File No. 100493

Committee Item No. 4
Board Item No. 21

# COMMITTEE/BOARD OF SUPERVISORS

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**Sub - Committee:** Budget and Finance — **Date:** May 12, 2010

**Board of Supervisors Meeting** — **Date:** 5/18/10

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| ☐ | ☐ | |
| ☐ | ☐ | |

**Completed by:** Andrea S. Ausberry — **Date** Friday, May 7, 2010

**Completed by:** [signature] — **Date** 5/13/10

An asterisked item represents the cover sheet to a document that exceeds 25 pages. The complete document is in the file.

[Finding of Fiscal Feasibility of Runway Safety Area Project at San Francisco International Airport]

**Resolution finding the proposed Runway Safety Area project at San Francisco International Airport fiscally feasible pursuant to Administrative Code Chapter 29.**

WHEREAS, The City and County of San Francisco owns and operates San Francisco International Airport (SFO), which is the primary commercial service airport for the San Francisco Bay Area; and

WHEREAS, SFO is a commercial airport and receives Federal Aviation Administration (FAA) grant funds; and

WHEREAS, The FAA has mandated that commercial airports receiving grants funds must implement runway safety areas (the Project) that increase safety by reducing the risk of aircraft damage resulting from an overrun, undershot and/or excursion of the runway; and

WHEREAS, In 2005 Congress mandated that all commercial airports implement runway safety areas approved by the FAA by December 31, 2015; and

WHEREAS, In order to meet the Congressional mandate and comply with FAA standards, the Airport proposes to make modifications to each of its four runways and modify existing taxiways based on the current airfield configuration without any San Francisco Bay fill; and

WHEREAS, Chapter 29 of the San Francisco Administrative Code requires that a City department that sponsors a capital project which is projected to have construction costs greater than $25 million and use more than $1 million in public funds must prepare a fiscal feasibility study and submit it to the Board of Supervisors for approval; and

WHEREAS, On December 15, 2009, by Resolution No. 09-0278, the Airport Commission authorized the Airport Director to submit a Runway Safety Area Fiscal Feasibility Study to the Board of Supervisors; and

WHEREAS, Materials related to the Project on file with the Clerk of the Board of Supervisors in File No.100493, are hereby declared to be a part of this resolution as if set forth fully herein; and,

WHEREAS, Pursuant to Administrative Code Section 29.3, the Airport has submitted to the Board of Supervisors a general description of the Project, the general purpose of the Project, and a fiscal plan; and

WHEREAS, Pursuant to Administrative Code section 29.3, prior to submittal to the Planning Department of the environmental evaluation application (Environmental Application) required under Administrative Code Chapter 31 and CEQA (as defined in Administrative Code Section 29.1) related to the proposed Project, it is necessary to procure from the Board of Supervisors a determination that the plan for undertaking and implementing the proposed Project is fiscally feasible and responsible; and

WHEREAS, The Board of Supervisors has reviewed and considered the general description of the Project, the general purpose of the Project, the fiscal plan and other information submitted to it and has considered the direct and indirect financial benefits of the Project to the City of San Francisco, the cost of construction, the available funding for the project, and the federal mandate for the Project; now, therefore, be it

RESOLVED, That the Board of Supervisors finds that the plan to undertake and implement the Project is fiscally feasible and responsible under San Francisco Administrative Code Chapter 29; and be it

FURTHER RESOLVED. Pursuant to San Francisco Administrative Code Chapter 29, the Environmental Application may now be filed with the Planning Department and the

Planning Department may now undertake environmental review of the proposed Project as required by Administrative Code Chapter 31 and CEQA.

| Item 4<br>Files 10-0493 | Department:<br>San Francisco International Airport (Airport) |
|---|---|

## EXECUTIVE SUMMARY

### Legislative Objective

- Resolution finding that the Airport's proposed Runway Safety Area Project is fiscally feasible.

### Fiscal Impact

- The Airport's proposed Runway Safety Project is estimated to cost a total of $201,045,712, including (a) $150,784,284 in anticipated Federal Aviation Administration grants and (b) $50,261,428 from the proceeds from General Airport Revenue Bonds.

### Key Points

- Runway Safety Areas (RSAs) are runway safety enhancements of cleared and graded areas located at the ends of runways which reduce the risk of damage to aircraft and aircraft passengers in the event an aircraft travels beyond the runway surface. According to Mr. Bruce Robertson, Assistant Budget Manager at the Airport, Federal law includes two requirements relevant to RSAs: (1) that the Airport, "to the greatest extent practicable", provide RSAs which meet the Federal Aviation Administration's design criteria, and (2) the Airport complete RSA construction by December 31, 2015.

- The proposed $201,045,712 RSA Project would fund improvements to eight existing RSAs, one at each end of the Airport's four runways, and increase the safety of aircraft and aircraft passengers at the Airport. According to Mr. Robertson, due to space constraints at the Airport imposed by Highway 101 and the San Francisco Bay, (a) only five of the eight improved RSAs would meet the FAA's RSA design criteria, with the remaining three being in compliance with Federal law because the design of those three RSAs would meet the FAA's design criteria "to the greatest extent practicable," and (b) only four of the RSAs are currently scheduled to be completed by the deadline of December 31, 2015.

- Mr. Robertson stated that the Airport considered over 30 different alternatives to the proposed RSA project, and selected this proposed configuration of RSAs because it provided the highest level of safety enhancements within the existing boundaries of the Airport. Mr. Robertson noted that having all eight improved RSAs comply with FAA design criteria would have required (a) extending runways into the Bay, which was considered environmentally infeasible, or (b) the relocation of Highway 101 at an estimated cost of $750,000,000. Mr. Robertson stated that only four of the proposed eight improved RSAs would be constructed by the December 31, 2015 deadline because, while considering design alternatives for these RSAs, the Airport chose to pursue the design alternative which provided the greatest degree of aircraft and passenger safety rather than other alternatives which, while may have met the construction deadline, would have provided a lower degree of aircraft and passenger safety.

- Federal law does not state what penalties, if any, would be imposed for non-compliance. However, Mr. Robertson noted that not building the proposed RSA Project would not provide the increased aircraft and passenger safety which would result from the eight proposed RSAs. Mr. Robertson also

noted that not meeting the December 31, 2015 deadline could result in the FAA withholding some portion of future grant funding between January 1, 2016 and the date the RSA Project is completed.

- Chapter 29 of the City's Administrative Code states that the Board of Supervisors shall evaluate a project's financial feasibility, if (a) the project is subject to environmental review under the California Environmental Quality Act (CEQA), (b) total project costs are estimated to exceed $25,000,000, and (c) construction costs are estimated to exceed $1,000,000. Chapter 29 states the Board of Supervisors shall review the project's financial feasibility, in five areas including: (1) direct and indirect financial benefits to the City, (2) construction costs, (3) available funding, (4) long term operating and maintenance costs, and (5) debt load carried by the relevant City Department.

- The Airport's proposed RSA Project: (1) would create 1,704 temporary jobs, 1 permanent job, and allow the Airport to continue providing the same financial benefits it currently provides to the City, (2) is estimated to cost $201,045,712, (3) is proposed to be funded with $150,784,284 in anticipated FAA grants and $50,261,428 in General Airport Revenue Bond proceeds, (4) is estimated to increase overall Airport maintenance costs by $100,000 per year, and (5) increase the Airport's outstanding debt by 1.2 percent.

- Although the proposed RSA project would provide that only five of the eight improved RSAs would fully comply with the FAA's design criteria, and that only four of the eight improved RSAs would be completed by the December 31, 2015 Federal deadline, the Budget and Legislative Analyst recommends approval of the proposed resolution because (a) the proposed RSA Project would result in increased aircraft and passenger safety at the Airport, and (b) the proposed RSA Project is, according to Mr. Robertson, the preferred alternative which provides for the highest level of safety enhancements without extending the area of the Airport into the Bay or relocating Highway 101.

### Recommendation

- Approve the proposed resolution.

## MANDATE STATEMENT

### Mandate Statement

Runway Safety Areas (RSAs) are runway safety enhancements of cleared and graded areas located at the ends of runways which reduce the risk of damage to aircraft and aircraft passengers in the event an aircraft travels beyond the runway surface. The Federal Aviation Administration (FAA) requires commercial airports to provide Runway Safety Areas (RSAs) which meet FAA design criteria "to the greatest extent practicable". According to Mr. Bruce Robertson, Assistant Budget Manager at the Airport, Federal law does not specify what penalties, if any, exist if the Airport does not comply with this Federal requirement. However, Mr. Robertson noted that not building the proposed RSA Project would not provide the increased aircraft and passenger safety which would result from the proposed eight improved RSAs.

On November 30, 2005, the President signed Public Law 109-115 which, among other things, required all airports to comply with the FAA's requirements regarding RSAs by December 31, 2015. According to Mr. Robertson, Public Law 109-115 did not specify what penalties, if any, exist if the Airport does not meet the December 15, 2015 deadline. However, Mr. Robertson noted that not meeting the December 31, 2015 deadline could result in the FAA withholding some portion of future grant funding between January 1, 2016 and the date the RSA Project is completed.

The proposed resolution would find that the Airport's RSA Project is fiscally feasible, in accordance with Chapter 29 of the City's Administrative Code, which requires projects[1] to be submitted to the Board of Supervisors to approve the fiscal feasibility of the project prior to submitting the project to the Planning Department for environmental review if (a) the project is subject to environmental review under the California Environmental Quality Act (CEQA), (b) total project costs are estimated to exceed $25,000,000, and (c) construction costs are estimated to exceed $1,000,000. Chapter 29 specifies five areas for the Board of Supervisors to consider when reviewing the fiscal feasibility of a project, including the (1) direct and indirect financial benefits to the City, (2) construction cost, (3) available funding, (4) long term operating and maintenance costs, and (5) debt load carried by the relevant City Department. Chapter 29 also states that a finding of fiscal feasibility means that a "project merits further evaluation and environmental review."

## DETAILS OF PROPOSED LEGISLATION

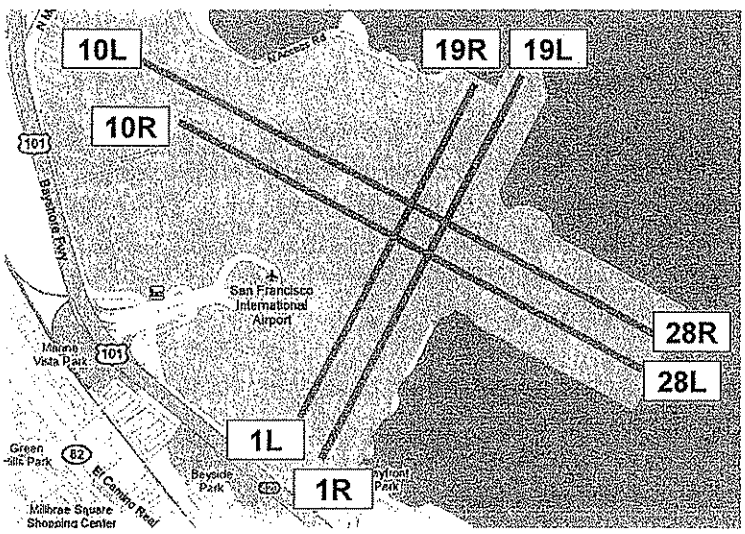
### RSA Project Description

The proposed resolution would find the Airport's proposed RSA Project to be fiscally feasible, in accordance with Chapter 29 of the City's Administrative Code. The proposed RSA Project to provide safety enhancements at the Airport consists of (a) improvements to eight existing Runway Safety Areas, with one at each end of the Airport's four runways[2] (see map below for the location of each of the eight RSAs), (b) the relocation of certain existing taxiways to make space for the improved RSA areas, (c) the relocation of drainage basins and utilities necessary to make space for the improved RSA areas, and (d) environmental mitigation.

Runway Safety Areas (RSAs) are runway safety enhancements of cleared and graded areas located at the ends of runways which reduce the risk of damage to aircraft and aircraft passengers in the event an aircraft travels beyond the runway surface.

[1] Chapter 29 excludes various types of project from the fiscal feasibility requirement, including (a) any utilities improvement project by the Public Utilities Commission, (b) projects with more than 75 percent of funding from the San Francisco Transportation Authority, and (c) a project which was approved by the voters of San Francisco.

[2] According to Mr. Robertson, (a) each end of a runway is given a unique name based on the location of that end, and (b) the title of a runway is the combination of the names of the ends. For example, the two parallel runways running north-south are named 1L-19R and 1R-19L, and would have an RSA at each of the four ends, 1L, 19R, 1R, and 19L.




**The East-West Runways**

According to Mr. Robertson, the four of the eight improved RSAs will be located at the ends of the two parallel runways which run east-west (runway ends 10R, 28L, 10L, and 28R) will be asphalt areas approximately 620 feet in length and will comply with the FAA design standards.

Mr. Robertson stated that these four improved RSAs are estimated to be completed by July of 2014, which is before the December 31, 2015 deadline imposed by Public Law 109-115.

**The North-South Runways**

According to Mr. Robertson, because of space constraints imposed by the bay on the north and Highway 101 on the south, there is not sufficient space to construct traditional asphalt RSAs at the ends of the two parallel runways which run north-south (runway ends 1L, 19R, 1R, and 19L). Mr. Robertson advised that the FAA design criteria allow for a shorter RSA if it is made with the Engineered Materials Arresting System (EMAS), which consists of a bed of lightweight, crushable concrete to assist in the stoppage of an aircraft that overruns a runway.

Regarding the other four RSAs, the Airport's RSA Project would provide for EMAS-based RSAs at the four ends of the north-south runways, including (a) one RSA at runway end 19R that would comply with the FAA design criteria, and (b) three RSAs which would not fully meet the FAA design criteria, pertaining to the precise length and width of the RSAs, at runway ends 1L, 19L, and 1R. According to Mr. Robertson, and as stated in the attached memorandum, the Airport would be in compliance with Federal law because the Airport's proposed RSA Project represents compliance "to the greatest extent practicable" even though three of the eight RSAs would not meet the FAA's design criteria. Mr. Robertson noted that although these three RSAs would not meet the FAA's design criteria, the three RSAs would enhance runway safety at the Airport.

Mr. Robertson further noted that, although the FAA will not issue a formal approval or disapproval of the proposed RSA Project until the Board of Supervisors finds that the project is fiscally feasible, the local and regional FAA staff are familiar with the RSA Project and have

not objected to the proposed design which includes the three RSA's which do not meet FAA design criteria.

Mr. Robertson stated that requiring design alternatives for three of the eight RSAs to fully comply with the FAA's design criteria pertaining to the precise length and width of the RSAs would not be practicable because such alternatives either (a) require extension into San Francisco Bay, which was determined to be environmentally infeasible, or (b) require the relocation of Highway 101 at an estimated cost of $750,000,000 or $548,954,288 more than the proposed total RSA Project cost of $201,045,712.

According to Mr. Robertson, the construction of four of the eight RSAs located at the north-south runways will not be completed by the December 31, 2015 Federal deadline imposed by Public Law 109-115, with (a) the two RSAs at 1L and 19R not being completed until May of 2016, or approximately five months after the deadline, and (b) the other two RSAs at 1R and 19L not being completed until September of 2017, or approximately 21 months after the deadline. Mr. Robertson stated that the Airport currently estimates that it will miss the deadline for these four RSA because, while considering other design alternatives for these RSAs, the Airport chose to pursue the design alternative which provided the greatest degree of aircraft and passenger safety, rather than other alternatives which, while meeting the construction deadline, would have provided a lower degree of aircraft and passenger safety.

According to Mr. Robertson, Public Law 109-115 did not specify what penalties, if any, exist if the Airport does not meet the December 15, 2015 deadline. However, Mr. Robertson noted that not meeting the December 31, 2015 deadline could result in the FAA withholding some portion of future grant funding between January 1, 2016 and the date the RSA Project is completed.

**Relocation of Taxiways and Other Work**

The RSA project includes (a) the construction to improve eight existing RSAs, with such RSAs located at each end of the Airport's four runways, (b) the relocation of existing taxiways to make space for the eight improved RSA areas, (c) the relocation of a drainage basin located near runway end 1L and utility pipes which are currently located where the proposed improved RSAs will be constructed, and (d) environmental mitigation. The environmental review process for the proposed RSA Project, as required by the California Environmental Quality Act (CEQA), cannot begin until the Board of Supervisors finds that the proposed project is fiscally feasible, such that the total extent of environmental mitigation will not be finalized until the CEQA required environmental report is completed.

## Fiscal Feasibility of the RSA Project

In accordance with Chapter 29 of the City's Administrative Code, the following five areas are to be considered by the Board of Supervisors for determination of fiscal feasibility: (1) direct and indirect financial benefits to the City, (2) construction cost, (3) available funding, (4) long term operating and maintenance costs, and (5) debt load carried by the relevant City Department.

## Direct and Indirect Financial Benefits

According to Mr. Robertson, the RSA Project would (a) create approximately 1,403 temporary jobs created due to construction of the proposed RSA Project, and (b) create approximately one permanent job due to the ongoing maintenance needs of the improved RSAs. Mr. Robertson also noted that the proposed RSA Project would continue to allow the Airport to provide the current level of employment and support to the City's General Fund. The Airport's current support to the City's General Fund is provided through the Annual Service Payment, which is estimated to be $26,266,600 in FY 2009-2010.

## Construction Costs

The fiscal feasibility of a project must be determined, pursuant to Administrative Code Chapter 29, for projects with (a) total costs over $25,000,000, and (b) construction costs over $1,000,000. The proposed RSA Project is estimated to cost $201,045,712, including (a) $176,045,508 in construction costs, and (b) $25,000,204 in non-construction costs, as shown in Table 1 below.

**Table 1: Estimated RSA Project Costs**

| Category | Estimated Soft Costs[3] | Estimated Construction Costs | Total Estimated Cost |
|---|---|---|---|
| Runways | | | |
| 1L-19R (EMAS RSAs) | $6,386,896 | $41,716,437 | $48,103,333 |
| 1R-19L (EMAS RSAs) | 4,825,940 | 34,748,372 | 39,574,312 |
| 10R-28L | 1,396,435 | 10,129,323 | 11,525,758 |
| 10L-28R | 650,675 | 9,250,981 | 9,901,656 |
| **Subtotal** | **$13,259,946** | **$95,845,113** | **$109,105,059** |
| Taxiways | | | |
| 1L-19R | 1,543,942 | 9,880,042 | 11,423,984 |
| 1R-19L | 2,915,915 | 19,620,207 | 22,536,122 |
| Taxiway Between 1L-19R and 1R-19L | 2,056,107 | 13,834,846 | 15,890,953 |
| 10R-28L | 636,213 | 3,513,536 | 4,149,749 |
| **Subtotal** | **$7,152,177** | **$46,848,631** | **$54,000,808** |
| Other | | | |
| Drainage Basin and Utility Relocation | 4,588,081 | 27,351,764 | 31,939,845 |
| Environmental Mitigation | 0 | 6,000,000 | 6,000,000 |
| **Subtotal** | **$4,588,081** | **$33,351,764** | **$37,939,845** |
| **Total** | **$25,000,204** | **$176,045,508** | **$201,045,712** |

As shown in Table 1 above, the estimated costs of the four RSAs at the ends of the two parallel north-south runways (1L-19R and 1R-19L) is much greater than the estimated cost of the four RSAs at the ends of the two parallel east-west runways (10R-28L and 10L-28R) because the north-south runway RSAs will be constructed using the more expensive Engineered Materials Arresting System (EMAS) instead of standard asphalt.

[3] Soft Costs include architecture, engineering, construction management, and City staff costs.

**Available Funding**

Mr. Robertson estimates that the $201,045,712 in project costs will be funded by (a) $50,261,428 from the proceeds of General Airport Revenue Bonds, and (b) $150,784,284 in anticipated grant funding from the Federal Aviation Administration.

The $50,261,428 in General Airport Revenue Bond proceeds includes (a) $48,761,428[4] from the future issuance of General Airport Revenue Bonds, and (b) $1,500,000 in bond proceed which were previously issued for other completed projects.

The debt service on such a future issuance of $48,761,428 in General Airport Revenue Bonds would be paid by the Airport from revenues received from airline and non-airline revenues.

The $150,784,284 in anticipated FAA grant funding has yet to be awarded by the FAA to the Airport. According to Mr. Robertson, the Airport receives annual grants for capital improvements through the FAA's Airport Improvement Program (AIP), and that the award of the $150,784,284 in FAA grants is highly likely. Mr. Robertson stated that in the unlikely event that the amount of awarded FAA grants is less than $150,784,284, the Airport would then issue additional General Airport Revenue Bonds beyond the anticipated future issuance of $48,761,428 identified above, to replace any shortage of FAA grant funds.

**Long Term Operating and Maintenance Costs**

According to Mr. Robertson, the RSA Project would result in a net estimated increase in Airport annual maintenance costs of $100,000 related to the maintenance of the EMAS RSAs. The Airport's current budget for airfield maintenance is $2,800,000 per year, such that the proposed RSA Project would result in a 3.6 percent increase in annual airfield maintenance costs, from $2,800,000 to $2,900,000. Such additional maintenance costs will result in slightly higher terminal rental rates, landing fees, and related fees paid by airlines to the Airport, as permitted by the leases between the airlines and the Airport, which allow the Airport to pass all increased operating costs through to the airlines.

**Debt Load of the Airport**

According to Mr. Robertson, the Airport currently has approximately $4,300,000,000 in outstanding debt, such that the anticipated issuance of $48,761,428 in additional General Airport Revenue Bonds would increase the Airport's debt load by 1.1 percent to $4,348,761,428. As noted above, if the Airport receives less than the anticipated $150,784,284 in FAA grants to fund the RSA Project, the Airport would then issue additional General Airport Revenue Bonds beyond the anticipated future issuance of $48,761,428, such that the overall debt load of the Airport could increase beyond 1.1 percent.

Based on the five areas described above, the Budget and Legislative Analyst concurs that the Airport's proposed RSA Project is fiscally feasible.

[4] The future issuance of $48,761,428 in General Airport Revenue Bonds includes (a) $12,299,975 in unissued bond proceeds previously approved by the Board of Supervisors (File 08-0404) to partially fund the RSA Project, and (b) $36,461,453 in additional General Airport Revenue Bonds, subject to the approval of the Board of Supervisors.

## FISCAL IMPACTS

As discussed in the "Available Funding" section above, the proposed $201,045,712 RSA Project would be funded with (a) $150,784,284 in anticipated grant funding from the Federal Aviation Administration, and (b) $50,261,428 from the proceeds of General Airport Revenue Bonds, including $48,761,428 in a future bond issuance, with such future bonds being subject to separate future approval by the Board of Supervisors. Should the anticipated FAA grant funds not be awarded in the full amount of $150,784,284, the Airport would then issue additional revenue bonds to replace the FAA grant funds which may not be received by the Airport.

## POLICY CONSIDERATION

**The proposed RSA Project includes the construction of three RSAs which do not meet the FAA's design criteria, and (b) four RSAs which would not be completed by the December 31, 2015 deadline.**

As discussed above, Federal law includes two requirements relevant to Runway Safety Areas (RSAs): (1) that the Airport, "to the greatest extent practicable", provide RSAs which meet the Federal Aviation Administration's design criteria, and (2) the Airport complete RSA construction by December 31, 2015.

As noted above, three out of the eight improved RSAs will not fully comply with the FAA's design criteria pertaining to the precise length and width of the RSAs. However, according to Mr. Robertson, the proposed RSA designs for these three RSAs represent compliance with the FAA design criteria "to the greatest extent practicable." Mr. Robertson also noted that, although the FAA will not issue a formal approval or disapproval of the proposed RSA Project until the Board of Supervisors finds that the project is fiscally feasible, the local and regional FAA staff are familiar with the RSA Project, and have not objected to the proposed design which includes the three RSA's which do not meet FAA design standards.

According to Mr. Robertson, Federal law does not specify what penalties, if any, exist if the Airport does not build the required RSAs. However, Mr. Robertson noted that the proposed RSA Project would increase aircraft and passenger safety at the Airport.

Four out of the eight improved RSA's will not meet the December 31, 2015 deadline imposed by Public Law 109-115 because the Airport, while considering design alternatives for these RSAs, chose to pursue the design alternative which provided the greatest degree of aircraft and passenger safety rather than other alternatives which, while meeting the construction deadline, would have provided a lower degree of aircraft and passenger safety. Although Federal law does not specify what penalties, if any, would be imposed on the Airport for not complying with the deadline, Mr. Robertson notes that the FAA could withhold or otherwise reduce grant funding to the Airport for other Airport projects until the proposed RSAs are completed.

Although the proposed RSA project would provide that only five of the eight improved RSAs fully comply with the FAA's design criteria, and that only four of the eight improved RSAs

would be completed by the December 31, 2015 Federal deadline, the Budget and Legislative Analyst recommends approval of the proposed resolution because (a) the proposed RSA Project would result in increased aircraft and passenger safety at the Airport, and (b) the proposed RSA Project is, according to Mr. Robertson, the preferred alternative which provides for the highest level of safety enhancements without extending the area of the Airport into the Bay or relocating Highway 101.

## RECOMMENDATION

Approve the proposed resolution.

Harvey M. Rose

cc: Supervisor Avalos
Supervisor Mirkarimi
Supervisor Elsbernd
President Chiu
Supervisor Alioto-Pier
Supervisor Campos
Supervisor Chu
Supervisor Daly
Supervisor Dufty
Supervisor Mar
Supervisor Maxwell
Clerk of the Board
Cheryl Adams
Controller
Greg Wagner

Attachment

AIRPORT COMMISSION
CITY AND COUNTY OF SAN FRANCISCO
SAN FRANCISCO INTERNATIONAL AIRPORT
MEMORANDUM

TO: Nathan Cruz
Budget and Legislative Analyst's Office

DATE: May 6, 2010

FROM: Bruce Robertson

SUBJECT: Additional Information on RSA Project Selection Process

This memo is in response to the three information requests, including (a) why the Airport is unable to meet the standard Runway Safety Area (RSA) requirements for two of the runways; (b) to what extent the Airport examined alternatives for a standard RSA requirement; and, (c) how the non-standard RSA will put the Airport in compliance.

The Airport's Planning Division and Facilities Division, along with Ricondo and Associates, the Airport's consultant tasked with development of RSA alternatives and preparation of the RSA study document, developed approximately 30 different RSA alternatives for Runways 1L-19R and 1R-19L. These alternatives ranged from doing next to nothing to providing full standard RSAs. The alternatives were evaluated on four criteria:

1) Operational impacts – Alternatives that had a negative effect on airport operations were rejected.
2) Environmental impacts – Alternatives that had significant greater environmental impacts than other alternatives that did not provide an additional increase in safety were rejected.
3) Construction cost impacts – Alternatives that were too costly to implement were rejected.
4) Does the alternative meet Federal (FAA) RSA design standards – The merits of each alternatives to meet the standard were weighed against the other three criteria.

Ultimately, the choice came down to two alternatives:

1) Construct standard RSA with Engineered Materials Arresting System (EMAS) – this alternative provided the full standard RSA, but required San Francisco Bay fill.

2) Construct non-standard RSA with EMAS – this alternative provided one standard RSA (off the end of Runway 19R) and three non-standard RSAs, without San Francisco Bay fill.

These alternatives were discussed with FAA and it was determined that due to the cost and the environmental impacts associated with the construction of standard RSAs for these two runways, that alternative would be rejected. Therefore, the preferred alternative was determined to be the one that provided the greatest RSA safety enhancement without requiring SF Bay fill.

Once the Airport has Board of Supervisors approval, we will send the RSA study reports to FAA for their formal review and acceptance. After the FAA approves our selection of the preferred alternatives, they will write an RSA determination. For the runways that do not meet RSA dimensional standards, FAA will state that the RSAs are being improved to the extent practicable, which meets the goals of the Congressional mandate. The determination letter is the document that shows that we will be in compliance.

SFO

San Francisco International Airport

P.O. Box 8097
San Francisco, CA 94128
Tel 650.821.5000
Fax 650.821.5005
www.flysfo.com

File # 100493

April 12, 2010

Ms. Angela Calvillo, Clerk of the Board
Board of Supervisors
City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, CA 94102-4689

RECEIVED
BOARD OF SUPERVISORS
SAN FRANCISCO
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BY



Dear Ms. Calvillo:

Pursuant to Administrative Code Chapter 29, I am forwarding a Fiscal Feasibility Report for a Runway Safety Area project at San Francisco International Airport for Board of Supervisor consideration.

The Runway Safety Area project is being proposed in order to comply with a Congressional mandate and meet Federal Aviation Administration standards by making modifications to each of its four runways and taxiways. As the cost of the project will exceed $25 million, the Airport has prepared a Fiscal Feasibility Report for Board of Supervisors approval, as required by Chapter 29 of the San Francisco Administrative Code.

The following is a list of accompanying documents (five sets):

- Proposed Board of Supervisors Resolution
- Approved Airport Commission Resolution No. 09-0278
- Runway Safety Area Fiscal Feasibility Report
- General description and purpose of the Runway Safety Area Project

You may contact Cathy Widener, Airport Governmental Affairs Manager at (650) 821-5023 regarding this matter.

Very truly yours,

Jean Caramatti
Commission Secretary

Enclosures

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 09-0278

**AUTHORIZING THE AIRPORT DIRECTOR TO SUBMIT A FISCAL FEASIBILITY STUDY FOR THE RUNWAY SAFETY AREA PROJECT TO THE BOARD OF SUPERVISORS.**

WHEREAS, San Francisco International Airport is a commercial airport and receives Federal Aviation Administration grant funds; and

WHEREAS, the Federal Aviation Administration (FAA) is the federal regulatory agency that oversees civil aviation and ensures aviation safety by enforcing regulations on runway layout, length, and overall size; and

WHEREAS, the FAA determined that commercial airports receiving grant funds must, to the extent possible, implement runway safety areas that increase safety by reducing the risk of aircraft damage resulting from an overrun, undershoot, and/or excursion of the runway; and

WHEREAS, in 2005 Congress mandated that all commercial airports implement runway safety areas approved by the FAA by December 31, 2015; and

WHEREAS, Chapter 29 of the San Francisco Administrative Code requires that City departments that sponsor a capital project which is projected to have construction costs greater than $25 million and use more than $1.0 million in public funds must prepare a fiscal feasibility study and submit it to the Board of Supervisors for approval; and

WHEREAS, the runway safety area project, with a maximum projected cost of $192.3 million, requires a fiscal feasibility study; and

WHEREAS, economic impact studies found Airport activities sustain 313,000 jobs and generate $469.7 million in state and local taxes, $692.6 million in federal taxes, and $30.7 billion in business revenue each year and any runway restrictions would have a negative economic impact; and

WHEREAS, the Airport anticipates receiving grant funding for 75% of costs for the mandated project; now, therefore, be it

RESOLVED, that the Airport Commission authorizes the Airport Director to submit the Runway Safety Area Fiscal Feasibility Study to the Board of Supervisors.

*I hereby certify that the foregoing resolution was adopted by the Airport Commission*

*at its meeting of* DEC 15 2009

Jean Caramatti

*Secretary*

# San Francisco International Airport

# RUNWAY SAFETY AREA

*Fiscal Feasibility Study*

April 2010

# I. Introduction

The City and County of San Francisco owns and operates San Francisco International Airport (SFO), which is the primary commercial service airport for the San Francisco Bay Area. The Airport serves the Bay Area with domestic and international passenger flights as well as all-cargo flights. SFO is one of the busiest airports in the United States and provides economic benefits to the City of San Francisco and the entire Bay Area. According to U.S. Department of Transportation data, SFO was ranked 10th in the United States in terms of total enplanements with 18,135,827[1] and ranked 16th in terms of air cargo[2] in calendar year (CY) 2008. SFO is one of the country's principal international gateways for Pacific Rim traffic, it serves as a hub for United Airlines, and it is Virgin America's primary base of operations.

San Francisco International Airport occupies approximately 5,171 acres of land, of which the runways and taxiways comprise approximately 1,700 acres. The runway layout includes four intersecting runways, three of which are equipped with instrument landing systems (ILS) for arrivals. The longer east-west runways are 11,870 feet long (10L-28R) and 10,600 feet long (10R-28L), and the shorter north-south cross-wind runways are 8,648 feet long (1R-19L) and 7,500 feet long (1L-19R). Each of the four runways is 200 feet wide.

The Federal Aviation Administration (FAA) is the federal regulatory agency responsible for oversight of civil aviation in the United States. FAA regulations ensure aviation safety by enforcing regulations over aircraft, air navigation facilities, and airport facilities. As part of the regulations to ensure safety, the FAA enforces design standards for runways at all public airports. Runways are designed to include Runway Safety Areas (RSAs), which are cleared and graded areas that surround the runway and are designed to "provide a measure of safety in the event of an aircraft's excursion from the runway by significantly reducing the extent of personal injury and aircraft damage during overruns, undershoots and veer-offs."[3] In October 1999, the FAA issued Order 5200.8 to enhance runway safety by requiring that its published Runway Safety Area design standards be met, or that RSAs be improved to the maximum extent possible.

For SFO, the FAA defines a standard RSA as being 500 feet wide (250 feet either side of runway centerline) and extending 1,000 feet beyond the end of the runway. An RSA that only extends 600 feet off the end of a runway can also be considered standard if EMAS (Engineered Materials Arresting System) is used. EMAS is a bed of lightweight, crushable concrete at the end of runways to assist in the stoppage of an airplane that overruns a runway in emergency situations.

The FAA also clarifies that for an arriving aircraft, only 600 feet of RSA is required prior to the landing threshold, but 1,000 feet of RSA is still required off the far end of the runway.

[1] Federal Aviation Administration (Note: CY 2008 is the most recent period for which this data is available). http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy08_all_enplanements.pdf

[2] Federal Aviation Administration (Note: CY 2008 is the most recent period for which this data is available). http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy08_cargo.pdf

[3] FAA Order 5200.8, "Runway Safety Program" October 1, 1999.

FAA regulations state that any commercial airport receiving grant funding from the FAA through the Airport Improvement Program (AIP) must provide a standard runway safety area where possible. The design of the runway safety area is outlined in the FAA Advisory Circular 150/5300-13, *Airport Design.*[4]

Airport staff reviewed the FAA RSA standards against the existing airport RSA configuration, and determined that the RSAs at SFO do not fully comply with the design standards required by the FAA. In 2005, Congress mandated that to the extent possible, airports should comply with the FAA RSA standards. Specifically, Congress passed a mandate that required improvement of runway safety areas for commercial airports. Public Law 109-115 states[5]:

> That not later than December 31, 2015, the owner or operator of an airport certificated under 49 U.S.C. 44706 shall improve the airport's runway safety areas to comply with the Federal Aviation Administration design standards required by 14 CFR part 139.

San Francisco International Airport plans to commence with a Runway Safety Area (RSA) project to increase safety for aircraft and passengers in emergency aircraft landing and departure situations. The project will enhance safety for each of the four runways at the Airport. The project will require modifications to the runways and taxiways to enhance safety and to meet the Congressional mandate, without expanding runways into San Francisco Bay. The FAA and Congress have not indicated the penalties for failing to implement runway safety area design standards. It is possible that the FAA could reduce grant funds at an airport that fails to comply. SFO relies on grants from the FAA for airfield capital projects, worth an average of $22.5 million annually.

Under the provisions of Chapter 29 of the San Francisco Administrative Code, a city department that is the project sponsor of capital projects that require a California Environmental Quality Act (CEQA) review must first prepare a fiscal feasibility study subject to a review at the Board of Supervisors for each project in question. Specifically, Chapter 29 of the City's Administrative Code requires that certain City projects be subject to a fiscal feasibility review at the Board of Supervisors before the City Planning Department may begin a CEQA review of the project. The fiscal feasibility ordinance applies to projects proposed by the City for which (1) the implementation and construction cost exceeds $25 million, and (2) the project sponsor reasonably estimates that, at the time of filing an application for CEQA review, a portion of the predevelopment, planning or construction costs in excess of $1 million (excluding City personnel costs) and will be funded with public funds.

The Airport is submitting this fiscal feasibility study to the Board of Supervisors to comply with Chapter 29 of the Administrative Code, since the total project cost for the RSA project is in excess of $25 million and the project will require a CEQA review.

[4] FAA Advisory Circular 150/5300-13, "Airport Design", originally published September 29, 1989, last updated December 31, 2009.

[5] Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006; Public Law 109-115, November 30, 2005.

# II. San Francisco International Airport

San Francisco International Airport is owned and operated by the City and serves as the primary airport for the Bay Area. The Airport is governed by the Airport Commission, as outlined in the City Charter. The five-person Airport Commission is primarily a policy-making body, establishing the policies by which the Airport operates. The Airport Director oversees the operation and management of the Airport. SFO also operates under the regulations of the FAA and the Transportation Security Administration (TSA). The Airport's mission is to provide safe and secure facilities for airlines, tenants, employees, and the traveling public and to be fiscally prudent and contribute to the health of the local economy[6]. The Runway Safety Area project will enhance the safety of airfield facilities for airlines and passengers at SFO.

# III. Project Overview

The purpose of the project is to implement the Runway Safety Area project to comply with FAA RSA standards and the Congressional mandate for implementation by the end of CY 2015. The Airport conducted a Runway Safety Area study to determine viable alternatives for increasing safety prior to the passing of the Congressional mandate. To meet the Congressional mandate and comply with FAA standards, the Airport will make modifications to each of the four runways and modify existing taxiways based on the current airfield configuration. Because of the complexity and the size of the RSA project, SFO contracted with URS Corporation to provide an independent engineer's estimate of probable construction costs. The table below shows the project costs. More details regarding the project costs are shown in Appendix I.

[6] San Francisco International Airport, "Strategies and Goal 2007 – 2012", pg. 3.

**Table 1**
**Runway Safety Area Project Costs**[7]

| Runway Safety Area Project Component | Amount | Project Subtotal Amount |
|---|---|---|
| South Airport Project | $31,939,845 | |
| **South Airport Project Total** | | **$31,939,845** |
| Runway 1L-19R | $48,103,333 | |
| Runway 1L-19R Taxiways | $11,423,984 | |
| Runway 1R-19L | $39,574,312 | |
| Runway 1R-19L Taxiways | $22,536,122 | |
| Taxiways Between 1L-19R & 1R-19L | $15,890,953 | |
| **Runways 1-19 Total** | | **$137,528,704** |
| Runway 10R-28L | $11,525,758 | |
| Runway 10R-28L Taxiways | $4,149,749 | |
| Runway 10L-28R | $9,901,656 | |
| **Runways 10-28 Total** | | **$25,577,163** |
| Environmental Mitigation | $6,000,000 | |
| **Environmental Mitigation Total** | | **$6,000,000** |
| **TOTAL** | **$201,045,712** | **$201,045,712** |

*Source: URS Corporation and SFO*

The RSA project components are shown in Appendix II, and include:

- ***RSAs for Runway 10L-28R***—The RSA improvements for east-west Runway 10L-28R to meet FAA design standards will be accomplished by adjusting the available takeoff and landing distances on the runway. The RSA for Runway 28R will be lengthened by approximately 300 feet from 322 to 622 feet, and the landing distance will commensurately be shortened by approximately 300 feet (from 11,870 feet to 11,570 feet). The RSA for Runway 10L currently meets FAA RSA design standards, but the takeoff and landing distance will be shortened by approximately 675 feet (from 11,870 feet to 11,195 feet) due to RSA improvements off the end of Runway 28R. These resulting shortened takeoff and landing distances are sufficient to meet the needs of all aircraft serving SFO. The proposed work will include pavement reconstruction, airfield lighting and navigational system upgrade and/or relocation, and runway marking reconfiguration. These adjustments will bring the Runway 10L-28R runway safety areas into full compliance with the FAA RSA design and dimension standards.

[7] The cost estimates presented here are based on planning-level design drawings and are preliminary in nature as developed by the URS Corporation. Final cost estimates will be prepared once the environmental process is complete and detailed engineering drawings are prepared.

- ***RSAs for Runway 10R-28L***—The RSA improvements for parallel east-west Runway 10R-28L are similar to those planned for Runway 10L-28R. The RSA for Runway 28L will be lengthened by approximately 300 feet from 324 to 624 feet, and the Runway 28L landing distance will be lengthened by approximately 473 feet (from 10,600 feet to 11,073 feet) due to RSA improvements off the end of Runway 10R. To maintain the operational capability for takeoffs and landings on Runway 10R, the runway threshold will be relocated approximately 771 feet to the west. This improvement will allow the takeoff and landing distances to remain similar to the 10,600 feet that exists today – 10,697 feet for takeoff and 10,526 feet for landing. These adjustments will bring the Runway 10R-28L runway safety areas into full compliance with the FAA RSA design and dimension standards.

Improvements to the RSAs for the north-south cross-wind Runways 1L-19R and 1R-19L are more challenging, because the runways are bounded by San Francisco Bay to the north and Highway 101 to the south. These changes require significantly more work to comply with the Congressional mandate.

- ***RSAs for Runway 1L-19R***—To meet FAA RSA requirements for Runway 1L-19R, the runway will shift approximately 444 feet to the south. The RSA will be lengthened off the end of Runway 19R to 600 feet, and will meet FAA RSA design standards. The RSA off the end of Runway 1L will be 460 feet long and will be non-standard. Both RSAs will have EMAS installed.

- ***RSAs for Runway 1R-19L***—Runway 1R-19L also entails additional work to meet FAA RSA requirements. Runway 19L will be shifted approximately 200 feet to the south. The RSA off the end of Runway 19L will be lengthened to 445 feet long and will be non-standard. The RSA off the end of Runway 1R will be 357 feet long and will be non-standard. The Airport will install EMAS to these RSAs as well.

- ***Other RSA-Enabling Projects***—The Airport will need provide some environmental mitigation and relocate various existing structures, facilities and utilities to make way for the planned RSAs improvements:

    - A drainage basin at the end of Runway 1L with many underground utility structures is currently in the way of the proposed RSA improvements. The drainage basin will be demolished and a new structure will be constructed at a new location, away from the runway ends.
    - All utilities in the way of the planned RSAs will be rerouted.
    - Existing Taxiways A and A1 need to be relocated due to the RSA improvements. The taxiways will be decommissioned and new taxiways will be constructed to replace the two existing taxiways.
    - An electrical substation will be relocated outside the footprint of the runway safety areas.
    - Environmental mitigation for approximately 3.0 acres for work impacting the South Oxidation Pond, and other storm water facilities in the South Field area that would be subject to U.S. Army Corps of Engineers (USACE) jurisdiction.

# IV. Environmental Review

An Environmental Evaluation Application for environmental review has yet to be filed with the City and County of San Francisco's Planning Department – Major Environmental Analysis (MEA), the lead agency under the California Environmental Quality Act (CEQA). Once the Board of Supervisors approves the fiscal feasibility study, Airport staff will submit the current project proposal to MEA for review of potential environmental impacts for each of the 17 resource categories, conducted according to the procedural requirements of CEQA (California Public Resources Code Section 21000 et seq.), State CEQA Guidelines (California Administrative Code Title 14 Section 15000 et seq.) and Chapter 31 of the San Francisco Administrative Code. Airport staff will submit an Initial Study at a future date, which will include environmental analyses of the CEQA resource categories; staff anticipates the assigned MEA Environmental Review Officer will issue a (Mitigated) Negative Declaration rather than requiring preparation of an Environmental Impact Report.

The environmental permitting process will be conducted concurrently with the environmental review process to expedite the project. Such permits must be coordinated with the design process to ensure final key design conforms to the conditions and analyses provided in the permit applications to various federal, state, and local regulatory agencies. Staff anticipates permits will be required from the U.S. Army Corps of Engineers (USACE), San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Bay Regional Water Quality Control Board (RWQCB), and the City and County of San Francisco. Airport staff estimates completion of the environmental review and permitting process for both sets of runways within 24 months from the start of the environmental process, beginning with consultant selection.

# V. Fiscal Feasibility Analysis

Under the provisions of the San Francisco Administrative Code §29.2 there are five criteria to evaluate the project's fiscal feasibility. The five criteria to study the fiscal feasibility are as follows:

(1) Direct and indirect financial benefits of the project to the City, including to the extent applicable cost savings or new revenues, including tax revenues generated by the proposed project;
(2) The cost of construction;
(3) Available funding for the project;
(4) The long-term operating and maintenance cost of the project; and
(5) Debt load to be carried by the City department or agency.

The fiscal feasibility of the Runway Safety Area project is analyzed based on the five criteria below.

# (1) Financial Benefits to the City

The Airport plans to implement the Runway Safety Area project to comply with FAA orders and the Congressional mandate to enhance safety. Failure to comply with the Congressional mandate may result in the loss of FAA AIP grant funding for airfield related capital projects and thus result in the Airport providing the funding for airfield projects.

**Direct Financial Benefits**

The City receives numerous direct financial benefits resulting from the operation of the Airport in the most efficient and effective manner possible. The federally mandated RSA project is critical to ensure that the City continues to receive the maximum financial benefits including tax revenue generated by visitors, job creation benefits, and the Airport's annual service payment into the General Fund. The Airport's economic activity also provides financial benefits to the entire Bay Area economy.

City Revenue

Under the current Lease and Use Agreement between the Airport and the airlines, SFO provides 15% of gross concession revenues to the City's General Fund. These General Fund revenues can be applied to any use determined by policy makers.

The annual service payments provided by the Airport to the City's General Fund over the previous five fiscal years totaled $117.3 million. In FY 2009, the Airport transferred $26.8 million in revenue to the City. The five-year breakdown of the annual service payments is shown in the table below.

**Table 2**
**Annual Service Payment**
**FY 2005 to FY 2009**
**(in millions)**

| Fiscal Year | Annual Service Payment |
|---|---|
| FY 2005 | $ 19.7 |
| FY 2006 | $ 21.5 |
| FY 2007 | $ 23.3 |
| FY 2008 | $ 25.9 |
| FY 2009 | $ 26.8 |
| **Total** | **$ 117.3** |

*Source: San Francisco International Airport Annual Financial Statements*

The average annual payment received by the City over the most recent five fiscal years was $23.5 million. Although the current Lease and Use Agreement between the Airport and the airlines expires July 31, 2011, a new Lease and Use Agreement has been agreed to that provides for continuation of the annual service payments through FY 2021. The Airport expects the

annual service payments to continue to increase with passenger volumes and concession spending during that period.

Direct Employment

San Francisco International Airport is an economic driver for the City and County of San Francisco and also the entire Bay Area. A key measure of economic activity is the direct employment based on activities related to the Airport. These are jobs, within the aviation sector, transportation, professional services, or construction services, which would not exist without the Airport.

According to Martin Associates, a total of 29,555 direct jobs are dependent on the activity of SFO. These jobs would be discontinued immediately if airport activity ceased. Also these jobs would be impacted as a result of changes in number of flights and passenger levels."[8] The table below provides a breakdown of the types of direct jobs by category created by the Airport.

**Table 3**
**Direct Job Impacts from SFO for 2008**

| Job Category | Direct Jobs | Percent |
|---|---|---|
| Passenger Airlines | 13,201 | 44.7% |
| Fixed Base Operators/Sky Caps | 2,784 | 9.4% |
| Ground Transportation | 2,474 | 8.4% |
| Construction and Consulting | 2,247 | 7.6% |
| Freight Transportation | 2,167 | 7.3% |
| Airport Administration | 1,661 | 5.6% |
| Retail Concessions | 1,559 | 5.3% |
| Security | 1,093 | 3.7% |
| Federal Government | 811 | 2.7% |
| Other | 1,558 | 5.3% |
| **Total Direct Jobs** | **29,555** | **100%** |

*Source: Martin Associates, June 2009*

The average income from direct jobs in Fiscal Year 2008 is $56,412 which totals $1.7 billion. These jobs provide tax revenue to the City and County of San Francisco and throughout the Bay Area.

In addition to the jobs directly associated with the activities of SFO, the RSA construction project will employ significant staff. Based on the construction costs of the project an estimated 1,403 jobs would result from this project in the City and County of San Francisco, including 960 construction jobs.

[8] Martin Associates, "The Local and Regional Economic Impacts of the San Francisco International Airport", June 9, 2009, pg. 11.

**Table 4**
**RSA Project Job Impact**

| Runway Safety Area Project Component | Amount | Construction Jobs Impact | Total Job Impact |
|---|---|---|---|
| South Airport Project | $31,939,845 | 157 | 230 |
| **South Airport Project Total** | **$31,939,845** | **157** | **230** |
| Runway 1L-19R | $48,103,333 | 237 | 346 |
| Runway 1L-19R Taxiways | $11,423,984 | 56 | 82 |
| Runway 1R-19L | $39,574,312 | 195 | 285 |
| Runway 1R-19L Taxiways | $22,536,122 | 111 | 162 |
| Taxiways Between 1L-19R & 1R-19L | $15,890,953 | 78 | 114 |
| **Runways 1-19 Total** | **$137,528,704** | **677** | **989** |
| Runway 10R-28L | $11,525,758 | 57 | 83 |
| Runway 10R-28L Taxiways | $4,149,749 | 20 | 30 |
| Runway 10L-28R | $9,901,656 | 49 | 71 |
| **Runways 10-28 Total** | **$25,577,163** | **126** | **184** |
| Environmental Mitigation | $6,000,000 | n/a | n/a |
| **Environmental Mitigation Total** | **$6,000,000** | | |
| **TOTAL** | **$201,045,712** | **960** | **1403** |

*Source of employment impacts: Regional Economic Models, Inc. (REMI). These estimates are based on the REMI model used by the San Francisco Controller's Office, Office of Economic Analysis, which is customized to the City and County of San Francisco to estimate the impacts of tax initiatives as well as capital programs. The REMI job creation multipliers are 4.93 construction jobs and 7.20 jobs overall per $1.0 million in construction spending.*

The construction impact is a one-time job creation impact for the City and County of San Francisco, but the project duration is for several years.

**Indirect Financial Benefits**

The indirect impact of jobs resulting from the economic activity of the Airport is significant:

- A total of 12,420 of indirect jobs are generated in the local economy from purchases of goods and services by firms completely dependent upon activity of SFO.
- A total of 21,445 jobs are induced in the region from purchases of goods and services by the 29,555 direct jobs created by activity at SFO.
- An aggregate of 249,713 visitor industry direct, induced, and indirect jobs are created in the Bay Area as a direct result from passengers arriving through the SFO.

In addition to the indirect job impact, activities from SFO generate significant tax revenues for San Francisco and the Bay Area. SFO activities provide an estimated $469.7 million in state and

local taxes[9]. The activities at SFO also generate $692.6 million in annual federal tax revenues, which provide funding for programs and services at the local and national level.

## (2) Costs of Construction

The Airport projects that the total project cost will be $201.0 million for the entire Runway Safety Area project, including environmental mitigation. This amount includes construction costs, internal costs for Airport staff, external professional services to provide environmental review, and associated design and engineering work for the project. Airport Engineering staff, Airport Planning staff, staff from the FAA, and consultants from URS Corporation worked together to provide the best cost estimate for this project. The full breakdown of the project costs including construction costs and soft costs are shown in the table below.

**Table 5**
**Runway Safety Area Total Project Costs**

| Runway Safety Area Project Component | Total Amount | Construction Costs | Soft Costs* |
|---|---|---|---|
| South Airport Project | $31,939,845 | $27,351,764 | $4,588,081 |
| **South Airport Project Total** | **$31,939,845** | **$27,351,764** | **$4,588,081** |
| Runway 1L-19R | $48,103,333 | $41,716,437 | $6,386,896 |
| Runway 1L-19R Taxiways | $11,423,984 | $9,880,042 | $1,543,942 |
| Runway 1R-19L | $39,574,312 | $34,748,372 | $4,825,940 |
| Runway 1R-19L Taxiways | $22,536,122 | $19,620,207 | $2,915,915 |
| Taxiways Between 1L-19R & 1R-19L | $15,890,953 | $13,834,846 | $2,056,107 |
| **Runways 1-19 Total** | **$137,528,704** | **$119,799,904** | **$17,728,800** |
| Runway 10R-28L | $11,525,758 | $10,129,323 | $1,396,435 |
| Runway 10R-28L Taxiways | $4,149,749 | $3,513,536 | $636,213 |
| Runway 10L-28R | $9,901,656 | $9,250,981 | $650,675 |
| **Runways 10-28 Total** | **$25,577,163** | **$22,893,840** | **$2,683,323** |
| Environmental Mitigation | $6,000,000 | $6,000,000 | $0 |
| **Environmental Mitigation Total** | **$6,000,000** | **$6,000,000** | **$0** |
| **TOTAL** | **$201,045,712** | **$176,045,508** | **$25,000,204** |

** Soft costs include engineering, inspection, design activities, and construction management.*
*Source: URS Corporation and SFO*

[9] Ibid, pg 18.

Detailed construction cost estimates are included in Appendix I. The construction costs related to the project are primarily for modifying the existing runways and taxiways. SFO staff reviewed the construction costs and determined that they are reasonable and reflect the estimated construction costs for the project.

## (3) Available Funding

The Airport anticipates having sufficient funding for the Runway Safety Area project. The Airport's Plan of Finance and the Airport's Capital Improvement Plan (ACIP)[10] submitted to the FAA include the Runway Safety Area project for SFO. The ACIP and the Plan of Finance identify FAA grant funding of 75% of total project costs, with a local match of 25%.

**Table 6**
**Runway Safety Area Plan of Finance**

| Runway Safety Area Project Component | Amount | Anticipated FAA Grant Amount | Local Share Amount |
|---|---|---|---|
| South Airport Project | $31,939,845 | $23,954,884 | $7,984,961 |
| **South Airport Project Total** | **$31,939,845** | **$23,954,884** | **$7,984,961** |
| Runway 1L-19R | $48,103,333 | $36,077,500 | $12,025,833 |
| Runway 1L-19R Taxiways | $11,423,984 | $8,567,988 | $2,855,996 |
| Runway 1R-19L | $39,574,312 | $29,680,734 | $9,893,578 |
| Runway 1R-19L Taxiways | $22,536,122 | $16,902,092 | $5,634,031 |
| Taxiways Between 1L-19R & 1R-19L | $15,890,953 | $11,918,215 | $3,972,738 |
| **Runways 1-19 Total** | **$137,528,704** | **$103,146,528** | **$34,382,176** |
| Runway 10R-28L | $11,525,758 | $8,644,319 | $2,881,440 |
| Runway 10R-28L Taxiways | $4,149,749 | $3,112,312 | $1,037,437 |
| Runway 10L-28R | $9,901,656 | $7,426,242 | $2,475,414 |
| **Runways 10-28 Total** | **$25,577,163** | **$19,182,872** | **$6,394,291** |
| Environmental Mitigation | $6,000,000 | $4,500,000 | $1,500,000 |
| **Environmental Mitigation Total** | **$6,000,000** | **$4,500,000** | **$1,500,000** |
| **TOTAL** | **$201,045,712** | **$150,784,284** | **$50,261,428** |

*Source: URS Corporation and SFO*

As a large-hub airport with a robust capital improvement program, the Airport will include the costs of the project into the annual 5- and 10-year capital plan. The Airport currently is in the third year of a five-year $648 million supplemental appropriation for capital projects and has approximately $113 million of bond proceeds to issue for other projects unrelated to the Runway Safety Area project. The Airport will utilize debt financing through General Aviation Revenue Bonds (GARBs) to fund the required local match to the FAA grants. If necessary, the Airport will likely seek additional bond appropriation authority from the Mayor and the Board of

[10] Per the FAA Airports Capital Improvement Plan Order (FAA Order 5100.39A), the "Airports Capital Improvement Plan (ACIP) is an internal FAA document that serves as the primary planning tool for identifying and prioritizing critical airport development and associated capital needs for the National Airspace System."

Supervisors when the project expenditures peak in FY 2014/15.

In the unlikely event that the grant funds from the FAA do not materialize, SFO is committed to fund this project entirely through the issuance of new debt and will request additional authority from the Mayor's Office and the Board of Supervisors. However, on average over the previous three fiscal years, the Airport received approximately $22.5 million in grant funds from the FAA. With the Congressional mandate for runway safety areas, the FAA set aside additional grant funds for these projects nationwide.

## (4) Project Long-term Operating and Maintenance Costs

The long-term operating and maintenance costs from the proposed project are minimal. Currently, the Airport expends approximately $2.8 million on operating and maintenance costs associated with all runways and taxiways at SFO per year. The component costs of that total are $1.35 million for pavement repairs on the airfield and $1.45 million for materials and labor costs to maintain airfield lighting system. If the full Runway Safety Area project is implemented, the increase in costs will be minimal and will be performed by Airport maintenance staff.

Maintenance of the Engineered Material Arresting System (EMAS) will total approximately $100,000 annually. The cost of maintenance is not eligible for FAA AIP funds and will be funded using airport funds. Additional ongoing maintenance costs will not be borne by the Airport. The FAA's approach lighting and navigational-aid equipment will be upgraded and relocated as part of the project. After this work is complete, the FAA will operate and maintain the system using its own staff and maintenance funds. Therefore, no additional operating and maintenance funds are needed from the Airport for runway lighting and navigational-aid equipment.

The increased costs from maintenance of pavement and lighting on the new taxiways and runway safety areas will be offset by savings from the decommissioned taxiways. As a result, the slight increase in operating and maintenance costs performed by Airport maintenance staff will be offset by the reduced work from the decommissioned taxiways. The Airport's maintenance group anticipated additional operating and maintenance projects are required.

## (5) Debt Load Carried by the Airport

The Airport will have to finance a portion of the RSA project, and thus will incur additional debt. The Airport anticipates receiving 75% in total project funding from the FAA for the $201 million cost of the project. The Airport has an active debt finance department to fund capital projects that also manages the Airport's $4.3 billion debt portfolio.

The amount of the RSA project funded by debt would $50,261,428 based on 75% funding from the FAA and 25% in matching funds. The issuance of debt for the 25% matching funds would result in debt service payments of approximately $4.7 million per year or a total of $139.5 million over the 30-year term of the bonds[11]. In the unlikely event that grant funds do not

[11] This assumes an all-in true interest cost of 5.73% and a 36 month capitalized interest period.

materialize from the FAA, the entire amount of the project funded would be debt-funded. Issuance of debt to fund the full project cost of $201.0 million would result in debt service payments of approximately $19.3 million per year or at total of $574.8 million over the 30-year term of the bonds[12].

The debt service costs associated with this project will not impact the General Fund. Rather, the debt service payments will increase the costs borne by the airlines doing business at the Airport, through the rates and charges they pay the Airport. The increased debt service cost of $4.7 million annually, assuming 75% in FAA grants, would increase costs per enplaned passenger (CPE) for the airlines by approximately $0.25. In the unlikely event the Airport does not receive any grant funds, the increased debt service of $19.3 million would increase CPE by approximately $1.01. The Airport anticipates debt requirements for the RSA project will be spread out of multiple years and possibly several issuances, and as a result, it is likely that the full debt service amounts will not impact the Airport's budget until FY 2017.

# VI. Conclusion

Implementing this proposed Runway Safety Area project is a Congressional mandate and is critical to enhancing the safety of the Airport. The project will ensure that SFO continues to provide a safe experience for airfield operations and passengers, and that the Airport is in compliance with the FAA standards and Congressional mandates. The Airport believes this mandated project is fiscally responsible and fiscally feasible. The project will enable the City of San Francisco to maintain a world class airport and continue to be the airport of choice for the Bay Area. The project will continue to provide the City and the entire Bay Area region with significant economic benefits.

[12] This assumes an all-in true interest cost of 5.73% and a 36 month capitalized interest period.

# Appendix I
## Detailed Runway Safety Area Project Cost

| RSA Project Component | Civil Engineering | FAA NAVAIDS* | Electrical Sub-Station | Airfield Electrical Lighting, ALCS, & Signage | Contingency for Non-NAVAID and Phasing** | Soft Costs on Non-NAVAID Items at 23%* | Escalation at 3.5% annually (see escalation assumptions) | GRAND TOTAL RSA PROJECT |
|---|---|---|---|---|---|---|---|---|
| South Airport Project | $ 14,059,230 | - | $ 5,888,950 | - | $ 3,490,931 | $ 4,588,081 | $ 3,912,653 | $ 31,939,845 |
| **South Airport Project Cost** | **$ 14,059,230** | - | **$ 5,888,950** | - | **$ 3,490,931** | **$ 4,588,081** | **$ 3,912,653** | **$ 31,939,845** |
| Runway1L-19R | 26,189,644 | 697,800 | - | 1,579,470 | 4,859,595 | 6,386,896 | 8,389,929 | 48,103, |
| Runway 1L-19R Taxiways | 5,688,168 | - | - | 1,024,624 | 1,174,739 | 1,543,942 | 1,992,511 | 11,423,984 |
| Runway 1R-19L | 19,321,200 | 1,799,139 | - | 1,661,150 | 3,671,911 | 4,825,940 | 8,294,972 | 39,574,312 |
| Runway 1R-19L Taxiways | 11,462,247 | - | - | 1,215,646 | 2,218,631 | 2,915,915 | 4,723,683 | 22,536,122 |
| Taxiways Between 1L-19R and 1R-19L | 7,107,123 | - | - | 1,832,472 | 1,564,429 | 2,056,107 | 3,330,823 | 15,890,953 |
| **Total RSA Cost for Runways 1-19** | **69,768,382** | **2,496,939** | **0** | **7,313,362** | **13,489,305** | **17,728,800** | **26,731,918** | **137,528,704** |
| Runway 10R-28L | 3,941,538 | 2,279,088 | - | 2,129,920 | 455,359 | 1,396,435 | 1,323,417 | 11,525,758 |
| Runway 10R-28L Taxiways | 1,301,942 | - | - | 1,464,200 | 207,461 | 636,213 | 539,933 | 4,149,749 |
| Runway 10L-28R | 458,312 | 4,772,678 | - | 2,370,710 | 212,177 | 650,675 | 1,437,104 | 9,901,656 |
| **Total RSA Cost for Runways 10-28** | **5,701,792** | **7,051,766** | **0** | **5,964,830** | **874,997** | **2,683,323** | **3,300,454** | **25,577,162** |
| Environmental Mitigation*** | | | | | | | | 6,000,000 |
| **Total Environmental Mitigation Cost** | | | | | | | | **6,000,000** |
| **TOTAL RSA PROJECT COST** | **$ 89,529,403** | **$ 9,548,705** | **$ 5,888,950** | **$ 13,278,192** | **$ 17,855,233** | **$ 25,000,205** | **$ 33,945,023** | **$ 201,045,712** |

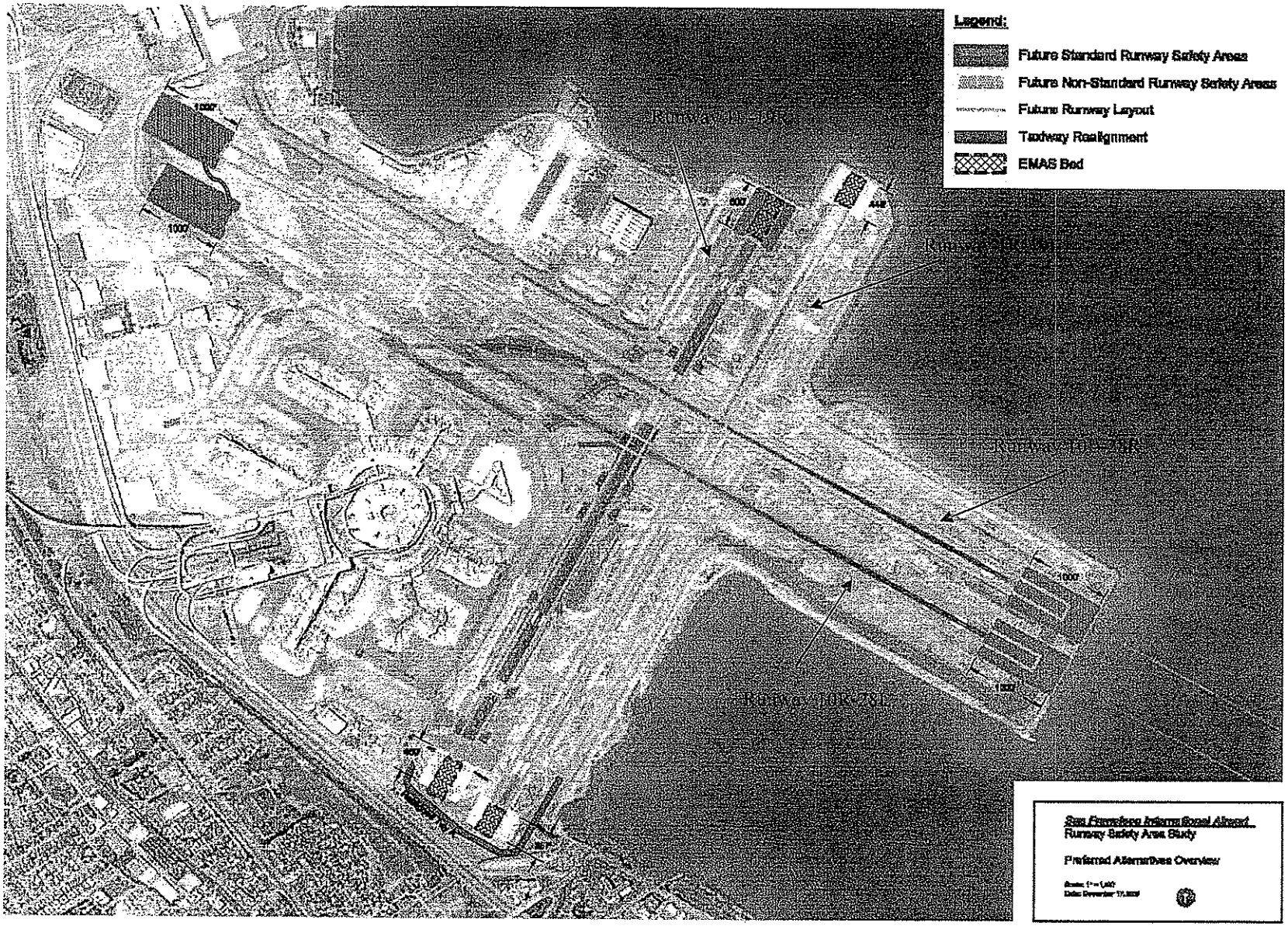
Notes

* FAA Navigational Aid System (NAVAIDS) work already includes 12% contingency and 26% soft costs fully loaded.

** Runways 10-28(L&R) will not require any substantial temporary work associated with phasing.

*** South Oxidation Pond and Detention Basin - 3.0 acres of fill requiring 2:1 to 3:1 mitigation ratio and the Millbrae Highline Canal - 0.8 acres of fill requiring 1:1 to 1.5:1 mitigation ratio.

# Appendix II
# Runway Safety Area Project Overview



## General description of the Runway Safety Area (RSA) Project

San Francisco International Airport plans to initiates a Runway Safety Area (RSA) Project to enhance safety for aircraft and passengers during departures and landings. The project involves modifications to the runways and taxiways to enhance safety and to meet a Congressional mandate without expanding runways into San Francisco Bay.

The Runway Safety Area Project will make safety improvements at each of SFO's four runways. To meet the FAA design standards for the available take off and landing distances for SFO's longer east-west runways (10L-28R and 10R-28L), the project will adjust the available takeoff and landing distances on each runway.

Improvements to the RSAs for the north-south cross-wind Runways 1L-19R and 1R-19L are more challenging because the runways are bounded by San Francisco Bay to the north and Highway 101 to the south. To improve the RSAs for Runway 1L-19R, the runway will shift approximately 444 feet to the south, the RSA off the end of Runway 19R will be lengthened to 600 feet, and the RSA off the end of Runway 1L will be 460 feet long. Improvements to Runway 1R-19L include shifting the runway approximately 200 feet to the south. The RSA off the end of Runway 19L will be 445 feet long and the RSA off the end of Runway 1R will be 357 feet long. All four of the 1/19 runway RSAs will have EMAS (Engineered Materials Arresting System)[1] installed.

The Runway Safety Area Project also requires that the Airport relocate various airfield structures, facilities and utilities to make way for the planned RSA improvements.

## General Purpose of the RSA Project

The Federal Aviation Administration (FAA) is the federal regulatory agency responsible for oversight of civil aviation in the United States. FAA regulations ensure aviation safety by enforcing design standards for runways at all public airports. Runways are designed to include Runway Safety Areas, which are cleared and graded areas that surround the runway and are designed to "provide a measure of safety in the event of an aircraft's excursion from the runway by significantly reducing the extent of personal injury and aircraft damage during overruns, undershoots and veer-offs."[2] In October 1999, the FAA issued Order 5200.8 to enhance runway safety by requiring that RSA design standards be met or that RSAs be improved to the maximum extent possible.

Airport staff reviewed the FAA RSA standards against the existing airport RSA configuration and determined that the RSAs at SFO do not fully comply with FAA's design standards. Furthermore, in 2005, Congress mandated that to the extent possible, airports should comply with the FAA RSA standards by December 31, 2015. The purpose of the project is to improve the Airport's RSAs and comply with the Congressional mandate.

[1] EMAS is a bed of lightweight, crushable concrete at the end of runways to assist in the stoppage of an airplane that overruns a runway in emergency situations.

[2] FAA Order 5200.8, "Runway Safety Program" October 1, 1999.