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September 14, 2007

TO: Commissioners and Alternates

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SUBJECT: **Regional Airport Planning Committee Phase 1 Conclusions and Recommendations and Proposed Phase 2 Work Program**
(For Commission consideration on September 20, 2007)

Summary

The Regional Airport Planning Committee (RAPC) is composed of members from MTC, ABAG, and BCDC, as well as representatives from the Bay Area commercial and general aviation airports, the FAA, and State Division of Aeronautics. RAPC seeks to develop a regional consensus around how to solve the region's long-range aviation needs in ways that promote our mobility, help grow the Bay Area economy while protecting vital environmental resources. The Committee is currently engaged in a multi-phase study of possible solutions to Bay Area aviation congestion, and has just completed the first phase of that work.

The Commission's strategic plan includes an objective that directs staff to "provide for the Commission's review and update of the first phase of the Regional Airport System Planning Analysis." This report satisfies that requirement, and summarizes the preliminary conclusions and recommendations from Phase 1, and a description of the work to be undertaken in Phase 2. Following a September 19, 2007 public workshop, RAPC will consider a staff recommendation on final conclusions and recommendations from Phase 1, and a work program for Phase 2.

Staff Report

Background. RAPC's adopted work scope addresses the need to define new solutions to long-term airport system capacity issues facing the Bay Area. The Federal Aviation Administration's 2007 national airport capacity analysis confirms the importance of this effort, as it indicates both Oakland and San Francisco International Airports will experience significant capacity issues by 2015 (OAK) and 2025 (SFO). In the Phase 1 portion of the work scope, RAPC has conducted four information-gathering panels listed below. Phase 2 will continue an examination of possible solutions identified in Phase 1, as well as other options, including use

of alternative airports to serve a portion of the anticipated growth in regional demand and the potential impact of a future California High Speed Rail system on air travel demand.

This memo summarizes the information obtained from the Phase 1 panels, including a discussion of what the experts said, staff's draft findings and conclusions, and a set of initial recommendations by staff as to how to proceed in each topic area.

Prior to each panel RAPC was presented with a staff report providing background on the panel topic and a set of sample questions for the panelists (see Attachment A for list of experts participating on the panels). Staff reports and presentations for many of the panelists can be viewed on BCDC's website at http://www.bcdc.ca.gov or on : MTC's website: http://www.mtc.ca.gov, or on ABAG's website at http://www.abag.ca.gov.

Expert Panels and Major Questions Addressed

Aviation Trends (January 2007)

1. What are the key trends affecting growth in air passenger, air cargo, and business general aviation?
2. How will these trends impact the use of the Bay Area's commercial and general aviation airports in the future?

New Air Traffic Control Technologies (February 2007)

1. What new technologies are on the horizon that could help increase the capacity, safety, and efficiency of the Bay Area's airports and airspace?
2. What effect on overall system capacity will these technologies have?
3. When might these technologies become available?
4. What are the key hurdles in bringing new technologies from research to deployment?

Demand Management (April 2007)

1. What are the legal and regulatory constraints faced by airports contemplating demand management strategies (i.e., strategies such as peak period pricing, minimum aircraft size requirements, etc.)?
2. Where have these strategies been tried and how successful have they been?

Airport Governance and Institutions (June 2007)

1. How are other areas approaching their long-term aviation planning issues?
2. How well do existing institutional structures perform in addressing these issues?
3. What new institutional or cooperative approaches are being tried to implement regional solutions to long-term aviation demand?

Preliminary Recommendations. Based on the information presented in the panels, staff has the following recommendations (these recommendations are also repeated under the summary of each panel below):

Panel One: Aviation Trends Recommendations

1. In order to better inform the discussion of future regional aviation system options in Phase 2 (e.g., potential airline service at alternate airports, High Speed Rail, expanded

use of general aviation reliever airports), updated forecasts should be developed for unconstrained air passenger, air cargo and business general aviation demand.

2. As with the earlier RASP forecasts, a careful evaluation of long-term trends in the price of air transportation, airline route strategies, and other key market-drivers will be essential to developing meaningful forecasts.

3. The forecasts should be of sufficient detail to assess the potential passenger and air cargo demand that could be served by alternative airports and the impact of general aviation on future runway capacity issues at the three major commercial airports.
4. To better understand current and evolving aviation demand trends, a tracking system of key forecast indicators should be developed.

Panel Two: New Aircraft Control Technology Recommendations

1. Airport capacity analyses conducted in Phase 2 should incorporate the effects of the most promising and realistic new air traffic control and air traffic management technologies.
2. During Phase 2, RAPC should receive and review reports from NASA and FAA on the research and funding status of key air traffic control technologies under development that were discussed in the panel, such as Automatic Dependent Surveillance Broadcast (ADS-B) and related technologies.
3. During Phase 2, RAPC should also receive and review reports from the FAA/Bay Area airports on the following specific topics:
    a. Development of Area Navigation (RNAV)/Required Navigation Performance (RNP) procedures for Bay Area commercial airports;
    b. Development of procedures that would allow lower weather minimum at Bay Area general aviation reliever airports;
    c. Progress in extending the use of the Simultaneous Offset Instrument Approach (SOIA) at SFO to lower weather minima; and
    d. Status of advanced tools for air traffic controllers to efficiently sequence aircraft arrivals.
4. RAPC may want to further examine potential benefits of Continuous Descent Approaches at Bay Area airports during low traffic periods. RAPC may want to request that the FAA and airports further examine the potential benefits of Continuous Descent Approaches (CDAs) during low traffic periods. Potential benefits include increased capacity and reduced noise and fuel consumption.
5. A potential Phase 3 task would be to conduct an airspace study, with cooperation from the FAA, that would provide a more detailed analysis of the benefits of new technologies at specific airports.

Panel Three: Demand Management Recommendations

1. As in the prior 2000 RASP, RAPC's Phase 2 work should estimate the benefits of specific demand management strategies at specific airports.
2. RAPC should receive periodic reports from SFO on its work to evaluate new demand management approaches and provide feedback.
3. According to recent FAA studies, OAK's main runway is likely to become congested in the next 8 to 10 years. RAPC should request that OAK also evaluate potential new demand management approaches prior to the onset of major delays.
4. RAPC should support the FAA's proposal in the current FAA reauthorization legislation to conduct a pilot congestion pricing program.

5. Depending on the demand management approach taken by the Bay Area airports, RAPC may wish to support possible future legislation (or other approaches) that would change current federal policy that requires airport fee structures to be revenue neutral--a significant obstacle for effective congestion pricing schemes.
6. In Phase 2, RAPC may wish to investigate the potential for inter-regional express buses to substitute for short-haul commuter flights on bad weather days from some of the closer commuter markets (e.g., Sacramento, Monterey, Fresno, Redding, Chico, etc.)

Panel Four: Airport Governance and Institutions Recommendations:

1. As part of the Phase 2 work scope, evaluate the strengths and weaknesses of various institutional approaches (such as a new Authority, Joint Powers Agreement, and Memorandum of Understanding, etc.) for addressing key planning and implementation issues. The need for institutional change may or may not be relevant, depending on the regional vision for the airport system developed during of Phase 2. If determined to be relevant, then further analysis will be conducted in Phase 3. The evaluation should address the following considerations:
    a. Improve long-range planning for the region's aviation needs;
    b. Influence airline service decisions;
    c. Flexible use of FAA funds for airport improvements;
    d. Acquire/operate new airports;
    e. Develop more effective demand management/delay reduction approaches;
    f. Resolve potential regional airspace issues;
    g. Expedite deployment of new Air Traffic Control technologies;
    h. Help resolve regional over flight noise issues (higher altitude noise, further from runways);
    i. Make better use of general aviation airports as relievers to air carrier airports;
    j. Improve surface access to airports;
    k. Promote compatible land use around airports; and
    l. Legislative solutions (funding, noise compatibility, other issues).

Detailed Panel Summaries

Panel 1: Aviation Trends

What the Experts Said. Unprecedented events following preparation of the 2000 RASP forecasts resulted in a wide divergence between actual traffic growth and that forecasted in the RASP, including:

- Large declines in domestic and international traffic following 9/11
- The Dot.com bust
- Bankruptcies and mergers of several major airlines
- Rising fuel prices
- SARS and other events affecting international air travel

However, by 2005 domestic air passenger volumes in the US had returned to pre-9/11 levels. Bay Area domestic passenger volumes are only slightly higher than 1998 levels (about 0.7%), due in large part to the financial troubles of United Airlines and a loss of some 5 million domestic air passengers at SFO. Recovery in the growth of International air travel has lagged that of domestic air travel, and by 2005 international air travel had not fully recovered to pre-9/11 levels. The share of international passengers handled at coastal airports on the East and West Coasts has declined as major US carriers are directing more of their international traffic to their interior hubs, creating new international gateways.

While the older "legacy" air carriers have struggled, passenger growth has been strong for the low cost carriers (such as Southwest and Jet Blue) and the regional air carriers (like Horizon and United Express). In fact, regional air carriers have grown from 10% of domestic passengers to 22% in the last 15 years.

In general, prices in high density short haul markets served by Bay Area airlines (e.g., service to Los Angeles) have gone up, while prices on long haul markets have gone down due to increased competition among low cost airlines. Airline load factors have reached all time highs as a result of technological innovation in the way they market their seats. Long term-trends could see average load factors in excess of 80%.

The size of aircraft (number of seats) used in domestic markets has not increased as much as forecasted in the RASP, as airlines have opted for smaller planes that they can fly more frequently and which fit the size of their markets better. Southwest Airlines now has overtaken United Airlines as the largest airline in the Bay Area. However, Southwest currently has the highest paid employees in the airline industry and cannot offer the extremely low fares that distinguished its service in its early days of operation.

SFO's share of Bay Area domestic passengers has declined from 55% in 1998 to 41% in 2005, whereas OAK's share has grown from 21% to 34% over the same period (SJC has a small gain of 1% as well). However, neither Oakland nor San Jose airports have grown their international air passengers as forecasted in the RASP. The number of passengers connecting at SFO has decreased, due to the downsizing of United's SFO hub.

The FAA's aviation forecasts for the next 10 years indicate:

1. Although air transportation is a mature industry, domestic growth in air travel will continue to exceed economic growth rates.
2. International air travel growth rates will exceed those of domestic travel, with significant passenger growth forecasted for Eastern Asia, and China in particular.
3. Load factors will average more than 78 percent.
4. Aircraft size will increase for regional and international air carriers, but remain fairly static for most of the other carriers.
5. Overall, Oakland and San Jose Airports will experience traffic growth of over 3 % per year, while SFO's growth will be slightly less.

Air Cargo. Worldwide air cargo continues to grow at 6% per year, which means that, if this growth continued, air cargo volumes would double in twelve years. The US currently is the largest generator of worldwide air cargo, but that will likely shift in the future to China and East Asia. The trend in domestic air cargo is for more and more cargo to be transported in freighter aircraft (an estimated 80% of domestic cargo is currently being flown in all cargo

aircraft). Over 50% of international air cargo is still carried in the belly of scheduled passenger flights, which fits well with the operation of foreign air carriers.

Cargo volumes at West Coast airports have not returned to pre-9/11 levels, due in part to the maturing of the domestic small package market and expanded use of trucks for 2-3 day delivery service (at distances up to 500 miles, but now extending as far as 700 miles). The largest West Coast air cargo airports continue to be Los Angeles and Anchorage. Of the international air cargo flown into the Bay Area, an estimated 70% has destinations outside the Bay Area and is transported up and down the west coast by truck.

The latest FAA air cargo forecasts assume no changes in current security requirements and that most of the impact of the switch in the delivery of air cargo from air to trucks has already occurred. The FAA predicts that:

1. Domestic air cargo will grow 3.2% annually.
2. International air cargo will grow 6.3% annually.

Business Aviation. Growth in the business aviation fleet, which numbers some 16,000 business jet and turbo prop aircraft nationally, is in the midst of an historic boom fueled by three primary factors:

1. Interest and ability of businesses to purchase aircraft (related to corporate profits);
2. Favorable government policies related to taxes and the cost of using the air traffic system; and
3. The use of business aircraft as a competitive alternative to flying on scheduled airlines.

The ability to participate in fractional ownership and other innovative ownership schemes (such as Card programs with a fixed number of flight hours) has increased the affordability of business aircraft, which can initially cost from $4 million up to $50 million per aircraft. Businesses owning jets on the West Coast tend to have the larger, longer-range jets because of their need to fly cross-country or over the Pacific. A new type of business jet, called Very Light Jets, will soon enter the fleet and could prove very popular for business and air taxi service. These six-seat or less jets, including crew, would sell for under $4 million, and use runways that are only 3,500 feet long, providing access to many general aviation airports around the country. The FAA estimates they could total 5,000 aircraft nationally in 10 years.

Finally, the declining number of new pilots entering the aviation field could have a significant impact on general aviation activity in the future.

Findings and Conclusions

1. Significant events since the RASP forecasts were prepared in 2000 have changed the expected demand for domestic and international air passenger and air cargo air transportation.
2. The terrorist attack in 2001 and a slowdown in the nation's economy had major financial impacts on the airline industry. Low cost airlines have weathered these conditions better than the larger legacy airlines.
3. These events and the reaction of the airline industry have, in turn, affected the amount of passenger and air cargo demand at each Bay Area airport, with lower air passenger demand than expected at SFO and SJC, and forecasts that were closer to actual traffic growth at OAK (reflecting in an increase in OAK's share of Bay Area air passengers). International air passenger demand at Bay Area airports has not recovered to pre-9/11 levels, in part because some US airlines are routing traffic to their inland hubs.
4. Over the long-term, the price of air transportation and growth in income will continue to play significant roles in determining future domestic and international air transportation demand. The price of air transportation (in constant dollars) has

5. Air cargo will continue to grow, especially international air cargo, which will grow faster than domestic cargo. Worldwide air cargo volumes could double in the next 10-12 years.
6. The business aviation fleet will continue to grow, based on the utility of business aircraft for corporations and the introduction of a large number of new business aircraft called Very Light Jets.
7. Although unforeseen events can have dramatic short-term effects on air transportation demand, the longer-term historic trend line is one of increasing demand. For current planning purposes, it is reasonable to assume that the Bay Area will experience continued growth in all market sectors—domestic and international air travel, air cargo, and business general aviation.
8. Forecasts for individual airports will be strongly influenced by airline competition and route strategies.

Recommendations

1. In order to better inform the discussion of future regional aviation system options in Phase 2 (e.g., potential airline service at alternate airports, High Speed Rail, expanded use of general aviation reliever airports), updated forecasts should be developed for unconstrained air passenger, air cargo and business general aviation demand.
2. As with the earlier RASP forecasts, a careful evaluation of long-term trends in the price of air transportation, airline route strategies, and other key market-drivers will be essential to developing meaningful forecasts.
3. The forecasts should be of sufficient detail to assess the potential passenger and air cargo demand that could be served by alternative airports and the impact of general aviation on future runway capacity issues at the three major commercial airports.
4. To better understand current and evolving aviation demand trends, a tracking system of key forecast indicators should be developed.

Panel 2: New Air Traffic Control Technology

What the Experts Said. A number of new Air Traffic Control (ATC)/Air Traffic Management (ATM) technologies are under development and have the potential to improve capacity, reduce delays, and improve safety. These technologies, working together, can:

1. Enhance the all-weather landing capability at multiple airports;
2. Provide conflict free transition routes to and from multiple regional airports;
3. Enhance regional airport system capacity through performance-based surveillance and communications systems; and
4. Maintain higher runway arrival rates in low visibility (instrument) conditions

Key capabilities and potential benefits of these technologies.

1. Providing more accurate information on the location of aircraft using satellite-based guidance information (RNAV, RNP, ADS-B); this allows controllers and pilots to know where all aircraft are around them;

2. Improved pilot vision in the cockpit so pilots can "see" runways, terrain, and other aircraft around them as well as flight path information (Heads Up Display, Enhanced Vision and Synthetic Vision);
3. Improved aircraft spacing and sequencing to maximize airport arrival rates in all weather (controller sequencing tools, four-dimensional trajectories, defined by latitude, longitude, altitude and time, Wake Turbulence Avoidance systems);
4. Reduce pilot and controller workload; and
5. Provide environmental benefits (Continuous Descent Approaches).

Airports utilizing some of these technologies.

1. Atlanta/Dallas Ft Worth: Area navigation (RNAV) used to open up more departure routes from the airport and increase capacity;
2. Juneau Alaska: RNP (Required Navigational Performance) being used to avoid terrain on approach into airport;
3. Washington National: RNP being used to lower approach weather minimums into this airport for those aircraft that are properly equipped;
4. LaGuardia/JFK: For properly equipped aircraft, RNP being used to lower approach weather minima and allow flights into LaGuardia, when previously these flights were preempted by flights landing at JFK;
5. Stockholm, Sweden: Advanced arrival sequencing tools that allows aircraft to know its precise arrival time at the runway and allows aircraft to fly Continuous Descent Approaches (fly a constant glide slope into the airport from 22 miles away, thereby lowering fuel consumption, emissions, and noise; this type of approach has also been tested at Mather Airport in Sacramento);
6. San Francisco International: Use of Simultaneous Offset Instrument Approach (SOIA) procedure to maintain higher arrival rates to the airport during some poor weather conditions (see below);
7. Heads Up Display: Currently Southwest Airlines uses HUD alone to fly instrument approaches into an airport; and
8. RNAV/RNP (area navigation with Required Navigational Performance) can reduce flight track dispersion, potentially allow creation of additional airport arrival and departure routes and/or "de-conflict" arrivals and departures, and reduce pilot and controller work load.

SFO Opportunities and Constraints. The Bay Area's flight delays are currently concentrated at SFO when poor weather reduces arrivals to a single runway. Some of the unique challenges and opportunities at SFO include:

1. SFO has a unique crossing runway configuration, where sufficient distance must be provided between arriving aircraft (typically about 4 miles) to allow for departures from the crossing runways. This aircraft separation requirement due to crossing runways cannot be overcome by new technology.
2. Procedural changes and improved software for controllers for the Simultaneous Offset Instrument Approach procedure could expand the time Runways 28 R and 28 L can be used for simultaneous landings from 4.8% to 7.5%, leaving 12.5% of the

time when only a single runway can be used for arrivals to Runway 28.

3. Current FAA research into improving the arrival capacity of airports with two closely spaced parallel runways is focusing on airports with runway separations around 1,200 ft. (SFO's spacing for runways 28R/L is 750 ft.).

4. The technological capability to land aircraft side-by-side on runways 750 ft. apart in all weather conditions may exist at some point in the future (a combination of RNP, ADS-B, Wake Vortex advisory systems, and cockpit displays); however, whether the public and pilots will accept the potential risks is unknown (potential for equipment malfunction, pilot error, etc.).
5. A study by Boeing Aircraft attempted to estimate the benefits of some of the basic new technologies for the 35 busiest airports in the country under different weather conditions. The average gain in capacity for these airports was 8-10% with RNAV/RNP solutions. The average gain in capacity would increase to 18-27% if these same technologies are combined with advanced controller spacing tools and new runway solutions.

Some potential future applications of these technologies in the Bay Area.

1. Advanced controller sequencing tools can improve arrival rates.
2. Additional RNAV/RNP routes could minimize arrival and departure conflicts between the three major commercial airports.
3. Technologically-based improvements in the current Simultaneous Offset Instrument Approach (SOIA) at San Francisco Airport could allow simultaneous approaches on two runways at lower approach weather minima (i.e., times when cloud ceilings drop to 1,600 feet compared to 2, 100 feet today).
4. Technologies could reduce entrail separation between arriving aircraft (through advanced wake turbulence detection and avoidance technologies).
5. 4D trajectories and Continuous Descent Profiles could be used for periods of low traffic.
6. New RNAV approaches could be developed for the region's busiest general aviation airports (e.g., reduced approach minima criteria for Oakland's North Field general aviation runways 9R/L).
7. If construction of new parallel runways is considered in the future (e.g., a new outboard parallel runway at OAK), the runways could be spaced closer together, reducing costs and environmental impacts.

Key Hurdles

1. While many technologies have been tested to show their functionality, very few of these new technologies have gone through the system engineering and integration work necessary for large-scale deployment.
2. Several new technologies have taken a decade to go from field-testing to full-scale deployment (e.g., the Traffic Management Advisor system). Key stakeholder groups (airlines, pilots, air traffic controllers) must accept and agree to use the technology. The development process can be slowed down by any group raising a safety concern. This has occurred for a fundamental building block in the new-era ATC system Automatic Dependent Surveillance-Broadcast (ADS-B), where aircraft constantly transmit their satellite based position and flight information to controllers and other aircraft around them.
3. There are no hard and fast guidelines as to what is "safe."

4. A fundamental aspect of all the new technologies is that they require a transition from a system in which the air traffic controllers are in command to one in which pilots assume more responsibility for their flight routes and safe separation from other aircraft. This transition will have significant implications in terms of pilot/controller workload and future training needs.
5. There is a "chicken and egg" problem with new technology--the FAA desires to have airlines equip with new technologies so that they can develop the operational procedures to use them, whereas the airlines want the FAA to develop the procedures first, before they make substantial technology investments in their fleets. The FAA would normally like to see at least 80% of aircraft capable of flying any new procedure.
6. Because of the cost purchasing and installing new technology in new or retrofitted aircraft can be quite high, airlines must see a clear "bottom line" benefit. For example, the cost of adding an Enhanced Vision System to a cockpit Heads Up Display is reportedly over $500,000 per aircraft. Re-equipping older aircraft may not be cost effective, while re-equipping newer aircraft can take 5 years or more, as these upgrades would normally be performed during a scheduled major maintenance.

Findings and Conclusions

1. There are many capacity-increasing air traffic management and air traffic control concepts and technologies in research, but very few are undergoing the systems engineering work necessary to make them an operational reality.
2. Also, there are still significant engineering and stakeholder issues to be resolved with a number of the new technologies; these aspects create uncertainty as to when will the airlines equip with the newer technologies and when will the FAA implement new ground infrastructure and procedures.
3. There is no "one size fits all" approach; new technology solutions and capacity benefits will be site/airport specific.
4. Airports, airlines, and regional agencies need to proactively work together with the FAA to get new technologies implemented.
5. Opportunities to significantly improve runway arrival rates at SFO during poor weather appear to be limited due to the existing runway configuration, technological challenges, risk issues, and pilot and controller acceptance.
6. New technology will be part of the region's runway and airspace capacity solution, but with a 10-15% overall airport capacity gain (Boeing estimate), this would only satisfy 3 to 5 years of normal traffic growth (assuming a 3 percent per year growth and little change in average aircraft seating, and no substantial change in the size of aircraft used, as forecasted by the FAA).

Recommendations

1. Airport capacity analyses conducted in Phase 2 should identify the most promising and realistic new air traffic control and air traffic management technologies, and evaluate the impact such technology could have at Bay Area airports.
2. During Phase 2, RAPC should receive and review reports from NASA and FAA on the research and funding status of key air traffic control technologies under

development that were discussed in the panel, such as ADS-B and related technologies.

3. During Phase 2, RAPC should also receive and review reports from the FAA/Bay Area airports on the following specific topics:
   a. Development of RNAV/RNP procedures for Bay Area commercial airports;
   b. Development of procedures that would allow lower weather minimum at Bay Area general aviation reliever airports;
   c. Progress in extending the use of the Simultaneous Offset Instrument Approach (SOIA) at SFO to lower weather minima; and
   d. Status of advanced tools for air traffic controllers to efficiently sequence aircraft arrivals.
4. RAPC may want to request that the FAA and airports further examine the potential benefits of Continuous Descent Approaches (CDAs) during low traffic periods (potential benefits include increased capacity and reduced noise and fuel consumption).
5. A potential Phase 3 task would be to conduct an airspace study, with cooperation from the FAA, which would provide a more detailed analysis of the benefits of new technologies at specific airports.

Panel Three: Demand Management

What the Experts Said. Experience with demand management strategies--strategies to better balance runway capacity with aircraft demand--has largely been concentrated at the four airports where Congress has imposed slot controls that limit the number of daily or hourly airline operations (Washington National, Chicago, LaGuardia and New York's JFK). Slot controls provide a very positive control on airport activity, but they also have some downsides:

1. Slots can restrict access by new airlines. Airlines that obtained slots originally can hoard them and not give them up to new airlines seeking access to an airport.
2. Slot systems can lead to less choice of airline services, less competition, and higher fares.
3. Slot controls fell out of favor with Congress due to their impact on airline competition and were eliminated, effective January 2007. LaGuardia and Chicago have transitional controls, since over-scheduling problems have not abated.

US Experience with Demand Management. Airport operators and the FAA are prevented from regulating airline routes, rates, or services by the Airline Deregulation Act of 1978. The FAA has more authority, however, due to the linkage between certain types of controls and the FAA's responsibility to maintain safe and efficient operation of the national airspace.

The 1990 Airport Noise and Capacity Act explicitly sought to minimize or eliminate airport access restrictions, as an incentive to speed the transition to quieter aircraft when the act was enacted. Airports may propose new restrictions under a Part 161 Study (Notice of Approval of Airport Noise and Access Restrictions study), but no airport has yet developed a capacity-related restriction for Stage 3 (quieter) aircraft in this manner, and the path is not an easy or obvious one, particularly absent FAA support.

Airports have several avenues available to address capacity issues, related to the need to increase the size of aircraft operating at their airport (carry more passengers with fewer operations) or the need to reduce congestion during the peak periods (due to too many scheduled flights during the same period of time): Specific mechanisms include:

1. Minimum landing fees
2. Leases
3. Congestion pricing

Chicago O'Hare's temporary restrictions on hourly operations will sunset in 2008 when a new runway will be completed. The FAA has proposed a new rule for LaGuardia, which includes auctions or fees to determine the allocation of supply; however, since the FAA does not have authority to impose fees, it is seeking this authority in the currently proposed FAA reauthorization legislation. Thus, the future of slots as a demand management tool is uncertain.

Some examples of the approaches being implemented by US airports are:

1. Boston Logan Airport's peak period pricing fee is an example of a "market-based" approach to managing demand, and was required to be developed as an environmental mitigation measure for constructing a new commuter aircraft runway. Traffic levels so far have not increased to a level where the peak period pricing program would be triggered.
2. An earlier pricing experiment, also at Boston Logan, adjusted the minimum landing fee at the airport, essentially increasing the landing fee for small aircraft and reducing it for large aircraft. Although this fee was revenue neutral, it was seen as discriminating against small aircraft and was successfully challenged in court. During the 6 months the program was in effect, it did have an impact on reducing general aviation and commuter/regional airline operations.
3. The Port Authority of New York and New Jersey is considering a lease approach for managing congestion at LaGuardia, where a lease obligation would include certain airline operational performance factors.

Congestion Pricing. Congestion pricing concepts rely on the cost of airport access to reduce demand. In the purest sense, such schemes would be indifferent to the impact on the types of services airlines provide, or the types of aircraft they operate. It would simply look at overall runway demand and set a price consistent with the runway's capacity. On the other hand, there are still multiple issues involved with congestion pricing as well.

Limited congestion pricing experience can result in such pricing being perceived as a panacea while downplaying the potential complexities, which include determining how to set prices, quantifying potential benefits, and the risk of potential administrative and legal challenges. The approach to setting the right price in a constantly changing market is complex, and with market-based systems it may be difficult to get the price right to control demand to a desirable level. Peak period pricing systems would not be particularly effective when demand is constant throughout the day (such as LaGuardia).

To be effective, market-based systems may require very high fees (surcharges) that generate substantial new airport revenues; revenues in excess of airport costs would violate FAA policy that airport pricing be revenue neutral (i.e. fees equal airport costs). In addition,

Airlines may not be able to avoid peak period pricing because of the need to schedule their aircraft a certain number of hours of the day to achieve maximum utilization and economic return. High fees may adversely affect the financial health of airlines serving smaller communities, as these fees could have a disproportionately large impact on their operating costs.

Public perceptions about how new revenues generated by higher fees are used by the airports and the impact of these higher fees on airfares will be important to consider. A successful highway congestion pricing project is the Rt. 91 toll lane in Orange County, where tolls are varied on a real time basis to ensure that traffic flows freely in the toll lanes. While there are differences between toll lanes and runways (drivers can use non-tolled lanes instead, and don't compete with each other in a business environment as the airlines do), it is an example of how prices can alter the use of available capacity.

There are also positive attributes of market-based pricing approaches:

1. They are a good alternative to current weight-based landing fees as they better reflect capacity and other environmental constraints at an airport.
2. Market-based systems let the market sort out the most valuable flights, and this avoids the convoluted administrative process often associated with slot type systems.
3. High congestion fees would impact feeder flights, but these shorter distance flights also have viable ground transportation alternatives (e.g., Sacramento, Fresno, Monterey, etc.) and may be less profitable to the airlines than commonly assumed.
4. Pricing could change based on seasonal capacity issues, such as reduced capacity during periods with known weather problems (e.g., SFO's summer fog condition).
5. A potential means to maintain airport revenue neutrality might be to lower other airport fees, such as weight-based landing fees, Passenger Facility Charges, FAA ticket taxes, etc. Alternatively, fees in excess of airport costs could be used for other "airport purposes" such as to increase the capacity of other alternative regional airline service airports or fund alternative ground transportation services for short haul flights.

Bay Area Weather Related Delays-Bay Area weather-related delay problems are concentrated at SFO, where 80% of SFO's delays occur on the 20 worst weather days (when runway arrival capacity is reduced in half). One panelist suggested several operational solutions to SFO's bad weather days:

1. Substitute ground transportation for short distance flights when the delay on a flight is greater than the time it would take to get to the airport by ground transportation.
2. On the very worst weather days, divert some SFO flights to OAK, and provide low cost facilities (such as remote aircraft parking with buses to the terminal) to handle these flights. This concept would likely require a ferry or bus connection between the two airports to be operated on these days as well.

Findings and Conclusions

1. Experience with demand management, other than slot controls mandated by Congress, is extremely limited.
2. Experience elsewhere (e.g., Boston's early landing fee program) has been

accompanied by legal challenges.

3. The outcome of current demand management proposals to manage traffic at LaGuradia will inform future demand management discussions at other airports; however, LaGuardia's situation is somewhat unique since the FAA is asking for new pricing authority, which it currently does not have.
4. With regard to congestion pricing, a major issue that will need to be resolved in the future is whether such an approach can work in the face of FAA's current policy that airport fees cannot exceed airport costs.
5. While the impact of various demand management approaches can be estimated (as was done in the RASP), the road to implementation is still not well defined; therefore, the impact on the Bay Area's future runway capacity issues is still uncertain.

Recommendations

1. As in the prior 2000 RASP, RAPC's Phase 2 work should identify the most feasible demand management strategies and estimate the benefits of these strategies at specific airports.
2. RAPC should receive and review periodic reports from SFO on its work to evaluate new demand management approaches and provide feedback.
3. According to recent FAA studies, OAK's main air carrier runway is likely to become congested in the next 8 to 10 years. RAPC should request that OAK also evaluate potential new demand management approaches, prior to the onset of major delays.
4. RAPC should support the FAA's proposal in the current FAA reauthorization legislation to conduct a pilot congestion pricing program.
5. Depending on the approach taken by Bay Area airports in the future to manage demand, RAPC may wish to support possible new legislation (or other approaches) that would change current federal policy that requires airport fee structures to be revenue neutral--a significant obstacle for effective congestion pricing schemes.
6. In Phase 2, RAPC may wish to investigate the potential for inter-regional express buses to substitute for short-haul commuter flights on bad weather days (e.g., Sacramento, Monterey, Fresno, Redding, Chico, etc.)
7. A tracking system should be developed to assess how close the three major Bay Area airports are to their estimated runway capacity and to better determine the time remaining until major delays are likely to occur.

Panel Four: Governance and Institutional Issues

What the Experts Said. Although different areas of the country have different institutional structures for planning and operating airports, they all face similar long-range airport capacity and environmental issues.

Boston/New England Area. Plans for New England's airports are the result of a six-state regional planning process that was begun in the early 1990's and continues today, with the completion of the latest study, the New England Regional Airport System Plan (2006). New England's air service Regionalization program is based on a cooperative partnership among

New England's state aviation agencies, the individual airports, New England Council (a business organization) and FAA to market and promote airline service at alternative airports. The goal of the program is to provide air passengers with more airline service choices at more convenient airports (such as Manchester and Providence) while also relieving traffic at Boston Logan. Boston Logan is run by Massport, a state-created agency, and is one of the most delay-prone airports in the country. There is no "silver bullet" to Boston's runway capacity problems; rather, Boston Logan is pursuing on a mix of solutions:

1. Runway improvements (new commuter aircraft runway);
2. Demand Management (peak period pricing);
3. Regionalization of Air Service (greater use of other New England airports); and
4. High speed AMTRAK service for shorter trips in the Northeast Corridor.

The share of regional traffic handled at Boston Logan has decreased, as Southwest Airlines began serving several regional airports. However, while Boston Logan's share of traffic has decreased, the actual number of passengers served has continued to grow, due to New England's diverse economy and propensity to travel. While New England Airports are part of the larger six-state New England Airport Coalition, each airport remains responsible for planning, funding, and obtaining all approvals for airport improvement projects at their airport.

Southern California Region. Regional aviation planning in Southern California is performed by the Southern California Association of Governments (SCAG), which has examined numerous potential solutions to Southern California's aviation needs over many years. Regionalization of air service has been an essential component of SCAG's strategy, due to local opposition to major expansion of Los Angeles International Airport, legal limits on airline activity imposed on Long Beach and John Wayne Airports (Orange County), and litigation over further terminal expansion at Burbank Airport. The region's main long-range options have included serving more air passengers at Ontario and Palmdale airports, reuse of closed military bases (such as El Toro Marine Corps Air Station, Norton AFB, George AFB), and joint use of March Air Reserve Base.

Use of El Toro airport for aviation was rejected by Orange County voters in 2002. The City of Los Angeles has agreed to limit the number of aircraft gates at Los Angeles International Airport as a result of a recent legal settlement agreement between the Airport and neighboring communities. The settlement agreement limits the total number of gates in an attempt to constrain the airport to 78 million annual passengers (the Master Plan's estimated maximum gate capacity).

In an effort to cooperatively examine new solutions, and as a result of a legal settlement agreement with local communities, Los Angeles World Airport (LAWA) is re-activating the Southern California Regional Airport Authority (SCRAA), which was created in 1985 to assist in developing new airport system capacity. This authority theoretically has the powers to own and operate a new airport, as well as powers of eminent domain, but has been de-activated several times due to disagreements among its participants. Based on recent studies of institutional options conducted by SCAG, the SCRAA board is considering changes to the Authority including eliminating powers that it had but did not use, making it more inclusive and less threatening to the participating parties, and remaining a Joint Powers Authority or changing to a MOU-based organization. SCAG would be responsible for the conducting the long-range aviation planning studies for SCRAA.

San Diego Regional Airport Authority. Past studies in the San Diego area had suggested a new authority might better address the region's future air transportation needs, including selecting a site for a new airport to replace or augment Lindbergh Field. State legislation was passed in 2001 creating the San Diego Regional Airport Authority, which began operation in 2003.

The Authority has the power to own and operate a new airport and was required by its enabling legislation to study and to place a recommendation for a new airport site on the San Diego County ballot in 2006. Over 30 sites were studied, and the existing Marine Corps air base at Miramar was recommended as a potential site for future joint use. However, the proposal was defeated by a 60/40 margin in the 2006 county vote. The Department of the Navy did not support the concept of joint use.

The Authority continues to plan for improvements at Lindbergh Field, one of the busiest

single runway commercial airports in the country. The EIR for the latest Master Plan, which proposed adding 10 gates, was challenged and revised due to community concerns about ground access issues. While use of the runway by air cargo and business general aviation is

not large, the airport is constrained in size, and their operations do have an impact on available capacity. Due to overlap in their air service areas, the Authority will likely participate in the revitalized Southern California Regional Airport Authority (see above).

The Authority's enabling legislation also transferred the County Airport Land Use Commission (ALUC) function from the regional council of governments to the new Authority, with a requirement to update all 16 airport land use compatibility plans in the County. This plan update process has been contentious, and a 50 member collaborative group has been formed to help implement the process. Current state legislation proposes to change the composition of the Authority's Board, but not change the existing powers of eminent domain or its ALUC authority.

Sacramento. The Sacramento County Airport System is a department of Sacramento County and reports to the Board of Supervisors through the County Executive. Each of the County's five airports has a well defined role in the system. Financially the airports are operated as an enterprise fund.

Airline passenger service at Sacramento International Airport recovered quickly after 9/11, and eight new airlines have started service since 2001. The Airport is proceeding with a $1.3 billion terminal expansion program. Corporate general aviation is largely served by Sacramento Executive Airport, which is leased from the City of Sacramento. Franklin Airport is also a general aviation facility, and is used heavily for training. Potential changes in airspace operations could provide benefits for Sacramento International Airport, but according to the FAA, would need to be reviewed in the context of operations throughout the larger Northern California airspace.

Mather Airport was a former military airport, which is now used for air cargo. In a highly successful transition, the County assumed operation of Mather two years after it was closed by the military. Incentives were offered to the air cargo airlines using Sacramento International to move to Mather, and two of the three cargo airlines opted to move. Because of the need to cover possible shortfalls in the early years of operation, financial arrangements were made to cover the shortfalls through revenues from airlines serving Sacramento International Airport as well as a line of credit that was established through a Joint Powers Agreement between the Board of Supervisors and County Redevelopment Agency.

The County has also assumed ownership of a portion of McClellan Air Force Base, which is owned through a joint venture with a private developer. The runways and some ancillary land and structures were retained for airport use to enhance the economic base of the County, and is the home of several corporate aircraft fleets and companies that perform aircraft maintenance. The private developer is responsible for any operating shortfalls.

The state-mandated Airport Land Use Compatibility (ALUC) planning function is performed by the regional council of governments, which has also experienced resistance from local communities in developing airport land use compatibility plans for county airports. An MOU has been drafted spelling out how future decisions will be made regarding new development and amendments to General Plans.

Findings and Conclusions

1. To address contentious aviation planning issues, some regions are relying heavily on new collaborative processes, e.g., the New England Airport Coalition, the re-constituted

2. A requisite for considering institutional change is to first clearly identify the problems that need to be solved and the major impediments to addressing these problems, whether they be institutional or for some other reason.
3. Within a regional airport system planning context, the panelists generally supported a process for evaluating the need for new governance mechanisms that included the following steps:
    a. Develop a baseline forecast that identifies the needs and capacity problems in the airport system;
    b. Develop a Vision of how the region can address these capacity issues;
    c. Develop a regional consensus around the regional vision; and
    d. evaluate the benefits of institutional changes as one means to implement the Vision.
4. A major challenge in any future effort to reconfigure how airport decisions in the Bay Area are made will be the keen interest of existing institutions and individual airports in maintaining local control.

Recommendations

1. As part of the Phase 2 work scope, evaluate the strengths and weaknesses of various institutional approaches (such as a new Authority, Joint Powers Agreement, and Memorandum of Understanding, etc.) for addressing key planning and implementation issues identified in the June staff report to RAPC (see below.) The need for institutional change may or may not be relevant, depending on the regional Vision for the airport system developed at the end of Phase 2. If determined to be relevant, then further analysis will be conducted in Phase 3.
    a. Improve long-range planning for the region's aviation needs;
    b. Influence airline service decisions;
    c. Flexible use of FAA funds for airport improvements;
    d. Acquire/operate new airports;
    e. Develop more effective demand management/delay reduction approaches;
    f. Resolve potential regional airspace issues;
    g. Expedite deployment of new Air Traffic Control technologies;
    h. Help resolve regional over flight noise issues (higher altitude noise, further from runways);
    i. Make better use of general aviation airports as relievers to air carrier airports;
    j. Improve surface access to airports;
    k. Promote compatible land use around airports; and
    l. Legislative solutions (funding, noise compatibility, other issues).

Phase 2 Work Scope Outline and Decision Process. Phase 2 will provide a process for completing the remaining portion of RAPC's adopted work scope. Phase 2 will emphasize public input and a visioning process to develop consensus on a long-range aviation plan for the region that potentially includes airline and air cargo service at alternative airports, diversion of some air passengers to a future California High Speed Rail System, use of new air traffic control technology, demand management at existing airports, and new institutional approaches. Phase 2 incorporates the findings and recommendations from Phase 1 as described below. Funding would come from MTC, the FAA, and airports. The work scope and a budget for Phase 3 will be determined by RAPC at the conclusion of Phase 2.

A proposed outline for Phase 2 is provided below. The Phase 2 work scope outline and the Phase 1 Summary Report will be discussed and evaluated at the September 19th Public Workshop. Staff will present the revised Phase 1 conclusions and recommendations and a more detailed Phase 2 Work Scope at RAPC's October 15th meeting for Committee action.

Phase 2 Work Scope Outline

Task 1. Public Input (throughout Phase 2)

Task 1.a. Workshops, meetings, website postings, etc.

Task 2. Vision and Implementation Plan. Throughout Phase 2, develop a vision for regional aviation and an implementation plan that addresses the following topics:

1. What is the long-range vision for addressing Bay Area aviation needs?
2. What are the next steps?
3. Who is responsible?
4. What should RAPC do specifically?

Task 3. Update Aviation Forecasts

Key Phase 1 recommendations regarding aviation forecasting:

1. In order to better inform the discussion of future regional aviation system options in Phase 2, updated forecasts should be developed for unconstrained air passenger, air cargo and business general aviation demand.
2. As with the earlier RASP forecasts, a careful evaluation of long-term trends in the price of air transportation, airline route strategies, and other key market-drivers will be essential to developing meaningful forecasts.
3. The forecasts should be of sufficient detail to assess the potential passenger and air cargo demand that could be served by alternative airports and the impact of general aviation on future runway capacity issues at the three major commercial airports.
4. To better understand current and evolving aviation demand trends, a tracking system of key forecast indicators should be developed.

Task 3.a. Develop new baseline aviation forecasts for the following areas (for the region and for the individual airports):

1. Air passengers

2. Air cargo
3. Business General Aviation

Task 3.b. Examine Potential Demand that could be served by Alternative Airports (air passenger and air cargo, as appropriate for the specific airport):

1. Moffett Federal Airfield
2. Travis AFB
3. Sonoma County (Santa Rosa)
4. Livermore
5. Buchanan Field (Concord)
6. Napa
7. Byron (eastern Contra Costa County)
8. Other airports: Stockton/Monterey/Sacramento

Task 3.c. Examine Potential Demand Diversion from a future HSR system

1. Review results from latest California HSR Ridership Study

Task 3.d. Develop an aviation forecast tracking system

Task 4. Determine Baseline Runway Capacity Shortfalls at SFO/OAK/SJC

Key Phase 1 Recommendations for Demand Management and Aviation Technology:

1. Airport capacity analyses in Phase 2 should identify the most promising and realistic new air traffic control and demand management strategies and estimate the impact at specific airports.
2. RAPC should receive and review reports from NASA and the FAA on the research and funding status of key technologies in Phase 2 and on technology development and applications at specific Bay Area airports.
3. RAPC should receive and review reports from SFO on its work to evaluate new demand management approaches; OAK should initiate demand management studies before the onset of major runway congestion.
4. RAPC may wish to investigate the use of inter-regional express buses to substitute for some short haul commuter flights into Bay Area airports.
5. A tracking system should be developed to determine how close each airport is to their estimated runway capacity and the time remaining until major delays are likely to occur.
6. RAPC should support a pilot congestion pricing program in new FAA reauthorization legislation.

Task 4.a. Identify Demand Management and Air Traffic Control technologies that should be used in developing aviation capacity assessments.

Task 4.b. Estimate demand and capacity at SFO, OAK, SJC, with and without:

1. New Air Traffic Control Technologies and Demand Management;
2. Airline service at alternative airports;
3. Improvements at GA reliever airports (to divert some business general aviation activity); and

4. Substitution of inter-regional express bus service for short haul commuter flights.

Task 4.c. Develop a runway capacity tracking system

Task 5. General Overview of Environmental and Economic Issues

Key Phase 1 Recommendations for environmental and economic assessment:

1. RAPC may wish to request that the FAA and airport further examine the potential benefits of Continuous Descent Approaches (CDAs) during low traffic periods (as a way to reduce noise and fuel consumption).

Task 5.a. Develop a qualitative assessment of regional impacts of alternatives/strategies that address the following:

1. Over flight Noise
2. Aircraft Emissions
3. Climate Change
4. Biological
5. Economy
6. Traffic/Ground Access

Task 5.b. Explore with the FAA and airports the potential to test a Continuous Descent Approach at Bay Area airports

Task 6. Mid-Phase Screening Evaluation. RAPC will determine which alternatives/strategies should be examined in greater detail based on the information developed in Tasks 1-5 above. This will ensure that the remaining work focuses on the long-range aviation solutions that are most promising according to the technical analyses and public input.

Task 6.a. Assess the relative benefits/tradeoffs of the alternatives/strategies.

Task 7. Develop Additional Information on Alternatives/Strategies

Task 7.a. Alternative Airports. Estimate costs of developing alternative airports.

1. Cost of terminals, avionics, security, airfield (runways, taxiways, etc.)
2. Ground Access

Task 7.b. New ATC Technology/Demand Management. Further development of new ATC technology and demand management strategies, as required.

Task 7.c. Evaluate aviation technologies and demand management strategies, and consider advocating for the technologies and legislation that will effectively address Bay Area capacity issues.

Task 8. Institutional Evaluation

Key Phase 1 Recommendations regarding Institutional Change:

1. As part of the Phase 2 work scope, evaluate the strengths and weaknesses of various institutional approaches (such as a new Authority, Joint Powers Agreement, and Memorandum of Understanding, etc.) for addressing key planning and

implementation issues identified in the June staff report to RAPC (see below.)

- Improve long-range planning for the region's aviation needs
- Influence airline service decisions
- Flexible use of FAA funds for airport improvements
- Acquire/operate new airports
- Develop more effective demand management/delay reduction approaches
- Resolve potential regional airspace issues
- Expedite deployment of new air traffic control technologies
- Help resolve regional over flight noise issues (higher altitude noise, further from runways)
- Make better use of general aviation airports as relievers to air carrier airports
- Improve surface access to airports
- Promote compatible land use around airports
- Legislative solutions (funding, noise compatibility, other issues)

The need for institutional change may or may not be relevant, depending on the regional vision for the airport system developed during Phase 2. If determined to be relevant, then further analysis will be conducted in Phase 3.

Task 8.a. Evaluate strengths and weaknesses of new Authority, JPA, or MOU relative to long-range planning issues listed above.

Task 9. Phase 2 Wrap up.

1. Adopt a Vision and Implementation Plan
2. Approve Phase 3 works scope (as required)

Attachment A

RAPC Panel Participants

Panel Moderator Andy Richards (Manager of the Federal Aviation Administration's San Francisco Airports District Office). Mr. Richards served as the Moderator for the first three panels below.

Aviation Trends

Patrick Sullivan (Senior Airport Planner in the Federal Aviation Administration's National Planning Division). Mr. Sullivan reviewed the methodology and assumptions involved in the Federal Aviation Administration's latest national aerospace forecasts for air passengers, air cargo, and aircraft operations. He also discussed the implications of introducing Very Light Jets into the nation's aviation system.

Michael Roach (Principal in San Francisco-based Roach and Sbarra). Mr. Roach reviewed the accuracy of RAPC's prior forecasts, discussed reasons for divergence in the forecasts, and reviewed current trends in airline service to the three Bay Area commercial airports.

Jerry Bernstein (Founding Partner, the Velocity Group). Mr. Bernstein reviewed growth trends in the Regional Airline industry and in business general aviation.

John Laughlin (expert in the air cargo industry and cargo manager for several major airlines). Mr. Laughlin provided an overview of current trends in the domestic and international air cargo markets and examined growth trends in West Coast air cargo in particular.

New Air Traffic Control Technology

Tom Cornell (Director in the firm of Jacobs Consultancy). Mr. Cornell provided an overview of new air traffic control technologies, their capabilities, and how they are intended to work together as a system.

Monica Alcabin (Associate Technical Fellow with the Boeing Commercial Airplane Group). Ms. Alcabin reviewed the cost/benefit issues with new technologies and some of the major issues that must be addressed by the FAA and airlines before these technologies can be widely deployed in the airline fleets.

Harry Swenson (Principal Investigator with the National Aeronautics and Aerospace Administration for the Next Generation Air Transportation System). Mr. Swenson discussed the lengthy process for bringing new technologies from research to implementation and the key issues that need to be addressed by all the stakeholders in the development process.

Don Crisp (Vice-President, Aviation Systems Analysis Division). Mr. Crisp discussed the status of a number of the new ATC technologies and which ones would be of most benefit in terms of addressing the capacity shortfall at San Francisco International Airport when weather conditions restrict operations to a single runway.

Demand Management

Steve Martin (Senior Vice President, Policy and Planning for Airports Council International). Mr. Martin reviewed the existing regulatory and legal context for demand management and provided examples of approaches at different airports.

Frank Berardino (Economist and President of GRA, a firm specializing in economic and financial analyses for government and private sector clients in the aviation industry). Mr. Berardino focused his presentation on congestion pricing as a demand management tool.

Mark Hansen (Professor in the Department of Civil and Environmental Engineering at the University of California Berkeley and co-Director of the National Center of Excellence in Aviation Operations Research). Mr. Hansen discussed operational alternatives for managing demand, such as diversion of some traffic from SFO to OAK on bad weather days and substitution of alternative ground transportation services (such as bus or rail) for short haul commuter flights in bad weather

Airport Governance and Institutions

Flavio Leo (Manager of Aviation Planning for Boston Logan International Airport). Mr. Leo provided an overview of aviation issues in the greater six-state New England region and the cooperative approach being employed to encourage decentralization of air service as a means to help relieve traffic at Boston Logan International.

Mike Armstrong (Aviation Planning Manager, Southern California Association of Governments). Mr. Armstrong discussed the capacity constraints at individual Southern California area airports and current efforts to re-activate the Southern California Regional Airport Authority as a means to obtain greater consensus on how to address long-range capacity issues in the region.

Angela Shafer-Payne (Vice President of Strategic Planning, San Diego County Regional Airport Authority). Ms. Payne discussed the genesis of the new (2004) San Diego Regional Airport Authority and some of the lessons learned in attempting to fulfill its legislatively mandated requirements for identifying a new airport site for the San Diego area as well as taking over the Airport Land Use Commission function from the County.

Robert Leonard (Chief Operating Officer of the Sacramento County Airport System). Mr. Leonard discussed the governance and role of the five individual airports in the Sacramento County airport system as well as some of the innovative financial approaches that have been developed for taking over and operating two closed military airports—Mather and McClellan.