METROPOLITAN TRANSPORTATION COMMISSION

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ABAG ASSOCIATION OF BAY AREA GOVERNMENTS

Regional Airport Planning Committee

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TO: Regional Airport Planning Committee

FROM: Staff of the Regional Airport Planning Committee

SUBJECT: DRAFT Institutional Arrangements Analysis

Introduction. During the previous update to the Regional Airport Systems Plan Analysis (RASPA) and Phase 1 of the current update, the idea has been presented that changing the way that Bay Area airports and air transportation are governed might allow the region to better respond and plan for air transportation needs and impacts. The staff analysis on institutional arrangements will be presented in two parts. The first part, presented at the October 2010 RAPC meeting, will summarize the study goals and strategies and describe the institutional issues associated with each strategy. This staff report contains part one of the staff analysis.

The second part of the analysis will be presented at the January 2011 RAPC meeting and will focus on RAPC, its regional role and strengths and weaknesses. This report will include a description of the types of institutional arrangements from memorandums of understanding to regional authorities and an analysis of how each type may respond to the identified strengths and weaknesses of the Bay Area's current institutional structure.

Currently, the Bay Area's three main commercial airports-San Francisco International, Oakland International and San Jose International-are all individually planned, financed, managed and operated. Under almost all circumstances, federal regulations allow airlines and not airports to determine where to fly. Local governments make the land use and permitting decisions that govern the airport lands and the lands surrounding the airports. However, there is a possible role for different kinds of institutional arrangements to improve the planning, financing, management and/or operations of air transportation and airports in the Bay Area.

Background. In Phase 1 of the current update to the RASPA, a panel on institutional arrangements was convened by RAPC to provide more information on the different types of institutional arrangements that exist around the country and the affect that these arrangements have had on addressing demand in these regions. The findings and conclusions from that panel included:

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 Southern California Regional Airport Authority, and the processes in San Diego and Sacramento counties to update ALUC plans for the airports in these areas.
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:
   - develop a baseline forecast that identifies the needs and capacity problems in the airport system;
   - develop a vision of how the region can address these capacity issues;
   - develop a regional consensus around this vision; and
   - 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 from Phase 1: As part of the Phase 2 work scope, evaluate the strengths and weaknesses of various institutional approaches (such as a new Regional Authority, Joint Powers Agreement, and Memorandum of Understanding, etc.) for addressing weaknesses and gaps in the region's current approach to air transportation. The need for institutional change may or may not be relevant, depending on the analysis of whether a different type of institutional arrangement would likely be effective in addressing the weaknesses and gaps identified in the region's current institutional approaches for addressing air transportation issues. The following list identifies the issues that the region may have to address and resolve in the next several decades:

- Improve long-range planning for the region's aviation needs;
- Influence airline service decisions;
- Encourage a more 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; and
- Pursuing legislative solutions air transportation problems (funding, noise compatibility, other issues).

In Phase 2, RAPC should conduct an analysis to determine whether changing the region's current airport and air transportation governance structure could improve effectiveness and efficiency in addressing the issues identified above, as well as any other issues that are identified during the work and analysis in Phase 2 as described in the regional vision.

Institutional Arrangements Analysis, Part 1. Part 1 of the analysis will look at institutional issues from two perspectives:

1. RAPC's adopted goals for the Regional Airport Study, which are the desired outcomes for the region's air transportation system.
2. The Regional Airport Study's identified strategies, which are the tools that have been identified and analyzed for their ability to achieve the goals.

The Regional Airport Study has identified the following goals for the region's air transportation system:

- Passengers will have a choice of more flights (or trains) at more airports.
- There will be fewer weather-related aircraft delays.
- Noise impacts on the regional population will be minimized.
- Air quality and climate change impacts will be minimized.
- Travel to airports will take less time in the future.
- The airport system will support regional economic expansion.

The following are the strategies that RAPC has evaluated to determine each one's effectiveness in achieving the goals above:

- Redistribution of air passenger demand among the three major airports.
- Use of alternative airports inside the Bay Area.
- Service expansion at airports outside the Bay Area.
- High Speed Rail.
- Demand Management.
- New Air Traffic Control (ATC) Technologies.

Impact of Strategies on Airport Capacity. The overall regional strategy for handling growth in passengers, air cargo, and general aviation is a set of moving parts and ones for which the timing cannot be predicted with great certainty. Two major strategies could have a significant impact on Bay Area airport capacity–new ATC technologies and High Speed Rail. However, both have significant development, funding, and operational challenges that remain to be

resolved, and the impact on the Bay Area airports can only be estimated without knowing exactly how effective they will be when operational. The following is a summary of some key factors that will have an impact on the timing of capacity constraints at the region's airports:

-If new ATC technologies achieve the maximum effectiveness and essentially eliminate SFO's bad weather problems that are a result of closely spaced runways, airlines will have more capacity available at SFO. Increased capacity at SFO will reduce the incentive to use OAK and SJC airports. While the study has evaluated the maximum ATC effectiveness scenario, it is possible that airspace issues, funding and limits on the effectiveness of ATC technology and acceptable risk could reduce the ultimate impact.

-If HSR comes to fruition quickly, there will be less need for air passenger traffic redistribution and less need for SFO to implement aggressive demand management programs.

-Airlines are generally believed to be highly sensitive to schedule disruption costs and to fuel costs, which increase with delays. If traffic growth at SFO increases delays, one scenario suggests that the airlines will begin to shift flights to less congested OAK and SJC to avoid these extra costs. In this situation, there may not be a need for new institutional or aggressive demand management strategies to shift flights. Rather, the market would solve the problem.

Impact of Forecasts on Planning for Airport Capacity. Another overall uncertainty that drives the planning process is the projected growth in air passengers, air cargo, and general aviation activity. This study has developed a 2035 high, medium (Baseline/Best Estimate), and low forecast with substantial differences in the absolute volumes of traffic. Using the best estimate approach (Baseline forecast), it is likely that overall Bay Area air passenger and air traffic growth could reach (101 million annual air passenger, up from 58 million passengers in 2008). This level of demand could be accommodated with some limited redistribution of air passengers among the three Bay Area airports, some well defined and achievable new ATC technologies at SFO and OAK, and some modest form of demand management at SFO.

Airport capacity, however, would look markedly different if the high growth in demand (128 million annual air passengers, plus additional growth in air cargo and business jet activity at all three airports) were to occur in 2035. The three major Bay Area airports could not accommodate the number of projected flights without other strategies. These strategies could include:

- OAK and SJC would need to handle an even greater share of regional air passenger demand, but activity would still be within their runway capacities.
- SFO would handle a significantly higher level of demand than today, but would need the benefits of FAA's NextGen technologies and would still need a demand management program to modify airline schedules and types of aircraft used.
- High Speed Rail would be an essential component of the airport system (the "fourth" regional airport), accommodating air passengers traveling between the Bay Area and Central and Southern California.
- Sonoma County airport would need to expand airline service into new markets.
- Sacramento, Stockton, and Monterey would also need to expand service into new travel markets, attracting more local air passengers who would otherwise use the three main Bay Area airports.
- The full range of new Air Traffic Control technologies under development by the FAA (called NextGen) would be required; in addition to creating new capacity, these

technologies would enable greater use of Continuous Descent Approaches to all three Bay Area airports, providing additional noise and emission benefits.
- SFO would still require a robust demand management program, which may also play a dual role of encouraging airlines to shift more flights to OAK and SJC.

While the above strategies could meet the high forecast of 2035 demand, some may not happen or may be less effective than currently envisioned. In this case it may be necessary to consider other strategies that are currently "off the table". Although the Regional Airport Study does not include an analysis of the implementation and institutional issues related to these potential strategies, they include:

- Additional airline gates at SJC (currently limited by local policy).
- Other "upland" airport alternatives: further examination of Travis AFB, Napa County, Buchanan Airport, or Byron (eastern Contra Costa County).
- Possible new runways at OAK or SFO.

Goals and Key Players. While the study has generally focused on potential long-range airport runway capacity constraints and potential solutions, there are other goals that are important and would be affected by the various strategies under review. The following is an overview of the study goals and the key players involved in achieving the desired outcomes and a description of the roles for the key players under the current governance structure.

Reliable Runways (Capacity and delay). The purpose of this goal is to reduce delays to air passengers created by lack of runway capacity mainly during bad weather (primarily at SFO, which has closely spaced runways). Bad weather combined with overlapping airline schedules typically results in long flight delays and some flight cancellations. Capacity gains can be achieved in a variety of ways, from new technology, to a new HSR system, to airfield improvements.

- Airports: runway improvements (new high speed taxiway exits, expanded aircraft queuing areas, upgraded navigational aids); also terminal, gate, parking, air cargo and general aviation facilities that match, but do not overload, runways.
- FAA: with airline collaboration, manages flight delays during bad weather conditions (hold aircraft at departure airport until a slot is available); responsible for development and delivery of NextGen technologies; funds airport runway improvements.
- Airlines: can make voluntary changes in schedules to reduce flight delays at congested airports.
- HSR: in regional transportation plans; construction of a state system with high frequency service could reduce flight delays and provide reliable all weather transportation for former air travelers.

Good Passenger Service. Elements of good airline service include number of cities served from Bay Area airports, frequency, direct vs. connecting service, fares, etc. Whether we achieve this goal is largely determined by airline decisions as opposed to something that airports or others can affect. Using alternate airports to provide airline service to some high volume markets would effectively increase overall Bay Area airline service as would frequent HSR service inside California (both would add service in 5 of the top 15 Bay Area markets).

- Airlines: determine the quantity, quality, and price of service offered at each airport; their service plans are constantly changing in response to economic conditions, competitive challenges from other airlines, and new market opportunities.
- HSR: in regional transportation plans, construction of a state system could significantly increase overall levels of service (planes plus trains) to air passengers traveling inside California.

Convenient Airports. Airport convenience has been assessed in terms of the ground access distance, travel time, and transportation cost incurred by air passengers using the Bay Area airports in the future. As more passengers are able to use an airport closer to their actual home/business/other destination, airport convenience will improve (for example, if additional passengers are able to use OAK or SJC for their flights or use an alternate airport such as Sonoma County). Airlines are responsible for these types of decisions, but ground access convenience is also a product of investment decisions by regional and local transportation authorities. Investments that make airport travel more reliable or provide more transit options will increase airport convenience.

- Airlines: determine which airports to serve and where to fly.
- MTC and county transportation agencies: responsible for prioritizing and funding regional transportation improvements that affect airport accessibility (travel time and cost). Improving regional accessibility for OAK and SJC is one part of a larger strategy to encourage greater passenger use of these airports.
- Public and private transportation service providers: determine levels of service to airports and cost.
- Airports: can make facilities "convenient" by providing user-friendly parking and on-site transit facilities and keeping parking costs affordable.

Climate Protection. While other transportation generators of greenhouse gas emissions (e.g., vehicles used for airport access) have the potential for significant GHG reductions, reducing aviation emissions is much more challenging from a technological aspect. Major improvements in aircraft fuel efficiency have been achieved over the last decade, but further progress will be more difficult (for example, the overall fuel efficiency of aircraft using SFO will only increase by about 5% in the future). In this regard, increased air passenger and air cargo demand will lead to additional flights and greater production of Greenhouse Gases (some estimates have aviation emissions growing at 3-4% a year worldwide). In addition to direct emissions from jet engines, contrails produced by aircraft flying at higher altitudes also produce climate warming effects.

- Airlines: have a strong economic interest in reducing fuel consumption that in turn, reduces GHGs (currently about 25% of their operating costs, but this percentage has been has high as 35% with the high fuel costs in 2008). Major strategies available to the airlines to reduce GHGs include purchase of new fuel efficient aircraft, use of biofuels (longer term), flying slower, adding winglets to reduce drag, taxiing at airports with a single engine, and using airport provided electrical power instead of the onboard APU which burns jet fuel.
- FAA: There is universal agreement that the FAA's modernized air traffic control and management system (NextGen) offers a tremendous potential to reduce aviation GHGs by reducing extra mileage flown by aircraft and reducing runway delays at airports.

NextGen will also provide the capability for more aircraft to use Continuous Descent Approaches, which will reduce GHGs from commercial aircraft landing at Bay Area airports (about a 1-3% reduction due to less fuel burned, if all commercial aircraft landing at Bay Area airports were able to use it).

- Airports: supply ground power and pre-conditioned air at gates to reduce aircraft APU operations (which operate on jet fuel and create GHGs), use bio-fuel, electric or other non-carbon fuel vehicles for ground operations.
- International Civil Aviation Organization (ICAO): a United Nations body that has taken the lead in evaluating various carbon trading systems to curtail future worldwide increases in aviation CO2 emissions.
- Federal Government: has promulgated tougher fuel economy standards for new vehicles (vehicles used by air passengers will emit less CO2 per trip in the future due to these standards).
- MTC and county transportation agencies: Prioritize and fund regional transportation improvements that affect airport accessibility via transit.

Clean Air. The primary pollutants emitted at the Bay Area airports from aircraft and on airport sources are Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOCs) (contributors to ozone), carbon monoxide (CO), and carbon dioxide (CO2), a greenhouse gas. These airport emissions comprise about 2-4% of total Bay Area emissions. However, while airport emissions can be significantly reduced, aircraft emissions will grow in relation to the growth in overall airport activity (by about 44%). Additional emissions come from vehicles used by air passengers to access the Bay Area airports, which are declining due to strong emission controls on passenger vehicles promulgated by the California Air Resources Board.

- EPA: works with the FAA and ICAO to develop and adopt aircraft emission standards: smoke (1974), VOCs (1984), NOx and CO (1997), additional NOx reductions to conform to ICAO standards (2005).
- FAA: responsible for enforcing the aircraft emission standards set by EPA.
- ICAO: Due to the international market for aircraft engines, and to ensure consistency in standards among countries, has taken the lead in developing standards and procedures for certifying new aircraft engines.
- Airports: contribute to emission reductions by providing clean power for airport vehicles (CNG, biodiesel, electric), providing airport ground power and pre-conditioned air for aircraft at gates (eliminates emissions from the aircraft's Auxiliary Power Unit), requiring taxi and shuttle operators to use hybrids or alternatively fueled vehicles, implementing airport employee trip reduction programs, etc.
- Airlines: hold planes at gates until ready for takeoff, use single engine for taxing.
- Bay Area Air Quality Management District: establishes regulations that affect airport emissions and programs developed by airports to control emissions.
- California Air Resources Boards: establishes engine emission standards for passenger cars and other vehicles.

Livable Communities. Many communities around the Bay Area are subjected to various levels of aircraft noise (both next to the airport runways, as well as those farther away under major airport arrival and departure routes). The main noise impact evaluated under this goal is

the residential population affected near the airports by noise greater than the state standard for airports. FAA noise mandates for newly manufactured aircraft have resulted in significant noise improvements around all airports over the last two decades. However, the margin for additional improvement is small. The latest aircraft noise requirements (Stage 4) only prevent the creation of new aircraft types which would be much noisier than most existing Stage 3 aircraft. The aircraft that are currently dominant at each airport will continue to operate and increase in numbers between 2007 and 2035. With increasing levels of operations from all types of aircraft, the regional population exposed to noise levels of 65 CNEL or greater is estimated to increase from 23,380 people in 2007 to as much as 45, 000 people in 2035, with most of the increase occurring around SFO.

- FAA: certifies noise standards for new aircraft (Federal Aviation Regulation Part 36), provides funding for noise compatibility planning (Part 150), approves any proposed airport use restrictions for noise or other purposes (Airport Noise and Capacity Act); the FAA is also responsible for determining flight tracks for arriving and departing aircraft, and therefore the area affected by aircraft noise; Continuous Descent Approaches (enabled by NextGen) could reduce noise that is generated several miles from the arrival runway as planes would start their descent from a higher altitude.
- State of California: has adopted airport noise standards (65 CNEL) within which there are to be no incompatible uses, such as residential development; the standard is administered by the Caltrans Division of Aeronautics.
- Airports: are responsible for achieving compliance with the State noise standard and may do so through a variety of methods (land acquisition, land use conversion, sound insulation of structures, runway modifications, etc.); airports may propose ways to reduce noise that involve FAA action, e.g., new flight tracks for use by arriving/departing aircraft, or different runway operations procedures for different times of the day.
- Airport Land Use Commissions are county bodies that: set standards for land use compatibility around airports; local jurisdictions must abide by ALUC plans but also have the ability to override the ALUC recommendations with a 2/3 vote and by adopting "findings" to support the override.
- ABAG: develops macro regional land use policies, currently embodied in their Focus Growth projections which seek to stimulate growth in Priority Development Areas near transit and provide for a more sustainable land use design in the future. Focus Growth will increase the residential population inside the 65 CNEL compared to the 2007 population by about 8% (8,000 residents). This represents a reversal in past efforts to reduce residential population within the 65 CNEL contours.

Healthy Economy. This goal recognizes the importance of maintaining a safe and efficient air transportation system to serve Bay Area residents, businesses, and the large tourism industry. Because of the close ties of this goal to the larger issue of the adequacy of the airport capacity in the Bay Area, the measure of effectiveness was similar to the Reliable Runways goal above. Additionally, the airlines have a major role in achieving this goal in two ways: they provide flights to key Bay Area travel destinations where air travelers need to go, and they create jobs by their local operations as well as the tourists they bring to the Bay Area.

Implementation and Institutional Issues Associated with the Six Strategies. While the above describes the goals of the Regional Airport Study and the roles of others in achieving

them, the following is a summary of the strategies that have been identified to achieve these goals and the institutional issues associated with each strategy.

Redistribution of Traffic. OAK and SJC have available runway capacity to handle additional regional growth in passenger volumes, but this is dependent on airline decisions. After years of service from low cost carriers at OAK and SJC, these types of carriers are now heavily committed to serving SFO as well, leading to the highest regional passenger share for SFO in the last decade. It is not clear that the low cost carriers and other airlines will return to OAK and SJC to provide the same levels of service they have in the past unless:

- Chronic delays at SFO create scheduling problems.
- Airport and delay costs to the airlines increase at SFO and are lower at OAK and SJC.

Key Players:

- Airlines: have freedom to select which airports they will serve, and may also decide when to start or curtail service (Airline Deregulation Act).
- Airports: provide the airline facilities and have control over airport costs, which are a major factor in an airline's decision to start new service.
- SFO: future decisions to implement a demand management program could have an indirect effect on airline service decisions if the program affects airline costs or scheduling freedom.
- FAA: similarly, if the FAA were to establish a slot type program that would limit flights due to chronic delay problems, this could impact airline decisions about which Bay Area airports they serve.

Implementation issues:

- There are no examples of multi-airport regions where states or local airport authorities have been able to mandate services at specific airports.
- Congress has legislated some airport specialization through perimeter rules for Reagan International, LaGuardia, and Dallas Love Field.
- For SFO to seek to redistribute its traffic through pricing, there would be financial consequences for the airport in connection with its long-range financial obligations.
- An authority that merged one or more Bay Area airports could theoretically charge differential fees to airlines for specific airports, but the political and financial challenges in setting up a new institution may not justify the benefits (at least from a traffic redistribution perspective).

Areas for further RAPC Engagement:

- Forecast tracking and updates of airport forecasts.
- Regular air passenger surveys to establish air passenger market potential for alternative airports.
- Assistance with regional marketing efforts to promote OAK and SJC.
- Continued investment is transportation infrastructure to improve the regional accessibility of all airports.

Demand Management (SFO). Demand management comes in many forms. This study evaluated one particular set of strategies that would reduce the number of flights at SFO in the most delay prone periods of the day (OAK and SJC do not have runway capacity issues in 2035 assuming the Baseline forecasts of demand are accurate). Each strategy would come with its own set of implementation and institutional issues. SFO will probably be the leader in pioneering new demand management approaches given its history of delay problems.

Key Players:

- SFO: under federal law the airport has the ability to formulate reasonable and non-discriminatory programs to manage the number of airline and general aviation operations at the airport; recent changes in FAA policy allow the airport to consider congestion pricing programs within an overall landing fee structure, meaning there could be higher fees for congested hours of the day and lower fees for less congested hours. An airport also has indirect control over its activity through the facilities it provides (number of gates, general aviation parking and services, air cargo facilities, etc) and lease agreements with the airlines.
- FAA: the FAA would need to approve any airport demand management program (Airport Noise and Capacity Act) and could, on its own, establish a slot control system to alleviate chronic delays.
- Airlines: airlines can use larger aircraft to reduce the number of operations (carry more passengers in fewer aircraft) or make voluntary schedule changes to reduce their exposure to delays.
- Congress: can enact demand management programs through legislation (e.g., the original slot and perimeter limits for the four High Density Airports, and the access rule for Dallas' Love Field). Congress could approve new slot auction authority for the FAA, a form of airport pricing, or provide the airports with additional authority.

Institutional Issues

- Airlines generally oppose all forms of demand management (airlines challenged the latest FAA policy to implement congestion pricing in federal court, but the court upheld the policy). At SFO, pricing could affect the cost of service to smaller communities and the ability of airlines to achieve maximum utilization of their aircraft fleet.
- General aviation also generally opposes all forms of demand management and wants to maintain access to the large metropolitan airports (i.e., would oppose any reservation system that limits access to SFO).
- SFO has studied various forms of demand management, but anticipates that improvements in SOIA (to increase operational capacity during foggy conditions) and future ATC improvements will postpone or alleviate the need for demand management programs. Boston Logan has chosen to prepare a demand management program that will be ready when needed, and a similar strategy could also be considered for SFO.
- Congress has chosen to eliminate slot controls that existed at the four original High-Density airports, but capacity problems persist and the FAA has needed to negotiate new controls with the airlines. FAA may not wish to engage in additional slot-type programs given Congress' view on this issue. Congress also has not approved authority for the FAA to auction slots, a system that many believe would have benefit (although this concept has largely been replaced by the congestion pricing approach).

- National experience with congestion pricing will be helpful in determining its overall effectiveness, although there is some concern that airports will not be able to charge high enough congestion fees to affect demand (due to requirements that an airport cannot collect more revenues than it spends in airfield costs).

Areas for Further RAPC Engagement

- Develop congestion tracking system and use results to refine timing of need for demand management programs at SFO.
- Monitor national experience with congestion pricing programs and report on results.
- Work with SFO in examining various demand management options in order to have a program ready when needed.
- Lobby Congress/FAA for action if chronic delays at SFO cannot be resolved through local demand management programs.

New ATC Technologies. Absent new runways, NextGen technologies (satellite based air traffic management system under development by the FAA to replace the current radar based air traffic control system by 2025) are clearly the most important capacity tool available and would provide the greatest potential for reducing aircraft delays, particularly at SFO where bad weather limits arrivals to a single runway. NextGen technologies would allow closer spacing of aircraft landing and taking off from Bay Area runways, create new airspace routes, and alleviate delays during bad weather conditions when runway capacity is significantly reduced. In the most optimistic assessment of NextGen, these technologies could effectively solve SFO's capacity problems by providing simultaneous instrument operations on SFO's closely spaced parallel runways in all weather conditions. New ATC technologies would also enable aircraft to conduct Continuous Descent Approaches, a procedure that reduces aircraft fuel consumption during landings and reduces emissions and Greenhouse gases (there are also some noise benefits for areas further away from the runways).

Key Players

- FAA: is responsible for all phases of NextGen development, including resolving stakeholder concerns, developing and certifying the technologies, installation and deployment, etc. Funding has been a continuing issue with Congress and the airlines.
- Airlines: will need to equip virtually all of their fleets to realize the full benefits of NextGen. Financial payback for this large investment is a key issue. It may not be economical for the airlines to equip older aircraft.
- Stakeholders: Pilots and air traffic controllers are the key stakeholders in the process and are concerned with the various safety aspects of NextGen.

Institutional Issues

- Clearly the scale and complexity of NextGen will pose significant management and delivery challenges for the FAA that could extend the timeframe for implementation. Despite widespread support for the system by the airlines, the program is funded out of the federal government's General Fund, rather than having any dedicated funding source.
- NextGen will shift many navigational functions and responsibility for safe separation between aircraft to the pilots in the planes, rather than having air traffic controllers

perform these functions; this is a concern for the air traffic controllers both from the safety aspects as well as the reduction in their role.
- Without at a clear timeline for NextGen and financial or other incentives, airline equipage may lag.
- SFO has been a strong advocate for new technologies, particularly in the development of enhanced SOIA (Simultaneous Offset Instrument Approach) procedures and in the testing Continuous Descent Approaches.
- The FAA will need to conduct further studies of the Bay Area's airspace to determine how to "redesign" it to take advantage of emerging NextGen technologies.

Areas for Further RAPC Engagement
- Monitor timing and funding of NextGen initiatives and support legislation that would expedite delivery.
- Support legislation that would result in full funding of NextGen.
- Support use of Bay Area airports as a test bed for new technologies.
- Support FAA studies to determine what changes are necessary in Bay Area airspace procedures to take advantage of NextGen.
- Support SFO's efforts to enhance SOIA.

High Speed Rail. High Speed Rail would serve about 6% of Bay Area air passengers by providing frequent high speed service between the Bay Area and Southern California via the Central Valley. With high quality, low fare service, there would be a reduction in airline flights at all three Bay Area airports as passengers switch to HSR. Due to reduced numbers of aircraft operations, HSR would provide environmental benefits by lowering airport noise exposure, Greenhouse gases, and other criteria pollutants.

Key Players
- The California High Speed Rail Authority is in charge of all aspects of planning, funding, and eventual implementation of the initial and ultimate systems (the ultimate system would extend to San Diego).
- Airlines: The airlines serving California cities would be affected by HSR as they would likely see the demand for flights decrease. The impact on Bay Area airport capacity issues will be influenced by how airlines respond to a new HSR service.

Institutional Issues
- Airlines have traditionally seen HSR as a business competitor. To maintain market share, airlines may lower air fares and/ or increase flight frequencies using smaller aircraft. This would erode the runway capacity benefits that HSR could provide while also making HSR more expensive to operate.
- The HSR Authority and airlines could collaborate on ways to integrate ticketing and other aspects of a passenger's HSR and air trip. There may also be ways for airlines to share in revenues with the HSR system by sponsoring some of their own trains on the HSR system.
- If airlines respond by maintaining their flight frequencies at SFO, SFO may need to develop a demand management approach in advance that would "lock in" the capacity

benefits of HSR (see demand management discussion above). FAA approval would be required.

- While airports do not have a direct role in development of the HSR system, the ground connection between the nearest HSR station and the airport would need to be designed to provide frequent and convenient service for air passengers transferring between flights and HSR.

Areas for Further RAPC Engagement

- Monitor progress with HSR system.
- Analyze European experience to determine potential for airline/HSR partnerships.
- Promote future discussions between HSR Authority and the airlines.
- Consider possible legislative approaches to achieve coordination.

Internal Alternative Airports (Sonoma County, Travis AFB, Buchanan Field). The analysis of the internal alternative airports strategy shows that new service would benefit local air passengers (more flight choices at closer airports), but that these airports would not divert enough flights to have a significant impact on flight delays at SFO. All three alternative airports have some experience with airline service (Sonoma County currently has service, and Buchanan Field (Concord) and Travis AFB have had service in the past).

Key Players

- Airlines: Based on most recent trends and economic headwinds, airlines have tended to reduce service at smaller airports rather than expand these types of services. In general, the factors that would effect future airline decisions would include:
    - inability to grow service at the primary airports due to capacity constraints;
    - potential to expand the airline's passenger base, rather than just divert passengers from another airport already being served;
    - strategic fit of the new service with an airline's overall business model;
    - availability of aircraft to serve the new market;
    - potential profitability of the service compared to the cost of operating and staffing another airport station; and
    - community interest and support.
- Alternative Airports: airports would need to work with the airlines on service plans and fund the necessary infrastructure such as, terminals, airfield improvements, parking and access roads, etc. The FAA would be expected to assist with grant funding.
- Federal programs: have been tapped in some cases to subsidize start up airline service in communities.
- County Airport Land Use Commissions (ALUCs) and local communities: would need to factor in future airline service into their land use compatibility plans to address potential noise and safety zone issues.

Institutional Issues

- Both Sonoma County and Buchanan Field airports have the institutional and management capability to pursue new or expanded airline service.

- For Travis AFB, the keys issues are the Air Force's willingness to enter into a Joint Use Agreement, which government entity would plan and pay for new civilian facilities, and whether the civilian airport could use the existing Air Force runways or would need to construct a separate new runway for civilian operations.
- Under the Airline Deregulation Act, airlines can abandon service at their discretion, which exposes airports to some financial risk when they construct new facilities to serve these airlines.

Areas for Further RAPC Engagement

- Provide data of local market air passenger service potential (through air passenger surveys).
- Assist in explaining regional perspective to local communities.
- Conduct feasibility studies, if desired (e.g. similar to the 1976 Joint Use Feasibility Study for Travis AFB).

External Alternative Airports (Sacramento, Stockton, Monterey). These airports are part of the growing mega region surrounding the Bay Area. About 9% of Bay Area air passengers originate outside the nine-county Bay Area and use the Bay Area airports because of the flight opportunities that do not exist at the closer airport serving their area. Similar to the Internal Alternative Airport strategy above, expanding service at these airports would have some benefit, albeit small, in reducing flights and delays at SFO, the region's most delay prone airport.

Key Players

- See above, as these are similar for External Airports
- In addition to serving its own local market, Sacramento Airport currently serves a number of air passengers from the Bay Area (primarily Solano and Napa Counties) because of its perceived convenience.

Institutional Issues

- In the near-term and due to declines in air passenger volumes, both OAK and SJC are probably less interested in supporting new air service at the external airports as these passengers would provide needed revenues for their own operations. In the long-term this issue may be less relevant, particularly as runway demand increases.
- RAPC has provided an initial framework for collaboration with the external airports by adding them as members of RAPC and bringing them in as active participants in the Bay Area's airport planning process. In the longer term, even greater cooperation would be beneficial although there are not many models to emulate. One example that may be useful is the New England Coalition that was formed to promote expansion of service at secondary airports to relieve Boston Logan Airport. The coalition consists of six New England states, the individual airports, New England Council (a business organization) and FAA.

Areas of RAPC Engagement

- Coordinate next air passenger survey with external airports to provide a comprehensive understanding of where air passengers originate in the larger mega region and which airports they use; this in turn will be useful in airline marketing efforts.
- Monitor airline service increases at these airports as well as airport facility plans.

Next Steps. As described above, the second part of the RAPC staff analysis on institutional arrangements will be presented at the January 2011 RAPC meeting and will include:

1. A literature review that summarizes similar studies that have been conducted in other parts of the country including San Diego, New Orleans, St. Louis and a study conducted for the FAA.
2. A discussion of the current institutional arrangements in the Bay Area focusing on RAPC, its regional role and strengths and weaknesses.
3. A description of the types of institutional arrangements from memorandums of understanding to regional authorities and an analysis of how each type may respond to the identified strengths and weaknesses of the Bay Area's current institutional structure.
4. Staff recommendations to RAPC regarding institutional arrangements.

The critical issue in determining whether the region would benefit from an institutional arrangement that is different from RAPC is to identify the past, present and projected weaknesses of the current governance structure. After these weaknesses have been identified, it is important to identify whether a different type of institutional arrangement would fill any existing gaps or would be able to overcome these weaknesses. Many of the perceived weaknesses of RAPC in its current form are related to federal laws and regulations that govern air transportation. A simple change in institutional arrangements will not have an effect on these federal laws and regulations. However, are there other ways in which a different institutional arrangement or a change in the current governance structure could address the region's air transportation system and aid in achieving the goals of the study? These will be the key questions that staff will attempt to answer in second part of the institutional arrangements analysis that will presented to RAPC at the January 2011 meeting.