on- and off-Airport infrastructure
 - Located within 100-year floodplain
- **Opportunities – Undeveloped desert land to the north, south and east for potential expansion**
- **Threats – Remote location 90 miles (2 hour-plus drive) from downtown San Diego**



Ocotillo Airport (L90)

Limited-use General Aviation Airport

- Approximately 800 aircraft operations in 2007
- Two unpaved runways
 - Runway 13-31 (4,210 ft)
 - Runway 9-27 (2,475 ft)
- Located approximately 95 miles east-northeast of downtown San Diego
- Operated by San Diego County



- **Strengths – Surrounded by vacant/airport-compatible land**
- **Weaknesses**
 - Runway length and lack of paved surface restrict operations to small single-engine aircraft and helicopters
 - Lack of suitable infrastructure; runways are not paved and airport is unlighted
- **Opportunities – Undeveloped adjacent desert lands could facilitate expansion**
- **Threats – Remote location 95 miles (2 hour-plus drive) from downtown San Diego**



Agua Caliente Airport (L54)

Limited-use General Aviation Airport

- Approximately 4,400 aircraft operations in 2007
- Single Runway 11-29 (2,500 feet)
- Located approximately 75 miles east-northeast of downtown San Diego
- Operated by San Diego County



Not to Scale

- **Strengths – Surrounded by vacant / airport-compatible land uses**
- **Weaknesses**
 - Runway length and pavement strength limit use to small GA aircraft
 - Lack of suitable infrastructure; airport is unlighted and has no aircraft hangar or tie-down facilities, and no FBO
 - Completely surrounded by state-owned parkland with high terrain on three sides
- **Opportunities – Adjacent undeveloped desert land for potential expansion**
- **Threats**
 - Remote location 75 miles (1.5 hour drive) from downtown San Diego
 - Lease agreement stipulates airport property may not be subleased or developed for more than what is needed for operation of the landing strip



Jacumba Airport (L78)

Limited-use General Aviation Airport

- Primarily used as a glider/sailplane facility
- Approximately 325 operations in 2007
- Single Runway 7-25 (2,510 feet)
- Located approximately 74 miles east-southeast of downtown San Diego
- Operated by San Diego County



Not to Scale

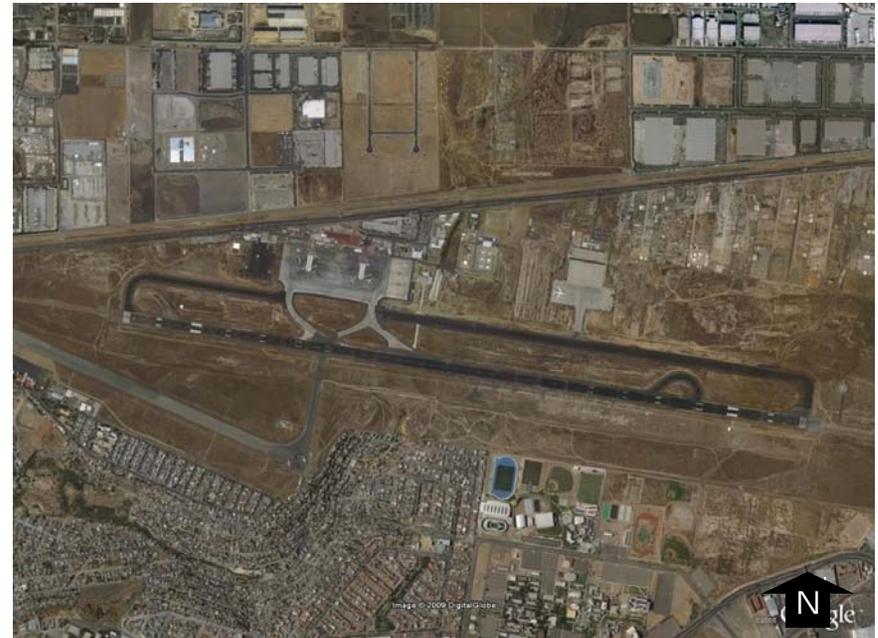
- **Strengths – Surrounded by vacant/compatible land**
- **Weaknesses**
 - Runway length and gravel surface restrict operations to small single-engine aircraft and helicopters
 - Lack of suitable infrastructure; airport is unlighted, does not have aircraft hangar facilities, and does not have an FBO
- **Opportunities – Undeveloped adjacent desert lands could facilitate expansion**
- **Threats – Remote location 74 miles (1.5 hour-plus drive) from downtown San Diego**



Tijuana-Rodriguez International Airport (TIJ)

Located in Tijuana, Mexico Immediately South and Adjacent to the U.S. Border

- **Non-stop service to over 26 destinations in Mexico; gateway to many Mexican tourism destinations; international service to Asia and Cuba**
- **Service provided by 10 carriers including 4 low cost carriers (no U.S. carrier service; Delta ceased LAX service in 2007)**
- **Approximately 52,000 operations and 3.7M total passengers in 2006**
- **Runways**
 - Runway 9-27 (9,711 feet)
 - Runway 10-28 (8,200 feet) currently closed
- **Located 20 miles southeast of downtown San Diego**
- **Operated by Grupo Aeroportuario del Pacifico**



Not to Scale



Tijuana-Rodriguez International Airport (TIJ)

Alternative Commercial Facilities to SAN, but Challenging Regulatory Issues

▪ Strengths

- Close proximity to large passenger base, including the city of Tijuana, which is Mexico's 3rd largest city, and the San Diego Central Business District; boarder access via the Blue Line Trolley which connects to downtown San Diego
- Direct service to multiple Mexican destinations at fares lower than that offered at SAN or LAX attract Mexican and U.S. passengers
- Airfield delays and congestion are low; demand less than 60% of the estimated airfield capacity
- Sufficient on-airport land for construction of additional facilities; only 30% of available land is already developed

▪ Weaknesses

- Congested and outdated passenger terminal facilities; international facilities inadequate and require major upgrades to satisfy international requirements; automobile parking exceeds 80% of capacity
- Language and cultural barriers deter some U.S. travelers

▪ Opportunities

- U.S. passengers utilizing the Airport is forecast to grow significantly over the next 20 years; potential cross border terminal concept could provide a more attractive alternative and further increasing activity
- Additional commercial service opportunities as San Diego International reaches capacity
- Located in the rapidly developing Otay Mesa which offers manufacturing, storage, and inexpensive labor; "border economy" projected to continue to flourish
- Improvements to CA 125 and CA 905 will increase regional surface transportation access to the airport

▪ Threats

- International border processing hinders efficient passenger operations and level of service; U.S. passengers sometimes wait up to 2 hours to cross the border
- Perceptions of Mexico among U.S. citizens, and vice versa; specifically according to the latest survey, many U.S. citizens considered the use of Mexican terminal unsafe



Regional Aviation Travel Demand Model

A Regional Aviation Travel Demand Model will Be Built to Meet RASP Objectives

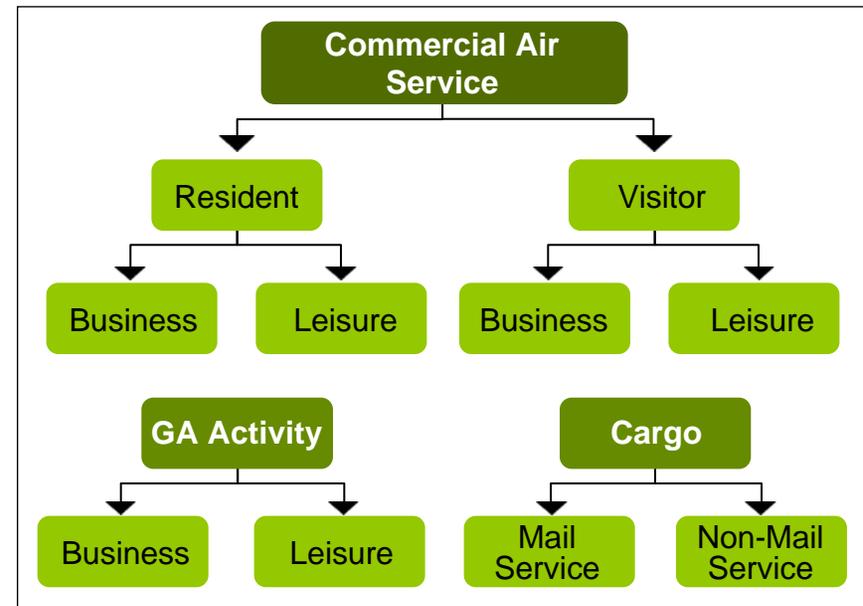
- **A decision support tool to assess the impact of various “What If” scenarios regarding future aviation infrastructure development and policy decisions**
 - **Potential scenarios may include:**
 - Shifting GA traffic from San Diego International to outlying County airports
 - Implementation of a high speed passenger rail line between San Diego and the Bay Area
 - The development of an integrated cargo airport at Brown Field or other regional airport
 - **Model compares the results of these scenarios across a set of common metrics**
 - Enplanements and operations at the various airports
 - Costs to airport users, including airfares and value of time
 - Estimated costs of required facility improvements
 - **Based on proven, uncomplicated methodology**
- **Benefits of using a demand model**
 - Use of available information that relates to people's propensity to travel and their choice of aviation infrastructure
 - Leverage existing SANDAG Regional Travel Demand Model
 - Translate and synchronize RASP results into ongoing regional transportation planning efforts
 - **Approach makes good use of the Strategic Assessment**
 - Existing strengths and weaknesses
 - Future opportunities and threats



Categories of Air Transit

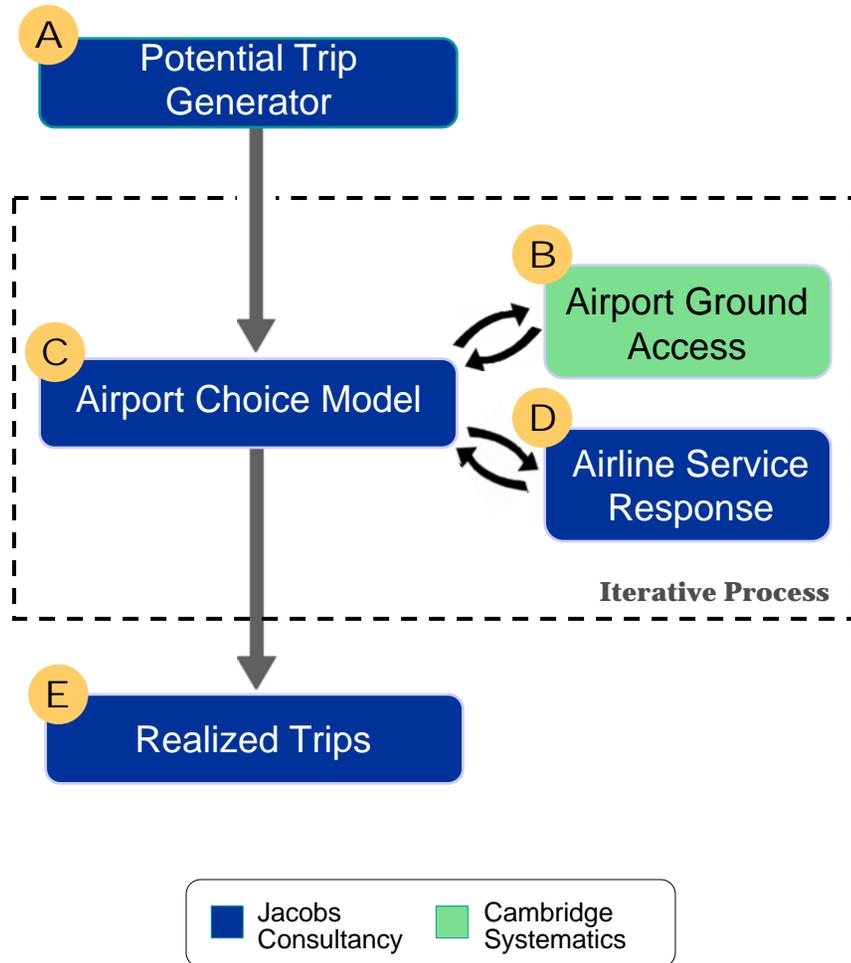
Models Will Be Built For Commercial Air Service, General Aviation, and Air Cargo

- **The Demand Model will estimate demand at each airport from population and commercial areas in the region**
- **Aviation travel demand is split into commercial air service, GA activity and cargo operations to account for different “drivers of activity”**
- **Broad categories are further differentiated to capture the nuances of different markets**
- **Commercial air service demand differentiates**
 - Resident vs. Visitor – differing preferences in accommodation type and location while in the San Diego region
 - Business vs. Leisure – business travelers are typically less cost sensitive than leisure travelers
- **GA activity divided between corporate travel and recreational flying**
 - Different types of operations
 - Different cost considerations
- **Cargo operations divided between mail service and non-mail service**



Regional Aviation Travel Demand Model Framework

Each of the 8 Air Transit Categories Would Have the Same Model Framework

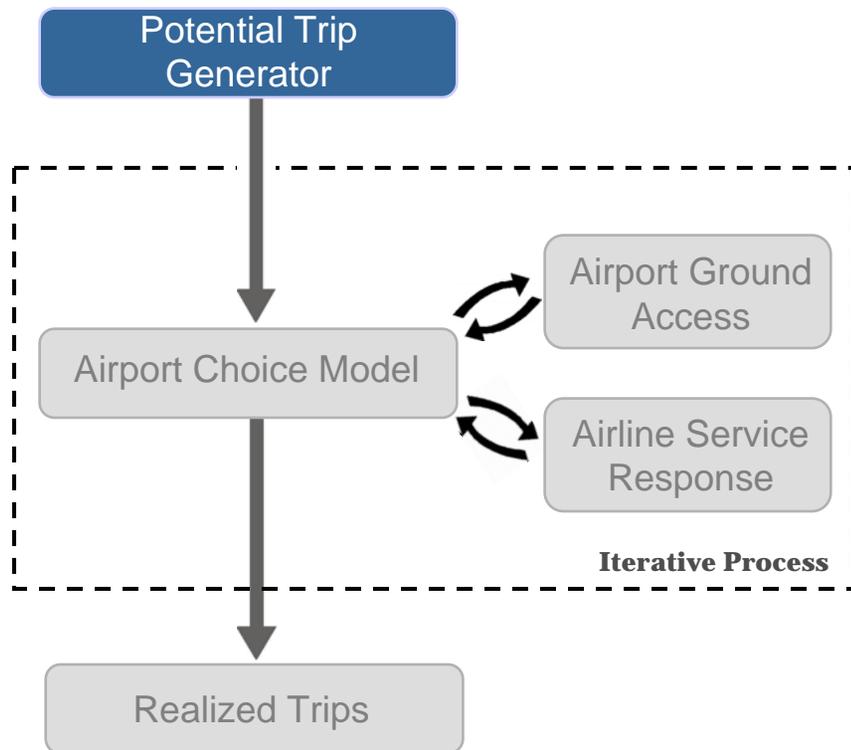


- A Potential Trip Generator** – Generates potential trips from each defined population/commercial area within San Diego region
- B Airport Ground Access** – Identifies the mode, travel time, and cost to get from a defined population/commercial area to an airport
- C Airport Choice Model** – Determines the regional airport to which each generated trip is assigned
- D Airline Service Response** – Predicts airlines’ response to air fare and service due to changing demand
- E Realized Trips** – Trips realized once equilibrium is reached between demand and supply

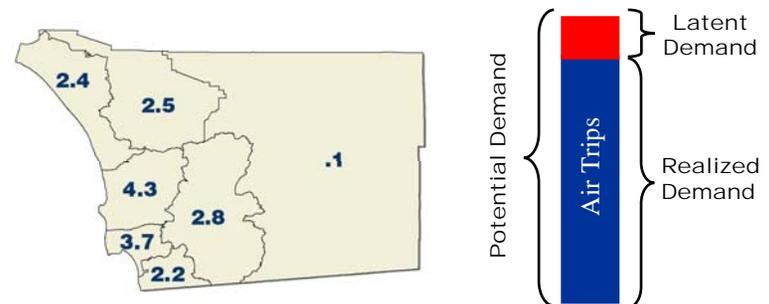


Potential Trip Generator

Generates Potential Trips from Defined Population/Commercial Areas Within San Diego Region



- Potential demand for commercial air service, GA flights, and cargo is calculated for each defined population/commercial area using socio-economic data
- Potential demand is represented by person trips/cargo tonnage between a defined population/commercial area and destination airport
- Not all potential demand would be realized and could be lost due to factors such as high airfares, insufficient service, etc.
- Latent demand is unrealized potential travel demand

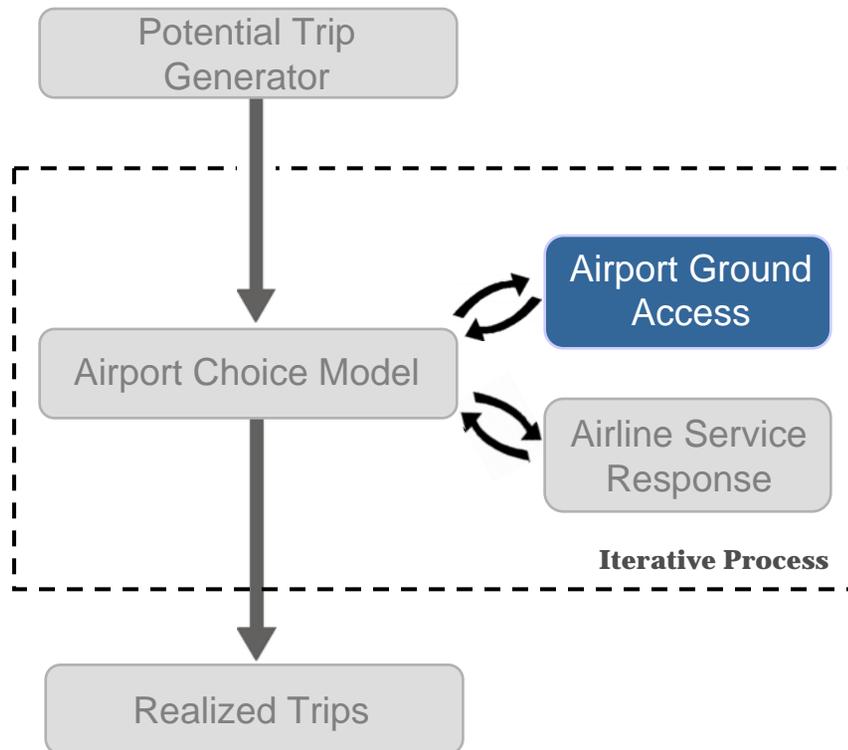


Example of Potential Demand in San Diego Region for San Diego International Airport (millions)



Airport Ground Access

Identifies the Mode, Travel Time, and Cost to Travel From a Population Center to An Airport

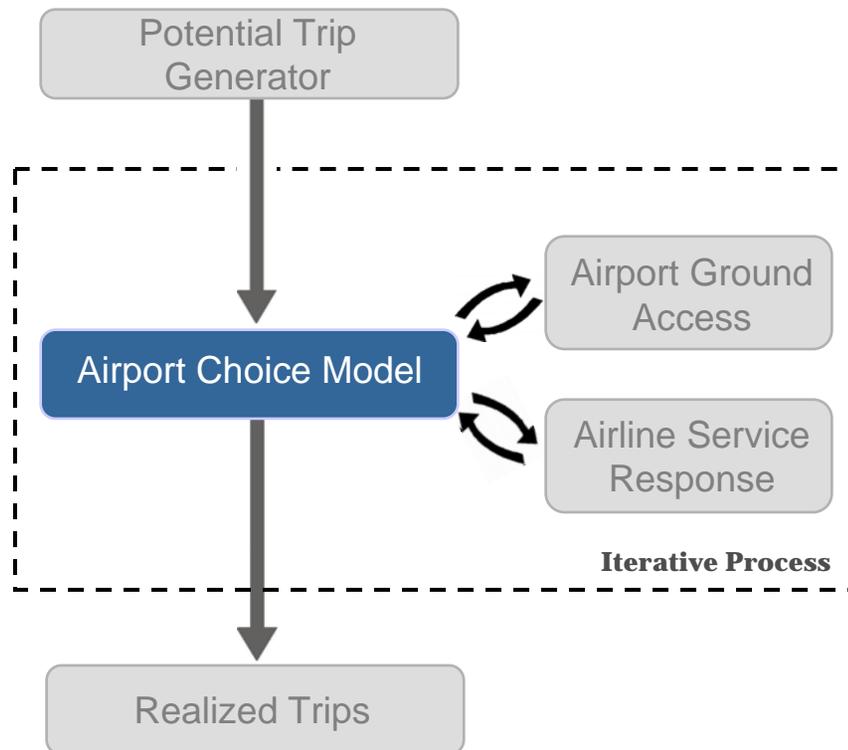


- **Realized trip demand is affected by the availability and performance of ground access infrastructure**
 - Mode choice (MTS, taxicab, personal vehicle, etc.)
 - Travel time
 - Travel cost (parking fees, fuel, etc.)
- **Existing and planned ground access infrastructure and performance would be considered**
- **Appropriate data and tools would be used**
 - SANDAG Regional Travel Demand Model
 - ITMS and FAF commodity flow and freight network flows
- **The model would leverage SANDAG Regional Travel Demand Model to determine**
 - Key ground access routes to/from airports
 - Travel times between population centers and regional airports
 - Level of service on ground access facilities

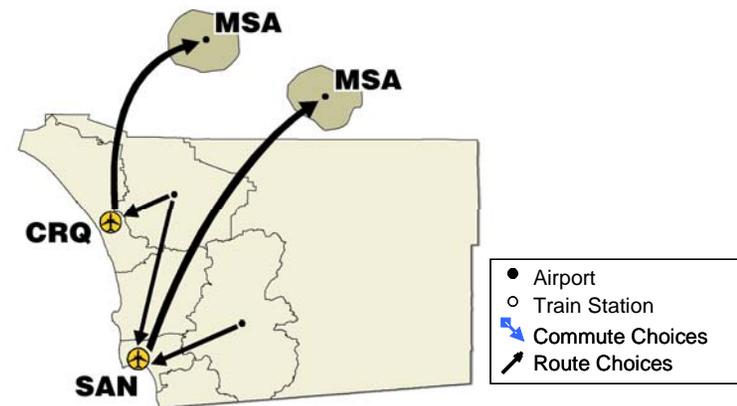


Airport Choice Model

Assigns Each Generated Trip to a Regional Airport



- **Every trip would be assigned to a regional airport based on the following**
 - Type of service available
 - Associated cost of travel
 - Historical airport choice trends
- **Realized demand at each regional airport is affected by ground access and airline service (frequency of service, fares, etc.)**
- **Likewise, future ground access options and airline service is affected by realized demand at each airport**



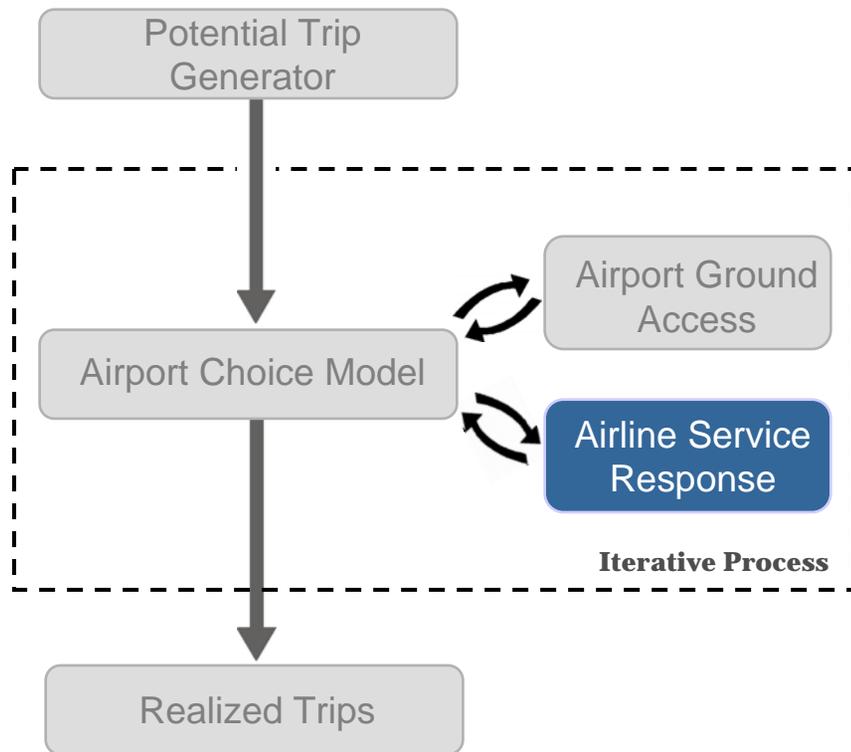
Airport Choice in San Diego Region

Regional Aviation Strategic Plan • RASP Subcommittee

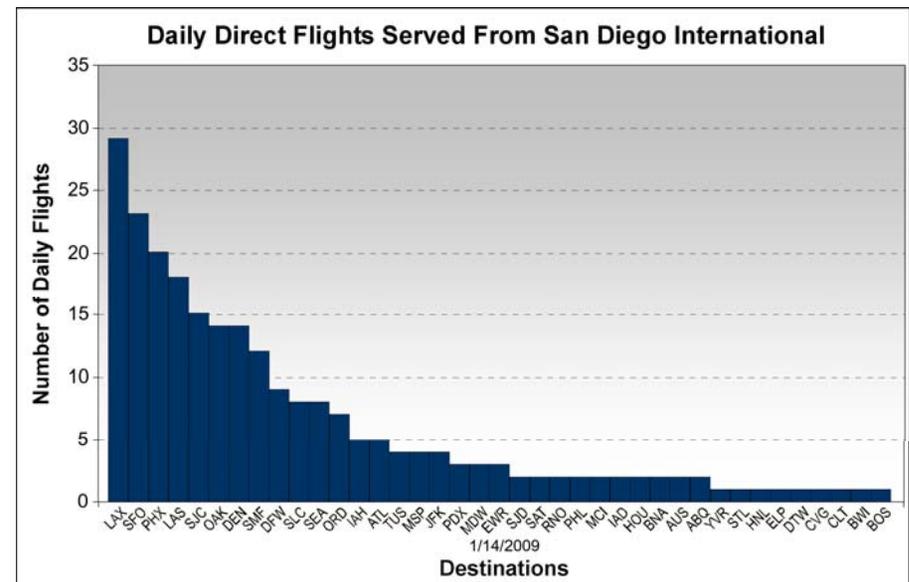
Revised Draft June 11, 2009

Airline Service Response

Predicts Airline Response to Air Fare and Service Due to Changing Demand

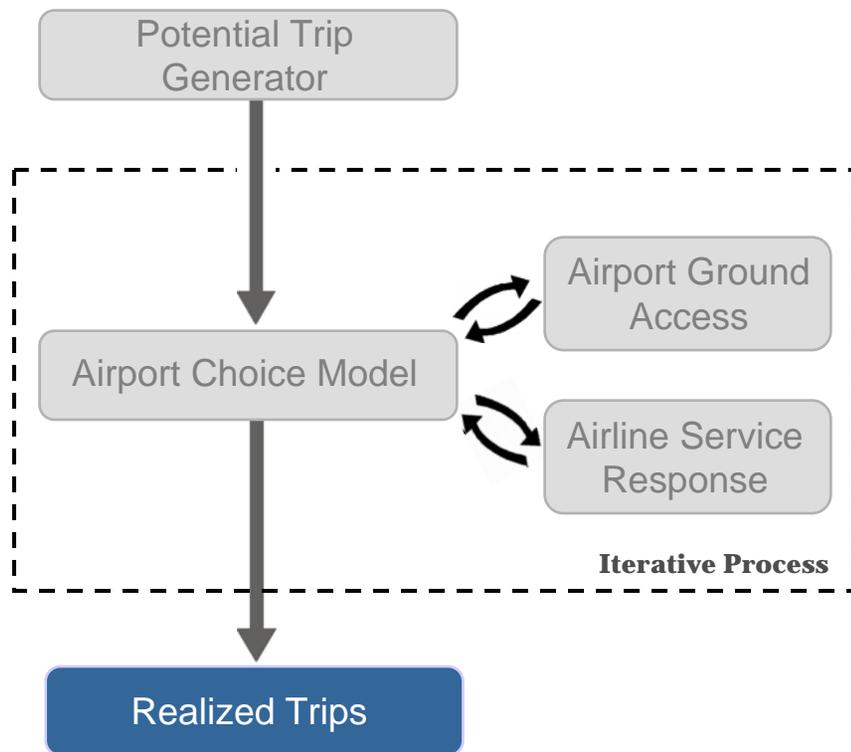


- Airlines would adjust service and airfare to maximize profit when demand changes
- The model would include a component that tracks realized demand against airport capacity
- Air service would be increased at an airport with high demand until capacity is reached

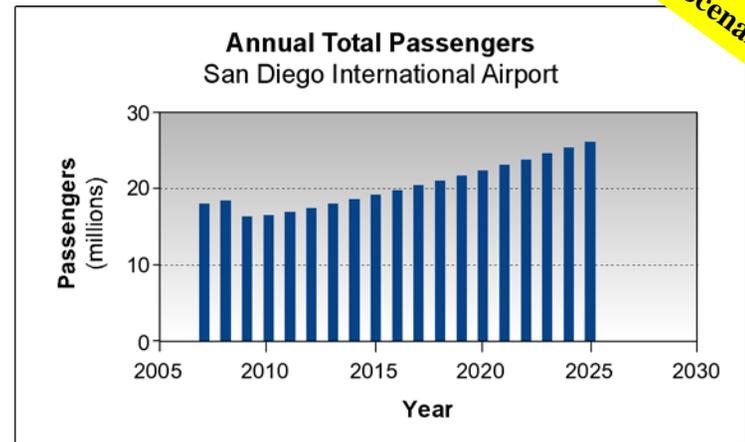


Realized Trips

Trips are Realized Once Equilibrium Is Reached Between Demand / Supply



- **Commercial Service** – realized trips would translate to annual enplanements and operations at a given airport
- **General Aviation** – realized trips would translate to annual GA flight operations at a given airport
- **Air Cargo** – realized trips would translate to total cargo flight operations and tonnage at a given airport



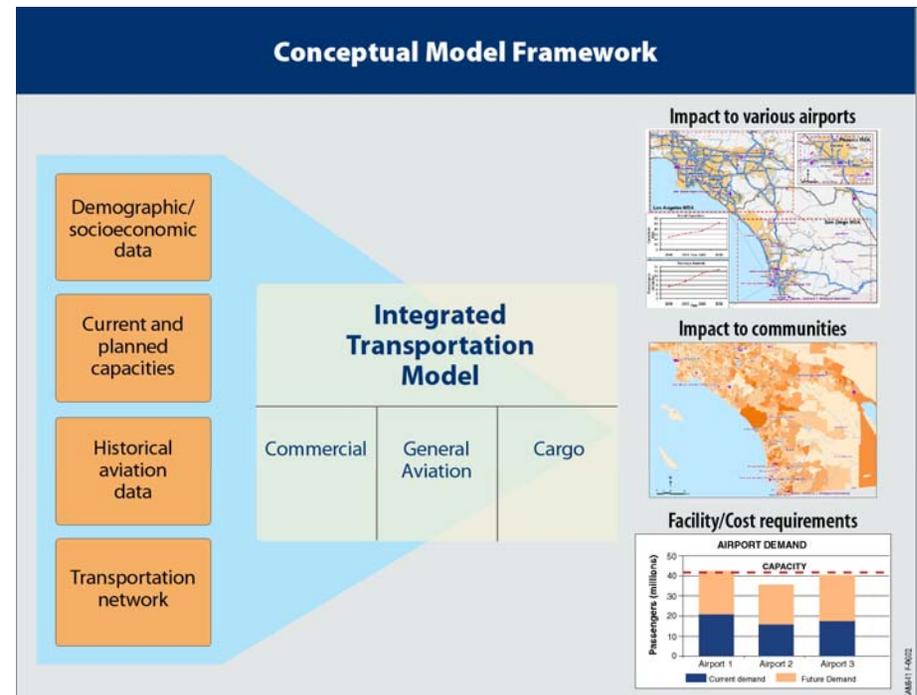
Hypothetical Scenario



Graphical Representation of Realized Trips

Geographic Information Systems (GIS) will be Used for Communication with Stakeholders

- Communicates the results and allows comparisons of various “What If” scenarios
- Provides a map-based interface to explore changes to the system
- Graphically demonstrates the results of infrastructure development and policy decisions
- Allows for quick visualization of the evolution of the aviation system within San Diego Region



Appendix A
Airport Facility and Existing Land Use Graphics

Revised Draft

Appendix B

Strategic Assessment Sources

Revised Draft

Strategic Assessment Sources

Regional, Commercial Service, and Reliever Airports

▪ Regional Source Documents

- *2030 San Diego Regional Transportation Plan: Pathways to the Future*, SANDAG, 2007.
- *San Diego RASP Aviation Demand Forecast*, Landrum & Brown, 2008.
- *Air Transportation Action Plan, Technical Report: Existing Airspace Issues*, Landrum and Brown, 2003.
- *Airport Site Selection program, Decision Document*, Ricondo, 2006

▪ San Diego International (SAN)

- *Destination Lindbergh Technical Report*, Jacobs Consultancy, February 2009.
- *San Diego International Airport Land Use Compatibility Plan*, SANDAG, 2004.

▪ McClellan-Palomar (CRQ)

- *McClellan-Palomar Airport Master Plan*, Coffman Associates, December 1997.
- *McClellan-Palomar Airport Layout Plan*, Wadell Engineering Corporation, May 2004.
- *McClellan-Palomar Airport Land Use Compatibility Plan*, SANDAG, 2004.
- *McClellan-Palomar Airport FAR Part 150 Noise Compatibility Plan*, URS, 2006.
- *Carlsbad Air Service Review*, SH&E, updated 2007.
- *McClellan-Palomar Airport Voluntary Noise Abatement Procedures*, San Diego County Department of Public Works, 2007.
- *Conceptual Terminal Plan*, Gensler Architects, 2006.
- *McClellan-Palomar Airport Site Plan*, Wadell Engineering Corporation, 2007McClellan Airport Business Map, 2008.
- Newspaper Article, *Boom Times In Corporate Aviation*, San Diego Metropolitan Magazine, 2007.
- Newspaper Article, *Residents Want Stricter Flight Regulations for Palomar Airport*, AirportBusiness.com, 2009.

▪ Montgomery Field (MYF)

- *Montgomery Field Airport Layout Plan*, Shutt Moen Associates, 2004.
- *Montgomery Field Airport Master Plan*, Mead & Hunt, 2003.
- *Montgomery Field Airport Land Use Compatibility Plan*, 2004.

▪ Brown Field (SDM)

- *Brown Field International Business Park Development Plans (Presentation)*, BFIBP, LLC, 2008.
- *Brown Field Airport Land Use Compatibility Plan*, SANDAG, 2004.
- *Brown Field Municipal Airport Layout Plan*, Mead & Hunt, February 2005.

▪ Gillespie Field (SEE)

- *Gillespie Field Airport Layout Plan Narrative Report*, P&D Aviation, September 2005.
- *Gillespie Field Airport Land Use Compatibility Plan*, SANDAG, 2004 Airport Layout Plan (CAD and PDF Files), P&D Aviation, 2005.
- *Fixed Based Operators List*, San Diego County, Department of Public Works, 2005.
- *Forrester Creek Industrial Park Environmental Impact Report*, Notice of Availability from City of El Cajon, 2009.
- *Revised El Cajon Air Center Plan Development Schedule*, 2009.
- *Diagrams and Traffic Study of CA 52 Extension and Interchange with CA 67*, CALTrans, 2008.

▪ Ramona (RNM)

- *Ramona Air Center Site Plan*, RJC Architects, May 2008.
- *Airport Property Exhibit*, Wadell Engineering Corporation, 2008.
- *Ramona Airport Land Use Compatibility Plan*, Mead & Hunt, 2006, updated June 2008.
- *Ramona Air Center Rendering*, RJC Architects 2008.



Strategic Assessment Sources

General Aviation and Non-FAA NPIAS Airports

▪ **Oceanside (OKB)**

- *Oceanside Municipal Airport Master Plan*, Heliplanners, December 1994.
- *Oceanside Municipal Airport Land Use Compatibility Plan*, SANDAG, 2004.
- Master Record Information, FAA/City of Oceanside, 2005.
- Hangar, Tie-down, and revenue data, City of Oceanside, 2009.
- Lease Agreement between City and APV, City of Oceanside, 2009.

▪ **Fallbrook (L18)**

- *Fallbrook Community Airpark Airport Layout Plan*, P&D Aviation, December 2005.
- *Fallbrook Airport Land Use Compatibility Plan*, Mead & Hunt, 2006.
- Fallbrook Airport Capital Improvement Plan, San Diego County Department of Public Works, 2008.
- *Fallbrook Airport Property Exhibit*, Wadell Engineering Corporation, 2008.

▪ **Borrego Valley (L08)**

- *Borrego Valley Airport Layout Plan*, Wadell Engineering Corporation, June 2007.
- *Borrego Valley Airport Land Use Compatibility Plan*, Mead & Hunt, 2006.

▪ **Ocotillo (L90)**

- Ocotillo Airport Diagram, Mead & Hunt, 2004.
- *Ocotillo Airport Land Use Compatibility Plan*, Mead & Hunt, 2006.

▪ **Agua Caliente (L54)**

- Agua Caliente Airport Diagram, Mead & Hunt, 2004.
- *Agua Caliente Airport Land Use Compatibility Plan*, Mead & Hunt, 2006.

▪ **Jacumba (L78)**

- Jacumba Airport Diagram, Mead & Hunt, 2004.
- *Jacumba Airport Land Use Compatibility Plan*, Mead & Hunt, 2006.

▪ **Tijuana-Rodriguez International (TIJ)**

- *Cross-Border Terminal Market and Demand Study*, Infrastructure Management Group, Inc., 2008.



Appendix C
Demand Model Background Research

Revised Draft

Aviation Demand Forecasts

Source: ACRP Synthesis “Airport Aviation Activity Forecasting”, TRB 2007

- **The Airport Cooperative Research Program (ACRP) study provides a review of aviation activity forecasting in the U.S.**
- **The primary statistical models used in airport aviation activity forecasting include**
 - Econometric modeling
 - Model predicts future aviation demand based on economic forecasts
 - Economic factors chosen will have highly correlated relationship to aviation demand (e.g. income levels, population, etc.)
 - Used in multiple-airport regional forecasts
 - Relies on extensive economic data
 - Market share analysis modeling
 - Model predicts future aviation demand at an airport as a proportion of future macro aviation demand (i.e. national or global)
 - The proportion of the macro aviation demand can vary based on forecasted events (e.g. terminal expansion projects, population, policies and regulations, etc.)
 - Used when generic high-level demand forecasts are required (e.g. FAA policies)
 - Time series modeling
 - Model predicts future aviation demand based on past demand (i.e. past enplanements and operations)
 - Accurate for short-term forecasts when long series of historical data is available and no large changes in airport use or activity are expected
- **Econometric model is most suitable for the San Diego Region’s Regional Aviation Travel Demand Model**



Air Fare Elasticities

Source: "Air Travel Demand" IATA 2008

- The report summarizes all previous airfare elasticity research conducted over the last 25 years
- Air fare elasticity is a measure of the sensitivity of demand for air travel to changes in air fare
- The report measured sensitivity of demand for the following factors
 - Business vs. leisure passengers
 - Short-haul vs. long-haul travel
 - Carrier vs. market vs. national
 - Income
- Econometric modeling was used to remove the impacts of non-air fare related external economic factors on travel demand
- Air fare elasticity will be used in the regional aviation travel demand model when assigning trips to available air service

Aggregation Level	Price Elasticity	Length of Haul	Income Elasticity (Route)	Income Elasticity (National)
Route/Market	-1.4	Short	1.8	1.6
National	-0.8	Medium	1.9	1.7
Supra-National	-0.6	Long	2.0	1.8
		Ultra-Long	2.2	2.0



Demand Allocation

Source: Various Studies

- Logit models are the industry standard for determining mode choice or demand allocation in travel demand models
- Logit models predict the probability of choosing an airport based on multiple travel variables
- Travel variables may include travel distance to an airport, available service at an airport, and available access to each airport
- Each variable contributes a different weight to the outcome
- A logit model was used to predict ground mode choices to Hartsfield Atlanta International Airport (*Travel forecasting model set for the Atlanta region, Atlanta regional commission, 2008*)



Previous Forecasting Studies for Multiple-Airport Regions

Source: Transportation Research E-Circular “Aviation Demand Forecasting”, TRB 2002

▪ Port Authority of New York and New Jersey

- Regional demand forecasts based on three models and results reconciled
 - *Time series model*: Decompose into trend, seasonal and irregular components
 - *Regional Econometric model*: Passenger levels are dependent on variables including real GDP and real yields
 - *Market share model*: Based on region’s share of national income
- Distribute demand to airports based on terminal and carrier specific information at the airports

▪ Southern California Association of Governments (SCAG)

- Designed a new airport demand model to replace legacy Regional Airport Demand Allocation Model (RADAM)
- Realized demand per terminal area zone was calculated based on extensive survey data
- Model allocated demand among all the airports within the greater Los Angeles Region (LAX, BUR, SNA, ONT, PSP, LGB)
- Flight schedules were modified to accommodate changes in demand
- Model structure shown on the next page



SCAG Demand Allocation Model

Source: "Model Design Working Paper" Cambridge Systematics, Gosling and SH&E 2003

