BARTLETT SCHOOL OF PLANNING

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PROJECT PROFILE

USA

Alameda Corridor, California

omega centre

Centre for Mega Projects in Transport and Development

A global Centre of Excellence in Future Urban Transport
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This report was compiled by the NYU Wagner Rudin Center for Transportation Policy and Management.

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A INTRODUCTION

Type of project

> "After more than two decades of planning and five years of construction, the $2.4bn Alameda Corridor freight rail expressway has opened on time and on budget, speeding the flow of cargo to and from the nation's two busiest ports, providing a model for public-private partnerships and delivering benefits to the nation, state and region."

(railwaypeople.com 2009)

> "The Alameda Corridor is a 20-mile long (32km) rail cargo expressway linking the ports of Long Beach and Los Angeles to the transcontinental rail network near downtown Los Angeles. It is a series of bridges, underpasses, overpasses and street improvements that separate freight trains from street traffic and passenger trains, facilitating a more efficient transportation network. The project's centerpiece is the Mid-Corridor Trench, which carries freight trains in an open trench that is ten miles long, 33ft deep and 50ft wide between State Route 91 in Carson and 25th Street in Los Angeles. Construction began in April 1997. Operations began in April 2002."

(ACTA 2009)

Project name

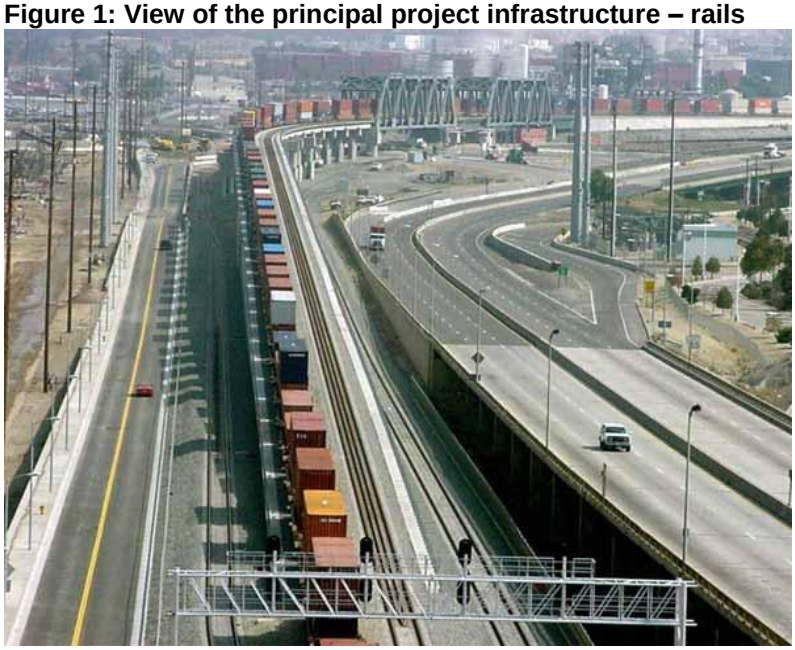
Alameda Corridor

Los Angeles County, California, USA

Construction Time: 1997-2002

Project sponsor: Alameda Corridor Transportation Authority (ACTA), a joint powers agency of the cities and ports of Los Angeles and Long Beach.

Figure 1: View of the principal project infrastructure – rails



Source: (SVCAG 2009)

Description of mode type

Freight rail.

Principal transport nodes

A 20 mile (32km) rail cargo route connecting the ports of Los Angeles and Long Beach, and rail yards near downtown L.A., into Alameda Corridor East.

Figure 2: View of the principal project infrastructure - trench

Source: (Railway Technology 2008)

Major associated developments

Connection to Alameda Corridor East project.

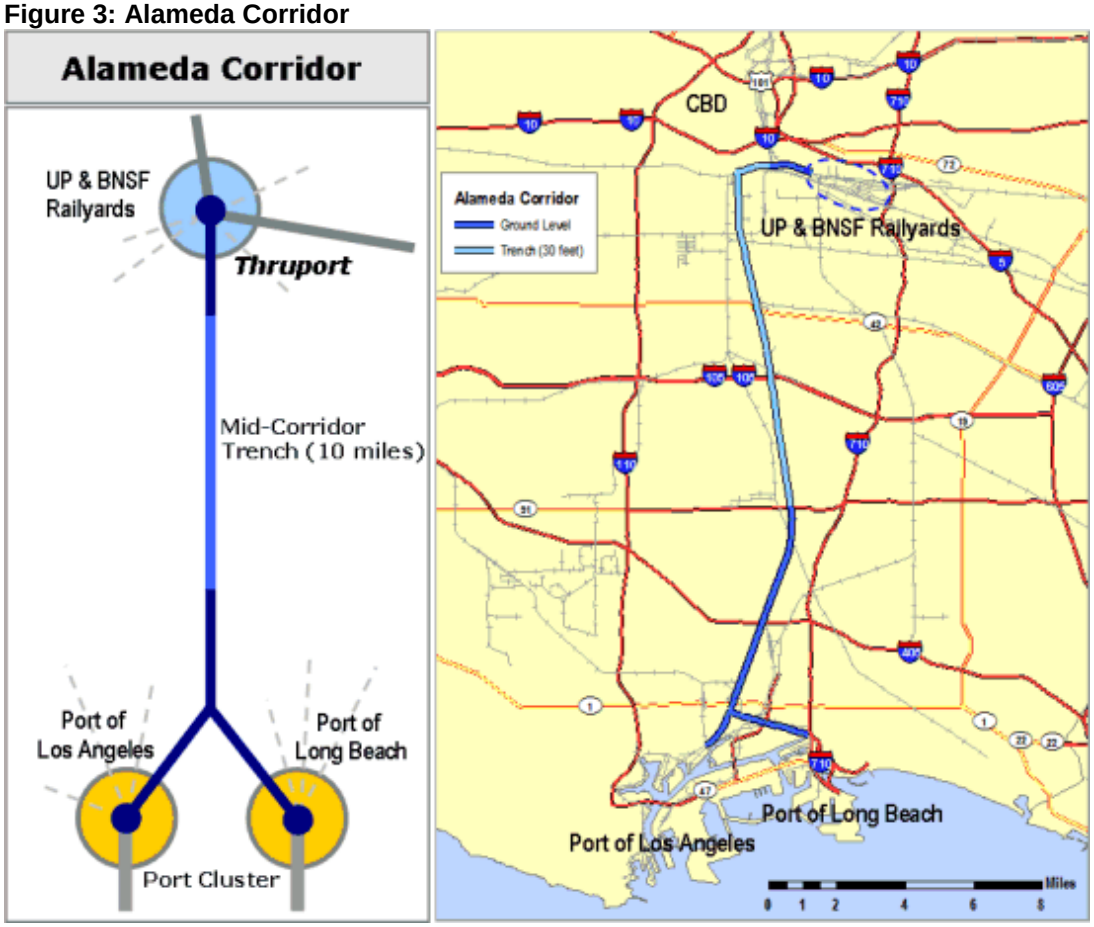
Associated public works projects.

Parent projects

No parent projects.

Country/location

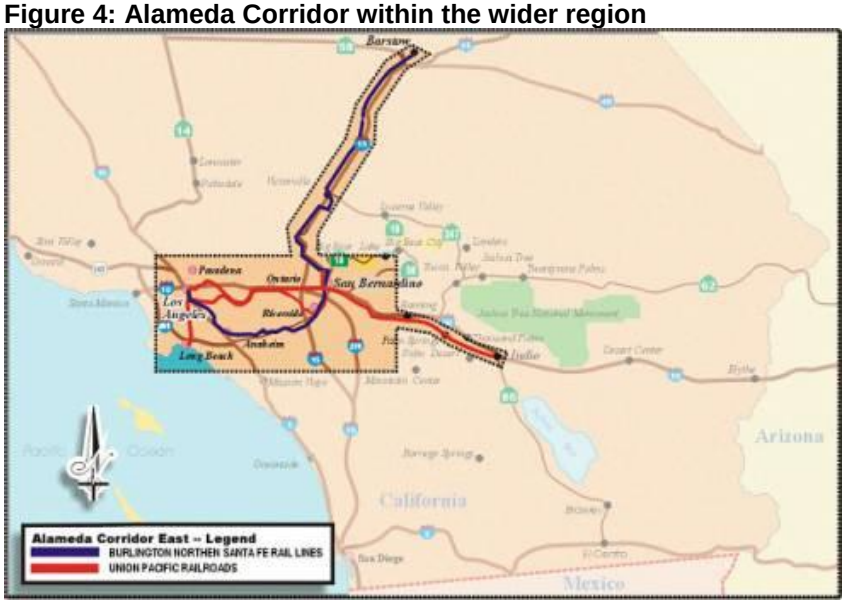
Figure 3: Alameda Corridor



Source: (Rodrigue 2006)

Alameda Corridor is located in the south west of the United States, at the Southern Californian coast in the Bay Port Area.

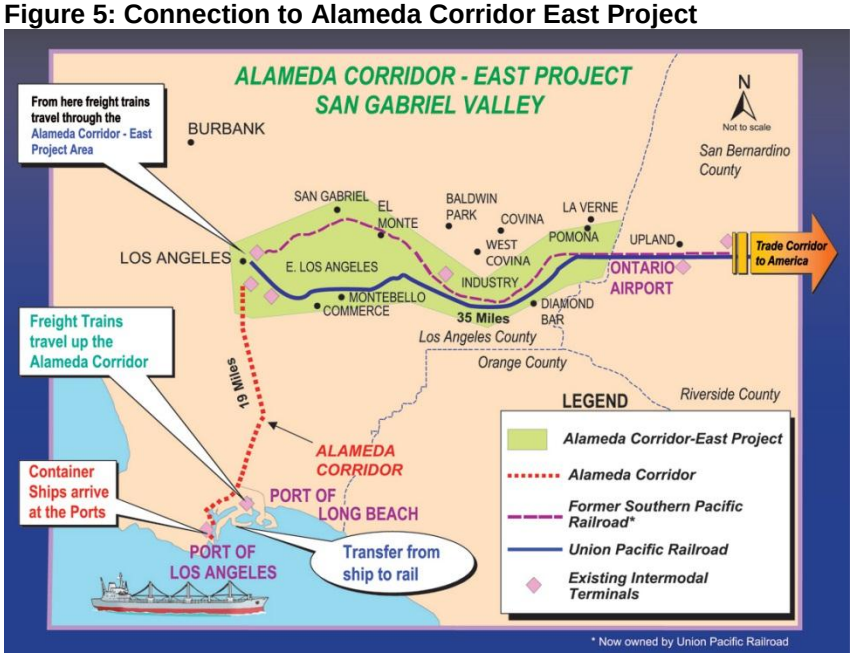
Figure 4: Alameda Corridor within the wider region



Source: (EPV 2002)

The Corridor is part of the larger rail infrastructure in the region. For instance, it feeds into the Alameda Corridor East Project, currently under construction.

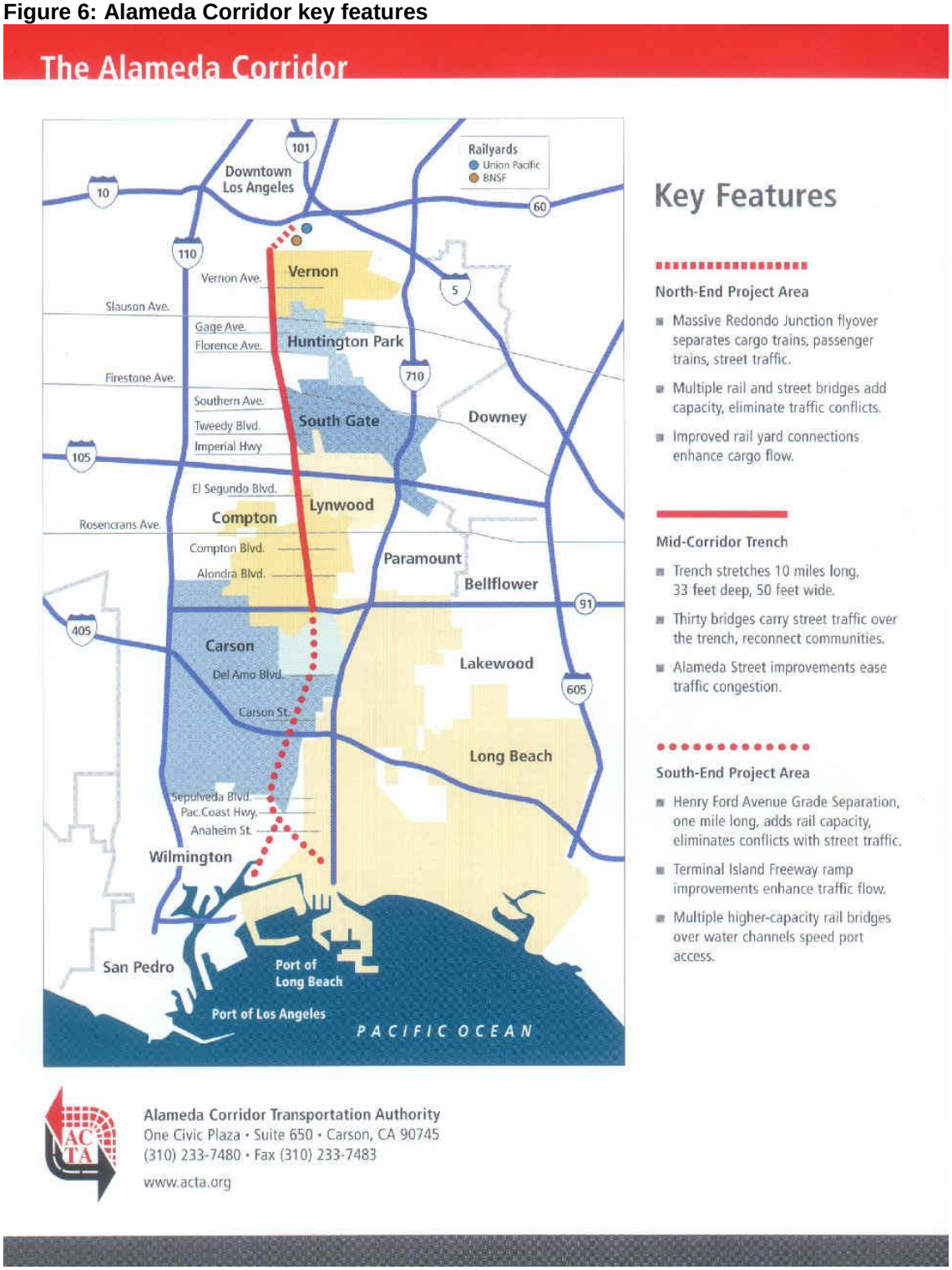
Figure 5: Connection to Alameda Corridor East Project



Source: (Alameda Corridor East Construction Authority 2008)

The 20 mile project itself consists of three segments: the North End Project, the Mid-Corridor Trench (Figure 7), the longest part and most well-known tunnel-like structure), and the two-legged South End Project (Figure 3). Each of the three parts contains smaller structures such as bridges, tunnels and crossings, made necessary by the manifold crossings of the Corridor by existing roads and railways. For example, the entire Alameda Corridor Program has forty railroad-highway crossings along its three major sections, or 52 water line crossings (25,000ft) that need to be relocated (LA Business Journal 2002) .

Figure 6: Alameda Corridor key features



Source: (railindustry.com 2008)

North End Project Area: grade separations and bridge replacements

"The North End consists of several segments and ten public crossings. The Redondo Junction Grade Separation is one of these segments and extends from a point south of Olympic Boulevard along the west bank of the Los Angeles River, then continues southeasterly to the intersection of The Burlington Northern Santa Fe Railway Company (BNSF) right-of-way, east of Soto Street.

Another North End segment involves construction of the Santa Fe Avenue Viaduct, a railroad bridge over Washington Boulevard to carry the ACTA main tracks, and a railroad bridge over Washington Boulevard that will carry two BNSF tracks connecting the BNSF San Bernardino Subdivision with the ACTA main tracks."

(ACTA/ Public Utilities Commission 2001)

Mid-Corridor Trench

The trench stretches ten miles long, 33 feet deep, 50 feet wide, and is a depressed double-track railroad with twenty-nine road crossings and three railroad crossings along Alameda Street between State Route 91 in Compton to 25th Street in L.A. Thirty bridges carry street traffic over the trench, and reconnect communities.

Figure 7: Mid-Corridor Trench

Source: (Tutor-Saliba 2009)

"Included in this Mid-Corridor will be a 5.6 mile, at-grade UP by-pass track parallel to the depressed railroad along the East Side of the ACTA right-of-way. This at-grade connection has 17 grade crossings, two grade separations, and one separated railroad crossing, between the existing tracks at the State Highway 91 overpass and the track's connection to the UP Santa Ana Branch, north of Firestone Boulevard. The Mid-Corridor extends from Los Angeles through the Cities of Los Angeles, Vernon, Huntington Park, South Gate, Lynwood, Compton, and the unincorporated County of Los Angeles."

(ACTA/ Public Utilities Commission 2001)

South End Project Area: grade separations and bridge replacements

"Henry Ford Avenue Grade Separation, one mile long, adds rail capacity, eliminates conflicts with street traffic. Terminal Island Freeway ramp improvements enhance traffic flow. Multiple higher-capacity rail bridges over water channels speed port access." (ACTA)

- Ten miles of new storage tracks;
- 65 miles of new high speed track;
- 20 miles of new highways;
- 42 highway – rail grade separations;
- Elimination of 200 at-grade highway crossings

(Goodwin 2002)

Current Status

The project and all subprojects have been completed. See Figures 1 and 6.

A description of current and future capacity

The project's current and future capacity refers to the maximal (or minimal) number of trains or units of cargo. "In 1991, the ports were forecasting growth of approximately 24m containers by 2020. The split of containers between trucks and trains is roughly 50/50. Thus, about 12m containers were projected for rail, which is equivalent to approximately 100 trains per day. The ports have since updated their projections to 40m containers in 2025, which would equate to approximately 140 trains.

The Alameda Corridor was originally designed to accommodate 100 trains per day in the year 2020 to meet the then projected growth of the ports train container throughput. The railroads, after the Corridor became operational in April 2002, installed a third track in the trench so there are now three complete mainline tracks for the entire length of the project, [to update freight projections]. The Corridor, with minor enhancements, has the capacity to handle 140 trains through 2025."

Source: ?

B PROJECT BACKGROUND

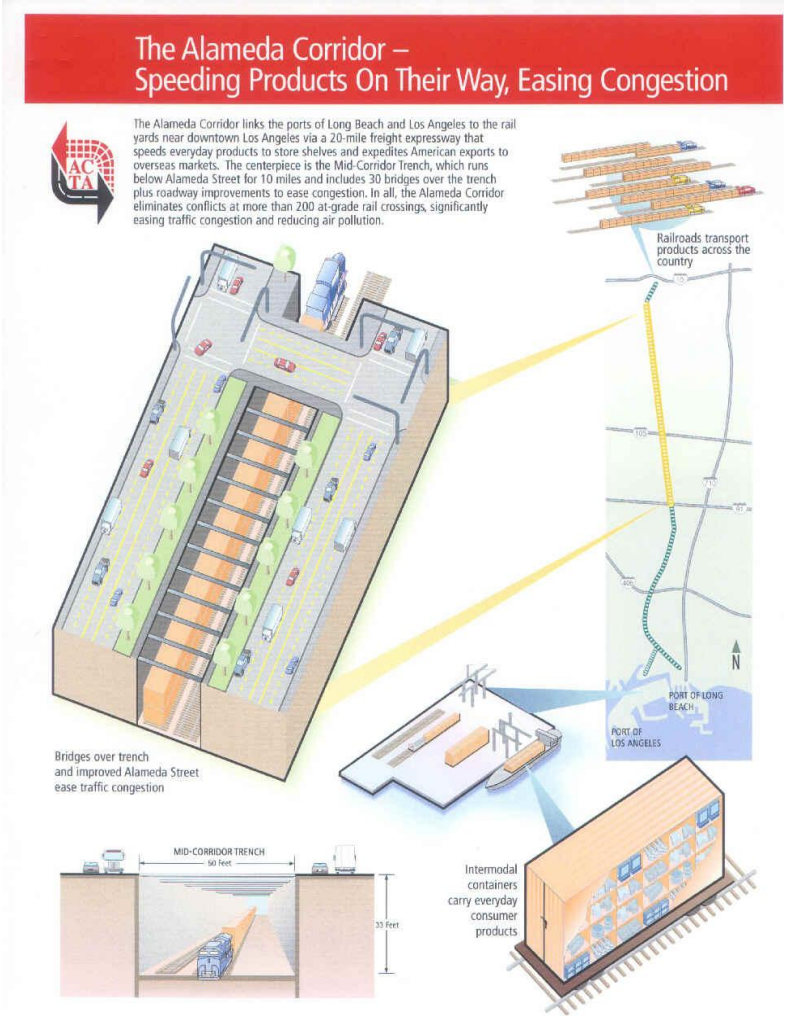
Principal project objectives

A description of the objectives from key stakeholders

International trade accounts for one of every 15 jobs in the Southern California region, according to the Los Angeles County Economic Development Corporation. About one quarter of all products arriving in the US moves through the two ports of Long Beach and Los Angeles, now connected to the Alameda Corridor. Both remain within the top 20 busiest container ports in the world. Together, the two ports are the fifth busiest port complex in the world. Severe congestion on the rail routes and highways on the west coast of America and growing port activities led to investment into this Corridor (Railway Technology 2008) .

Generally, the hope was to reduce traffic congestion, air and noise pollution at the ports and the areas around. According to Agarwal (2004), ACTA's website claimed (presumably before they wrote the piece – 2004) the following specific benefits: more efficient rail movement, reduction of transit time from over two hours to 45 minutes and increased train reliability. See Figure 8 for ACTA's presentation of project objectives.

Figure 8: Alameda Corridor, ACTA's presentation of project objectives



Source: (railindustry.com 2008)

Further benefits were: a cut in train emissions by up to 28% and noise pollution by 90%; the elimination of 200 at-grade rail crossings; improved quality of life for 2 million Southern Californians; fostered local economic development. Agarwal states that since completion there were no internal official performance reviews and none scheduled, except for official figures with average train traffic, cargo volumes, and revenues earned (Agarwal 2004).

However, the project involved a broad range of stakeholders with different interests: "ports that were investing large sums of money, private railroads that were going to share a common Right of Way (ROW) with their competitors, regional agencies like SCAG and LACMTA that were interested in easing traffic congestion, and above all cities through which the Corridor passed. It is interesting how ACTA resolved conflicts of interest between stakeholders and created a publicly acceptable project. Callahan (2002) describes ACTA as "a story of cooperation emerging out of the politics of structural choice." (Agarwal 2004).

Stakeholders

Federal Highway Administration: National entity within the Department of Transportation. Deals largely with highways, distributes fuel and tax revenues to the states. The Corridor was declared a national priority when the National Highway System Designation Act became law and named Alameda Corridor a 'high-priority corridor', making the project eligible for a federal loan.

Federal Railroad Administration: Responsible for freight and passenger rail within the Federal Department of Transportation. From their website (2009) it may be inferred that they have been interested in traffic safety:

> "Another public/private success story is the Alameda Corridor that serves the Southern California ports of Los Angeles and Long Beach. By better separating trains from highway traffic, the Alameda Corridor has eased traffic on one of our country's most crowded highways as well as congestion at the ports and is facilitating faster intermodal service between the West coast and markets in the Midwest and on the East coast." (Federal Railroad Administration 2008).

Alameda Corridor Transportation Authority: Joint powers agency, created by Long Beach City and Los Angeles in 1989 (two signatories) and the ports of Los Angeles and Long Beach, created by state law and given broad powers to raise money. Both the Federal Highway Administration and the Federal Railroad Administration were involved in the project – FHWA had construction oversight responsibility and FRA responsibility for funds (Office of the Inspector General 1999). It is a single purpose agency to plan, finance, design, construct and operate the Alameda Corridor; as of 1997 it is governed by a seven-member board representing the cities and ports of Long Beach and LA, and the Los Angeles County Metropolitan Transportation Authority (MTA) (ACTA, w/o year). Their objectives are stated in Figure 8.

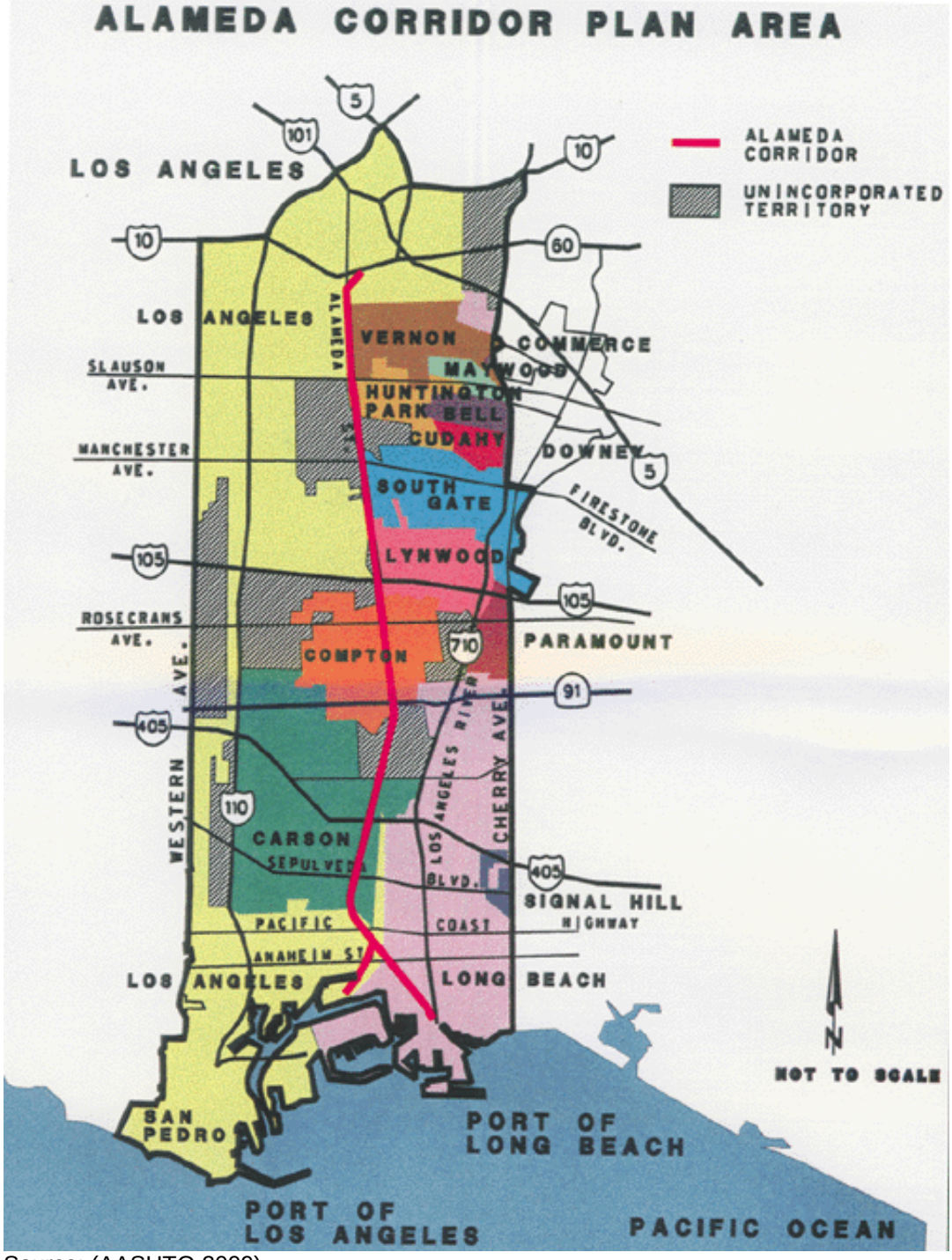
Ports of Los Angeles and Long Beach, Ca.: Due to growth in domestic and international trade, to the fact that the two ports together are the third-busiest container facility in the world (Agarwal 2004), and to expected growth, their objective was to build a structure which could help face these challenges. The ports started studying comprehensive rail and highway improvements in the 1970s, and even withdrew funding for ACTA when the Corridor Cities attempted to block the Corridor.

The Corridor Cities: the Corridor passes through eight cities (see Figure 9), known as the 'Corridor Cities' – Los Angeles, Long Beach, Vernon, Huntington Park, Lynwood, South Gate, Compton and Carson. Generally, the cities appear less keen on the Alameda Corridor

than other parties. For example, four of them, Vernon, Compton, Lynwood and South Gate, filed suit against the Port of Long Beach in 1993 for not 'expanding' until the corridor project would be further along. The Port responded by suspending its funding for ACTA on 11 August 1994, and the project nearly died. However, in 1996 a judge ruled in favor of the Port and the city of LA, and against the Corridor Cities.

Cities of Los Angeles and Long Beach, Ca.: Of the Corridor Cities, the cities of LA and Long Beach were supportive of the project, and interested in diminishing traffic and freight congestion, both for environmental and economic reasons.

Figure 9: The Corridor Cities



Source: (AASHTO 2009)

Two months later, in January 1997, the ACTA Governing Board composition changed from 16 members (with all cities included) down to seven: two representatives from each of the ports, a Long Beach City Council representative, an LA City Council representative, and a representative from LACMTA – the cities are no longer represented (Glover 1994; Lamb 1994). As Agarwal explains: "Corridor cities were allowed detailed review and approval of changes to each city's facilities. Cities, in turn, assured timely turnaround on city permits. The cities also received $12m in funds for mitigation of construction activities." (Agarwal 2004).

As Callahan argues, the Corridor Cities were removed from ACTA's governing board after a court battle by the cities of LA and Long Beach, leaving the board easier to govern. "However, while insulating the joint powers authority from the instability of majority rule, the ACTA still provided for local adaptation. Specifically, the authority negotiated two types of detailed, legal agreements with each of the mid-corridor cities: (1) a memorandum of understanding for specific transportation-related improvements in each jurisdiction at a specific funding level, and (2) a memorandum of understanding that assured timely construction permitting by each municipality." (Callahan 2007).

Private railroads: Three major private railroads, the Santa Fe, Union Pacific and Southern Pacific, used to carry freight from the ports on four different ways and crossed streets at 200 different points. On Alameda Corridor they all share the Rights of Way. Originally they were opposed to the project because it meant giving up private Rights of Way, but according to Agarwal they "warmed to the idea" for the sake of speeding up transportation and reducing delays. Agarwal cites two additional reasons for their co-operation: the immediate cash they would get from selling their Rights of Way to the ports (1994), and that no competitive disadvantage was likely to occur on the Corridor, since the container fees were the same for all (Agarwal 2004).

Southern California Association of Governments: SCAG is the MPO of six of the seven counties in Southern California. It includes Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial, a region which encompasses 18 million people on 38,000 square miles (Southern California Association of Governments 2009). As early as 1981 SCAG formed the Ports Advisory Committee (PAC), in response to growing concerns about the ability of the surface transportation network to accommodate the increasing amount of cargo going through the ports. In 1984 they adopted the plan recommended by the Ports Advisory Committee (PAC) and in 1985 they formed a taskforce – the Alameda Corridor Task Force (ACTF) – to research a consolidated rail cargo expressway, the first step to the Corridor of today.

Ports Advisory Committee: the first advisory committee created by SCAG in 1981. Members include representatives of the ports, railroads and trucking industry, the US Navy, Army Corps of Engineers, local elected officials and the Los Angeles County Transportation Commission (which has now been replaced by LACMTA).

Los Angeles County Metropolitan Transportation Authority (LACMTA, or short: MTA): the state chartered regional transportation planning and public transportation operating public agency. LACMTA operates the third largest public transportation system in the US. LACMTA was part of SCAG, and initially responsible for programming state and federal funds in LA County. Having been lobbied hard by ACTA, on the basis that goods movement would be important for reducing traffic congestion and pollution and for improving the economy, they provided $347m in grants for the project.

Residents of area: No media source talks much about residents per se, other than as they are represented by the agencies above. It seems to be assumed that on the one hand

residents were not keen on the Corridor project as represented by the governments of the Corridor Cities. On the other hand, the Corridor Cities (and residents) are said to have been consoled by massive job programs and local business advantages during both the planning and construction processes (see 'Key mechanisms').

Project objectives

(As organized and summarized by the National Cooperative Highway Research Program):

"Reduce highway traffic delays. It is estimated that upon opening of the Alameda Corridor, traffic delays affecting cars and trucks can be reduced by 90% (over 15,000 hours of vehicle delay will be eliminated every day) by consolidating rail traffic and eliminating highway grade crossings.

Improve safety. Safety will be improved by eliminating more than 200 street-level railroad crossings. Delays to emergency vehicles will be reduced significantly. Motor carrier and railroad accidents and toxic spills will be more effectively managed.

Improve access capacity and maintain competitiveness of ports. For the San Pedro Bay Ports, utilization of existing rail and highway access facilities would result in increased congestion and the inability to efficiently handle the projected increases in cargo volumes. Train and truck volumes are already at the limit of the railroad and highway access infrastructure capacity to the ports. The Alameda Corridor is intended to meet port rail access requirements to the year 2020 and thereby make it possible for the San Pedro Bay Ports to remain the major cargo hub and gateway for the US and its international trade partners.

Improve rail operations. Average train speed along the corridor will increase to approximately 30–40mph from 5–20mph. Upon opening the corridor, locomotive hours of operation will be reduced by 30%. Assisted by state-of-the-art technology in centralized traffic control systems, the double-track corridor will provide a 75% reduction in the number of times trains have to stop and wait for other trains to pass.

[Goodwin adds:

- Establish one main route to replace four lines;
- Build high-speed multi-track main line with centralized train control (60 track miles);
- Separate passenger and freight rail at North End;
- Remove local traffic from main line route;
- Depress railway trench from State Route 91 north to Los Angeles (ten miles);
- Build at-grade railway and expanded storage areas from State Route 91 south to ports.

(Goodwin 2002)]

Reduce environmental impact. Today, when an 8,000ft long unit train stops, the congestion and related pollution from train and vehicle backup can have a significant impact on the area's air quality. This project will provide a significant benefit to the area by reducing railroad emissions by 28%, as well as reducing auto and truck idling emissions associated with grade crossing delays by up to 54%. Another benefit realized by the consolidation of rail traffic to a primarily industrial corridor is the reduction of noise and vibration exposure to residential neighborhoods. The construction of tracks in the below-grade trench, track construction on new base material, and the use of continuous welded track will help promote

quieter operation. Also, sound walls will be provided, where appropriate, to mitigate vehicle noise along Alameda Street, in residential neighborhoods, and other sensitive areas.

Promote economic development. The project was estimated to create 10,000 construction jobs. Improved traffic circulation and the elimination of grade crossings C-3 also create enhanced development opportunities along the corridor. In addition, an increase in the efficiency of international cargo flows benefits consumers and shippers throughout the nation.

Reduce construction impacts. Right-of-way needed for a consolidated corridor can be reduced compared with several routes as is the existing situation, resulting in the fewest number of displaced persons and businesses as a result of the construction." (NCHRP 2003)

Key enabling mechanisms and decision to proceed

Key mechanisms which enabled the project to proceed

The ability of ACTA to form consensus was one of the keys for the project to proceed:

> "Rather than relying too heavily on state and federal money, every player with an economic interest in the corridor was willing to pay something to gain advantages – the ports to retain their No.1-in-the-nation status, the city to protect its economy, and the railroads to gain badly needed capacity to move freight. Local communities agreed to the chaos of construction knowing that the end result would eliminate grade crossings and gridlock." (Phillips 2002)

Acquisition of 'Right-of-Way' from the railroads (1994). Since $394m is quite a cash commitment for a project with unknown costs and financial viability, the "ports also signed a Memorandum of Understanding (MoU) with the railroads which provided the basic structure for the 1998 operating agreement. One provision of the MoU was that the railroads would pay container fees and other user fees for use of the corridor." (Cunningham 1998; Agarwal 2004)

The National Highway System Designation Act (1995) designated Alameda Corridor as a 'High Priority Corridor':

> "Thereafter, ACTA was able to obtain a $400m federal loan from the Surface Transportation and Uniform Relocation Assistance Act of 1987 and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ACTA issued $1bn in senior lien bonds, about half of which was tax exempt, and $163m in subordinate lien bonds, $21m of which was tax exempt. The blended cost of capital for the combined financing was near 6.5%." (Agarwal 2004)
>
> "The ports also negotiated construction, maintenance, and operations agreements with the railroads. In 1998, the ACTA Governing Board approved the use and operations agreement with railroads. Railroads agreed to pay a container-based user fee for access to the Alameda Corridor. The projected revenue stream allowed ACTA to finance the $1.1bn revenue bonds issue and also helped in securing the $400m federal loan. The user fee concept negotiated with the railroads as a part of the ROW purchase made it possible to create a debt repayment structure that would grow in the future as cargo and fee increases translated into higher revenues for ACTA. The rail corridor user fee and container charge system was essential to assembling and leveraging funding resources for the project without massive government grants generally associated with

public infrastructure projects (U.S. Government, 2002; testimony of Jim Preusch)." (Agarwal 2004)

Creating consensus among stakeholders. After (unsuccessful) lawsuits from cities along the mid-corridor, ACTA remained concerned that cities could extend or hinder construction through construction permits and other approval mechanisms. ACTA therefore negotiated MOUs separately with each mid-corridor city, granting each city monies for mitigation issues, 25% of their engineering permit upfront, and implemented several local economic development measures as described in 'Principal project objectives'. (Agarwal 2004)

Public Works Program. In 1997 ACTA established goals for economic development and for a Job Training Program for community residents, targeting 1,000 local residents, using aggressive business outreach (to 'disadvantaged' businesses) to ensure open bidding, and a Conservation Corps youth education and corridor beautification program.

"Through its contractors and various community partnerships, ACTA administered several programs designed to provide local residents and businesses with direct benefits that will long outlive actual construction. Construction industry-specific job training for 1,281 local residents, including 637 placed in union apprenticeships. 30% of all labor hours for Mid-Corridor Trench were performed by local residents living in adjacent zip codes. Through aggressive outreach and technical assistance, ACTA helped disadvantaged (primarily small and woman- or minority-owned) businesses compete for and earn contracts worth more than $285m, meeting the program goal of 22% of all contracts. On-the-job training and education credits for more than 420 young adults (ages 18-23), who performed community beautification work through the Conservation Corps program. One-on-one technical consulting for 25 local import-export companies and entry-level, international trade-specific job training for 20 local residents through a joint program with the World Trade Center Association Los Angeles-Long Beach." (ACTA)

Project delivery/contract method. Design-Build for mid-corridor: the mid-trench is one of the largest design-build projects in the United States. The contract method reduced planning and construction time for the project. The contract method for North and South Ends was Design-Bid-Build.

<u>Process/events leading up to decision and date of decision</u>

October 1981: SCAG established the Ports Advisory Committee.

1985: SCAG created the Alameda Corridor Task Force, which included members of PAC in addition to the California Public Utilities Commission and the eight cities along the corridor.

1989: the two San Pedro Ports provided the seed funding for design and environmental studies and also took the lead in creating an agency to oversee design and construction.

1989: the cities of Los Angeles and Long Beach formed a Joint Powers Authority (JPA) the 'Consolidated Transportation Corridor Joint Powers Authority', which later became ACTA.

June 1993: four Corridor Cities sued the Port of Long Beach against expanding.

December 1994: railways decided to sell their Rights of Way to the ports.

October 1995: the Alameda Corridor Engineering Team was formed to serve as the program manager.

October 1995: Alameda Corridor becomes National High Priority Corridor.

September 1996: Congress approves necessary bill to back up Alameda Corridor's DOT loan.

February 1996: Governing Board certifies EIS.

November 1996: Courts rule against Corridor Cities and thus for the Port.

January 1997: ACTA Governing Board composition reduced to seven members.

April 1997: construction commences.

Feasibility studies

Consolidated Rail Corridor Strategic Plan 1988

> "The origins of the Alameda Corridor were the result of several studies conducted by SCAG in the early 1980s. The SCAG rail study recommended consolidating the four existing rail routes to the ports into one highly improved grade-separated route. The SCAG highway study recommended substantial improvements to Alameda Street including widening it to six lanes at least from the port complex to SR91.
>
> In August 1989 the Alameda Corridor Transportation Authority […] was formed. In early 1990, a feasibility study concluded that the consolidation of the four existing rail routes to the ports into one grade-separated route was the most desirable alternative. An EIR and a project report were subsequently prepared.
>
> These same studies, however, concluded that a widened Alameda Street north of SR91 would not be an attractive alternate for trucks using the I-710 and that insufficient right-of-way existed to widen Alameda Street to six lanes north of SR91. The traffic analysis in the EIR was thoroughly evaluated by SCAG and Caltrans who came to the same conclusion. Thus, the six-lane improved Alameda Street north of SR91 was not considered to be a viable alternate to improvements to the adjacent freeways. In addition, the cities north of SR91, through which Alameda Street passes, were strongly opposed to any widening because of the right-of-way required to provide the additional two lanes of traffic.
>
> In March 1993, the ACTA Governing Board adopted the Alameda Corridor plan and certified the EIR, as did SCAG, LACTC, Caltrans and all the cities along the 20-mile corridor. All agencies approved the reduced scope of the Alameda Corridor project. After the project was defined and the EIR certified, the Corridor's official response to accommodating the increase in truck traffic was that "the Alameda Corridor will decrease the growth rate of trucks on the I-710" but not completely offset them."

(LACMTA 2003)

Main organisations involved

An overview of the most influential organisations involved in the project

"The project originated out of the planning process of the Southern California Association of Governments. In 1981, SCAG created a Ports Advisory Committee (including local officials, the railroads, the ports, CalTrans, the US Navy, the U.S. Army Corps of Engineers [COE], the Los Angeles County Transportation Commission, and others) to consider railroad improvements. This committee proposed the consolidation concept that would develop one rail corridor to the ports from the four rail routes then operated by the Southern Pacific (SP), Santa Fe (SF), and UP. Other interested organizations, including trucking companies, the California Public Utilities Commission, and the California Transportation State Commission, participated in the discussions that led to adoption of the consolidated rail corridor from the LA rail yards to the ports.

The planning process continued to be led by SCAG until 1989 when the Alameda Corridor Transportation Authority was created. After the creation of ACTA, the cities across the corridor became more intensely involved in the project. The corridor runs through or adjacent to the cities of Vernon, Huntington Park, South Gate, Lynwood, Compton, Carson, Los Angeles, Long Beach, and unincorporated parts of Los Angeles County. Several agencies (including sanitation districts and the Department of Public Works of Los Angeles County) of the City and County of Los Angeles also became actively involved during project implementation. After the railroad mergers of the 1990s, the two main railroads involved in the project were UP, which was formed through the merger of UP and SP, and BNSF formed through the merger of the Burlington Northern and the Atchison, Topeka and Santa Fe railroads." (NCHRP 2003).

"ACET [Alameda Corridor Engineering Team], working with ACTA, was responsible for overall management of the project. ACET was the prime engineer on many of the civil and structural projects that make up the Corridor, as well as providing support to ACTA. ACET worked with the hundreds of engineers that have contributed to the Project, both within the ACET team as well as outside consultants." (ACET 2008). The joint venture team of ACET includes the firms of DMJM Harris, Moffatt & Nichol, Jenkins/Gales & Martinez, and TELACU. ACET continues in a supporting role to ACTA on project closeout and development of future projects to benefit the region." (ACET 2008).

"DMJM Harris, in joint venture, provided program management, conceptual development, engineering, and construction management services to the Alameda Corridor Transportation Authority, the Port of Los Angeles, and the Port of Long Beach. The corridor is a consolidated railroad link between downtown Los Angeles and the ports of Los Angeles and Long Beach.

We were responsible for the myriad planning, engineering, and studies that were required to develop this project. During the preconstruction phase, we also developed the conceptual design for the entire project, which was used as the basis for obtaining funding and preparing the bid packages for the design/build and design/bid/build contracts. Additional program management services included project oversight of key elements; design criteria and standards; safety certification; value engineering; project control; contract administration; estimating; right-of-way acquisition and relocation activities; utility relocations; project management plans; configuration management and document control; claims administration; and preparation of new starts report." (DMJM Harris 2008).

Applied EarthWorks coordinated all cultural resources studies with ACTA and other agencies throughout construction period.

Planning regime

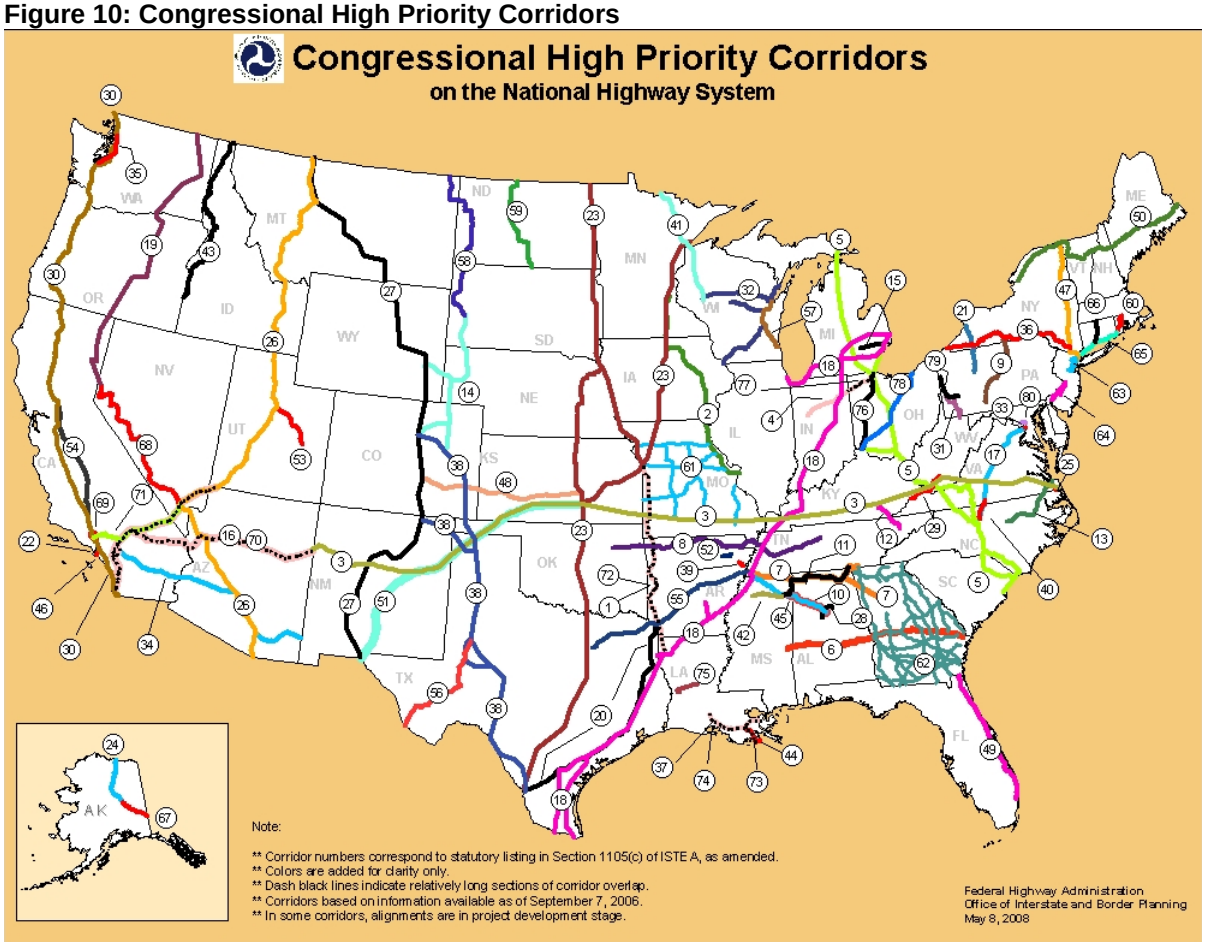
Outline of planning legislation/policy

Federal level

The capacities for interregional multimodal planning in freight transportation are still not unlimited, but have improved with ISTEA, TEA-21, and SAFETEA-LU. All three legislations strengthened the role of MPOs (at least formally), established planning factors to guide metropolitan planning, increased funding flexibility and eligibility, and promoted the inclusion of freight interests in the planning process (Neumann 1999).

ISTEA identified Alameda Corridor as a National High Priority Corridor designated by Congress (see Figure 10), thus making it eligible for federal funding.

Figure 10: Congressional High Priority Corridors



Source: (FHWA 2008)

The Congress initiative was carried by the Californian representatives Stephen Horn and Juanita Millender-McDonald, both of whom were on the Committee on Transportation and Infrastructure.

- Funding through ISTEA

"Section 1105(f) of ISTEA authorized funding for fiscal years 1992 through 1997 for some specific high priority corridor segments, and Section 1105(h) authorized some additional funding for high priority corridor feasibility and design studies. NHS, STP and Bridge Program funds authorized by ISTEA may be used to fund improvements to high priority corridors. In certain instances, Interstate Maintenance funds authorized by ISTEA may be used to fund improvements to some high priority corridor routes." (Federal Highway Administration 2008).

"The highest profile freight project to be funded during ISTEA was the Alameda Corridor, serving the Ports of Los Angeles and Long Beach in southern California. The federal support provided, however, was not under any ISTEA program. Instead, an innovative Federal direct loan was structured and special legislation was enacted giving USDOT the authority to enter into the loan. Nevertheless, the policy framework of ISTEA gave the project the visibility it needed in order to obtain Federal support. Moreover, the loan served as the model for one of the credit programs included in TEA-21." (Neumann 1999).

- Funding through TEA-21:

"Section 1602 of TEA-21 authorized funding for fiscal years 1998 through 2003 for some specific high priority corridor segments. Also, formula funds for the NHS, STP, Bridge Program, and in certain instances, Interstate Maintenance authorized by TEA-21 were used to fund improvements to high priority corridors. In addition, beginning in FY 1999, the planning and development of high priority corridors was eligible for funding under the discretionary National Corridor Planning and Development Program." (Federal Highway Administration 2008).

- Funding through SAFETEA-LU:

The "1701 (High Priority Projects program) will support improvements to these corridors." (Federal Highway Administration 2008).

Alameda Corridor was also subject to the federal environmental regulations under NEPA, the National Environmental Policy Act, requiring the preparation of an Environmental Impact Statement, as described in more detail in 'Environmental statements and outcomes related to the project'.

State level

"ACTA is the lead agency for this project under the California Environmental Quality Act of 1970 (CEQA), as amended, Public Resources (PR) Code Sections 21000, et seq. On 27 June 1997, the State of California Clearinghouse advised ACTA, that it had complied with State Clearinghouse review requirements for "draft environmental documents, pursuant to the California Environmental Quality Act (CEQA)." The United States Department of Transportation issued a Record of Decision approving Alameda Corridor Project. ACTA had previously prepared an Environmental Impact Report (EIR) in January 1993, and an Environmental Impact Statement (EIS) in February 1996." (California Public Utilities Commission 2001).

Metropolitan and local level

The federal requirement for MPO approval of major projects put Alameda Corridor under scrutiny by the Southern California Association of Governments, which includes a broad range of local and regional representatives. In their own words: “During the past four decades, SCAG has become the largest of nearly 700 councils of government in the United States, functioning as the Metropolitan Planning Organization (MPO) for Southern California. SCAG is mandated by the federal and state governments to develop regional plans for transportation, growth management, housing development, air quality and other issues of regional significance” (Southern California Association of Governments 2009).

Environmental statements and outcomes related to the project

Under the current law megaprojects by federal and state law require the conduct of Environmental Impact Analyses. In the case of Alameda Corridor this is NEPA and CEQA. While the requirements under NEPA are more procedural requirements and agencies do not necessarily need to act upon the findings, the state requirements under CEQA are more substantive.

“Environmental review process

- NEPA, including agency consultation

“ACTA began conceptual engineering in 1990, to more fully define the project. Simultaneously, FHWA intended to be the lead federal agency and a joint EIR/EIS was envisioned. FHWA started a NEPA scoping process in 1991. Subsequently, FHWA funding was limited to specific grade crossing separations allowing individual categorical exclusions for these actions. ACTA withdrew from the NEPA process and advanced the project under CEQA alone. ACTA developed a range of conceptual engineering alternatives and reviewed them in a Draft EIR, which was issued in August 1992, and a Final EIR, which was issued in January 1993. ACTA selected a locally preferred alternative.

After completion of the EIR, ACTA, Caltrans, and FHWA decided that additional federal funding should be applied for and that FHWA and FRA should prepare an EIS. FHWA and FRA stated in the FEIS that they had decided to make maximum use of the analyses undertaken for the EIR. Therefore, the EIS expanded on the EIR where it was necessary to address federal requirements that the EIR did not have to address. Additional subjects requiring analysis included: additional documentation to address Clean Air Act requirements, including a conformity determination, the Section 106 process for cultural resources, COE requirements for hydrology and water quality, additional documentation for hazardous materials requested by FHWA and EPA, and coordination required for threatened and endangered species.

[…]

The FHWA and FRA reinitiated the NEPA process with a Notice of Intent in December 1993. They consulted with three federal agencies during the preparation of the EIS: EPA, FWS [Fish and Wildlife Service], and COE. EPA submitted a comment letter during the scoping process in which they raised concerns about the selection of alternatives and air quality impacts. In May 1994, subsequent to the scoping process, FHWA and EPA held a meeting at EPA's Region 9 offices in San Francisco to discuss the project and its environmental documentation. The meeting included staff from FHWA Region 9, FHWA California Division, Port of Los Angeles, and project consultants. The

key comments in EPA's follow-up letter included air quality, train derailments and spills, and water quality. Their comments were largely based on their review of the Final EIR, which they had not previously reviewed. Regarding air quality, EPA commented on potential violations of the carbon monoxide and particulate matter standards and the application of the Conformity Rule to the project. Their concerns over emergency response focused on the need for a plan that addresses worst case scenarios. They commented that, among other requirements, such a plan should be designed to address sensitive receptors and natural resources in a timely way. The plan should be sent for review and comment to EPA, the Coast Guard, FWS, California Office of Emergency Services, California EPA, Los Angeles County, municipal fire departments, the Regional Water Quality Control Board, California Department of Fish and Game, and the Highway Patrol. Their comments on water quality centered on the need for stormwater discharge permits for the construction and operational phases and as well as the need for nonpoint source controls. In addition, EPA noted that the Executive Order on Environmental Justice had just been signed and that the DEIS should reflect its requirements. FHWA addressed these comments in the Draft EIS. FHWA also consulted with the COE on the proposed waterway crossings, which included two meetings. The COE indicted that the crossings may meet the general terms and conditions for a nationwide permit. Consultation with the FWS regarding the California least tern resulted in a response that potential effects are remote and therefore formal consultation is unnecessary.

They issued the Draft EIS in January 1995. The comment letters received during the scoping process came from: two federal agencies (EPA and the Surface Transportation Board), three regional agencies, five County of Los Angeles agencies, 17 local jurisdictions, eight private organizations, businesses and individuals. Approximately 90 people attended the public hearing and 30 people spoke.

Among the written comments, EPA's main concerns focused on air quality. EPA commented that although DEIS and conformity analysis suggest that the project would help reduce air pollution levels, there are opportunities to implement additional mitigation measures. As an example they recommended a program to reduce vehicle miles traveled by construction workers. They also had numerous comments on the technical aspects of the air quality modeling. The Metropolitan Water District of Southern California strongly objected to the alternative preferred by the local entities because of the potentially significant costs and impacts upon existing water conveyance facilities. The San Gabriel Valley Council of Governments and the Metropolitan Transportation Authority were concerned about the secondary or cumulative impacts from the increase in port-related rail traffic eastward of the Corridor (grade crossing delay, congestion, and air quality). Several of their member governments also provided similar comments. The Southern California Association of Governments commented that the project is consistent with the Regional Comprehensive Plan and Guide and is vital to the region's future growth. The Los Angeles Unified School District raised concerns about vibration during construction and operation of the Corridor, traffic circulation, air quality, and noise. The City of Compton submitted over 140 pages of comments on a broad range of subjects and proposed a covered depressed trainway and roadway (a tunnel). The City of Lynnwood commented on local transportation, utilities, mitigation of air pollution, and economic benefits (local hiring policy). The City of Vernon supports the locally preferred alternative and among their other comments, noted that the "EIS should discuss the importance of the Alameda Corridor Project with regard to its mitigation of individual and cumulative" impacts which are anticipated for the port projects related to the Corridor. They also commented that the EIS should recognize that the Alameda Corridor project is the mitigation for the impacts resulting from the other port projects. The comments of the Cities of Long Beach and Los Angeles were generally supportive. A family commented on existing grade crossing delays. A citizen of Compton commented on property

devaluation, emergency response access, increased noise, air pollution, and vibration. Two oil companies commented on potential impacts to their pipelines and one commented on access for emergency response vehicles. A land company, which owns over 450 acres and nearly 3 million square feet of office and light industrial space along the Corridor, commented on loss of access and impacts from noise and vibration.

Many of the issues raised at the public hearing pertained to the City of Compton and included vehicle access, impacts on schools, law enforcement and public safety issues, concerns about graffiti, a perception that there would be a large increase in trench traffic, job creation and the need for employment outreach efforts, and project cost. Other comments addressed potential grade separations in the City of Lynnwood, the I-105/Imperial Highway Interchange, parking, landscaping, and business access along the corridor.

The Final EIS was issued in February 1996. In May 1997, the Secretary of Transportation delegated to the Administrator of FHWA, the authority to manage DOT's $400m loan with ACTA. Other related activities outside the Alameda Corridor include the Alameda Corridor East and a Southern California Association of Governments study to determine the best way of moving rail traffic eastward through Southern California. The study addresses the potential for additional consolidated along one or more lines. The Alameda Corridor East project involves a series of transportation safety improvements at 55 grade crossings along 35 miles of ROW throughout the San Gabriel Valley.

The FHWA and FRA reinitiated the NEPA process with a Notice of Intent in December 1993. They issued the Draft EIS in January 1995 and the Final EIS in February 1996. In May 1997, the Secretary of Transportation delegated to the Administrator of FHWA, the authority to manage DOT's $400m loan with ACTA."

- Integration of NEPA and state environmental review processes

The CEQA process began about nine months before the NEPA process because federal funding was not identified, and thus NEPA was not triggered, until later in the planning process. The locally preferred alternative under CEQA was also the federally preferred alternative under NEPA. The FHWA wanted to streamline the NEPA process. One way to have accomplished this would have been to adopt the CEQA document for the purposes of NEPA. However, as mentioned above, FHWA needed to conduct additional analyses to meet federal requirements that were not required of the EIR.

- Effect of process on project design and alternatives:

The public involvement process and consultation with local governments led to certain mitigation measures on the preferred alternative.

- Multi-agency review

There was an extensive multi-agency review process as described above.

- Public involvement

Prior to the NEPA scoping process, the CEQA process involved an extensive public comment effort. ACTA distributed the August 1992 Draft EIR to 120 government agencies and interested parties. ACTA received 100 requests for additional copies during the public comment period. ACTA held six public hearings, which were attended

by 163 people, of whom 47 provided verbal comments. ACTA announced the hearings through a number of means, including newspapers, direct mailing, radio and television public service announcements, flyers and door hangers. In addition to the formal hearings, ACTA held four community meetings. The 35 comment letters received during the scoping process came from two state agencies, six regional agencies, three County of Los Angeles departments, eight local jurisdictions, eight private companies, and four individuals.

For the NEPA scoping process, the FHWA and FRA held a formal scoping meeting which they advertised in seven local newspapers. They also notified public agencies and known interested parties through a direct mailing. In addition, they sent a direct mailing to five federal agencies and a general mailing to 465 addresses. The FHWA and FRA conducted afternoon and evening sessions for the scoping meeting. They gave attendees an information packet about the project and conducted a presentation to explain the project and the purpose of the meeting. Fifty-one people attended the two sessions combined. Six speakers provided comments at the sessions and twelve written comments were received. During the scoping period, the FHWA and FRA received 14 comment letters, including one from EPA, two local agencies, the Cities of Compton and Vernon, seven private companies, and two citizens. The agency letters are separate from the agency coordination and consultation letters discussed above. The commenters raised issues concerning: alternatives, accessibility, safety, air quality, noise and vibration, traffic and circulation, landscaping, and site-specific issues. During the comment period for the DEIS, FHWA and FRA held a public hearing with an afternoon session and an evening session. Approximately 90 people attended the two sessions combined. Thirty people spoke at the two sessions combined."

Source: (FHWA w/o year)

Environmental Issues of Concern

- Air Quality

For the purposes of CEQA, the construction of the corridor would produce emissions of criteria pollutants and fugitive dust in quantities above significance thresholds established by the South Coast Air Quality District. These construction emissions were not considered substantial under NEPA. Under the No Build alternative, locomotive, auto, and truck regional criteria emissions would increase substantially. The proposed action was projected to have a substantial reduction in all criteria pollutants. Car and truck emissions decline slightly.

- Cultural Resources

The Corridor would avoid the Watson Station, which had been determined eligible for the National Register. Findings of No Effect were reached for several structures and a Finding of No Adverse Effect was reached for the Redondo Junction Historic District. The EIS indicated that the area between 109th and 111th Streets was sensitive for archaeological resources. One site, located in the vicinity of the midpoint of the Corridor, was reported to have burials when it was discovered in 1969. However, it is outside the area of potential effect. The other site is located on the Dominquez Hills overlooking Compton Creek and the Los Angeles River. The site was discovered in 1969 and was described as a seasonal village or camp site which had already been effectively destroyed by roads and grading activity. In addition, a Phase I Archaeological Study was conducted in 1992. The results of the archaeological field reconnaissance revealed no surface evidence of prehistoric or historic archaeological resources within the project

Area of Potential Effects. Therefore, the EIS concluded that the APE is considered to contain no known important prehistoric or historic archaeological resources with the possible exception of the area in the vicinity of the site with the potential burials. The EIS indicated that a qualified archaeologist would be contacted promptly if the construction of the project encountered unanticipated cultural resource remains. The fact that burials have been found in the past indicates the possible presence of an important resource. Therefore, they planned to conduct archaeological monitoring in that area. During the construction process 30 Native American skeletons were discovered. This led to the preparation of a recovery plan.

- Land use

Under the No Build alternative, increased train traffic could potentially have substantial incompatibility with some adjacent land uses. The construction of the Alameda Corridor does not represent a major change to existing uses and will not impede the achievement of local planning goals.

- Local transportation

The construction of the Alameda Corridor could result in potentially substantial traffic disruption at various locations throughout the construction period. During the operations phase of the No Build alternative, the increased train volumes and deteriorated roadway conditions would result in increasing delays, slower speeds, and less capacity to handle future demands. The operation of the Alameda Corridor is expected to improve overall traffic handling capacity. Grade separated crossings over the depressed railroad, left turn pockets, and improved signalization would improve traffic conditions in the project area. In terms of traffic capacity at intersections, the No Build alternative is estimated to have substantial impacts to three intersections in 2010 and 65 intersections in 2020. The operation of the Alameda Corridor is estimated to result in substantial impacts at two intersections in 2020. The addition of turning lanes would mitigate these impacts. Under the No Build alternative, auto/train accidents would increase as the growth in freight trains increases. The Alameda Corridor would reduce those accidents because conflicts would be eliminated along the Corridor and train volumes will be reduced on the other rail lines. The state is required to implement traffic maintenance plans during construction to mitigate temporary impacts.

Although the project may increase the potential for accidents involving train derailments and spills by increasing the number of trains, the provision of improved tracks and equipment and cross-street grade separations would decrease the accident potential. The likelihood of injuries or property damage would be substantially reduced due to containment provided by the trench. The potential for accidents on the other lines would decrease as train activity decreased.

- Noise/vibration

The construction of the corridor could produce intrusive noise at some locations. Train operations under the No Build alternative would have substantial impacts for 69 residences. For the portion of the Proposed Action within the Alameda Corridor, 92 residences and two community facilities would experience a substantial impact. With the construction of noise barriers, the residual impacts would potentially affect eight residences and two community facilities. The use of sound insulation for buildings will be explored and implemented where practicable. Along the SP, UP, and ATSF branches the proposed project would reduce residential noise exposure from 29,800 to zero. Potentially substantial vibration effects could occur during operation at certain points.

Various design and operational approaches will be used to reduce vibration potential, including relocation of trackwork away from sensitive areas, installation of ballast mats, and use of movable points frogs where needed.

- Socioeconomics

The construction of the Alameda Corridor will require up to 40 full acquisitions and up to 16 partial acquisitions of commercial properties. Under the Uniform Relocation and Assistance Act, comparable housing has been identified and assistance with relocation for both residents and business people has been provided. In terms of effects on schools, the Alameda Corridor would greatly reduce train conflicts for students walking across Alameda Street. However, the project would result in increased noise effects at two schools located along the corridor. The use of sound insulation for buildings will be explored and implemented where practicable. The residual impact is expected to be potentially substantial. In addition, the project would result in noise impacts at one church. The use of sound insulation for the building will be explored and implemented where practicable. The residual impact is not substantial.

Construction of the project will have substantial impacts on businesses along the corridor. They will experience reduced vehicular and pedestrian access, traffic detours, noise and other inconveniences. Mitigation measures are expected to reduce the impacts to potentially substantial and include signs to direct customers along alternate routes to businesses; traffic management to maintain access; and a business outreach program. Any relocated businesses would be compensated under the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

The EIS addressed environmental justice. Land uses surrounding the corridor are primarily industrial with only a small proportion consisting of residences. Those residences were occupied by minorities. The proposed action would result in only four residences having noise impacts after the implementation of noise attenuation walls. The proposed action would result in a 90% reduction in population exposure to railroad noise on all lines serving the ports. A number of mitigation measures involving landscaping and urban design will be implemented in response to perceived visual effects in one of the Central Business Districts (Compton) and in recognition of the need to apply urban design measures to the corridor as a whole. The environmental justice analysis also considered the beneficial effects of the proposed action, especially the improved traffic circulation and reduced grade crossing accidents. Based on the small number of minority residences that would be impacted and the substantial number of minority residences that would benefit from the noise reductions, the EIS determined that there were no disproportionate adverse impacts to minority or low-income populations.

- Water Quality

The EIS indicated that construction of the Corridor may require dewatering in some portions. In addition, the addition of footings and columns for the crossings of the Los Angeles River, Compton Creek, and Dominquez Channel could affect the flood control capacity of these waters. They planned to design the columns and footings for appropriate hydrology considerations in coordination with the COE and the Los Angeles County Flood Control District."

Source: (FHWA w/o year)

Environmental Performance

In 2005, ACTA conducted an analysis of the air quality benefits of the Alameda Corridor since its opening in 2002. The comprehensive study also projected the Alameda Corridor's air quality benefits through 2012, considering such factors as growth of port-related cargo volume and the capacity of the Alameda Corridor.

The Air Quality Benefits Analysis identified the following major positive impacts from the operation of the Alameda Corridor.

From 2002 to 2004, the Alameda Corridor has eliminated a total of 3,863 tons of pollutants from the study area.

Of this amount, 1,169 tons of nitrous oxide (NOx) and 49 tons of particulate matter (PM) have been eliminated. These two pollutants are considered to have some of the more severe impacts on air quality and pose the highest risks to public health.

Because trains generate significantly less pollution than the equivalent number of trucks they replace, the growth in use of the Alameda Corridor will continue to have positive impacts on air quality. A train emits significantly less pollutants than the 250-280 trucks it replaces. In addition to the air quality and associated health benefits of the Alameda Corridor emissions reductions, safety and travel time benefits were also identified in the analysis**,** including:

- Reduced chance of vehicular and pedestrian accidents at rail crossings;
- Improved emergency response times for fire and life safety authorities;
- Better ability to control hazardous spills in the trench section of the Alameda Corridor;
- Improvements to transit times and ridership for buses and passenger trains."

Overview of public consultation

Some public consultation took place by commenting on the EIS, see 'Environmental statements and their outcomes for the project'.

Regeneration, archaeology and heritage

The usual procedure – an Environmental Review Process – applied. In addition, an organization called Applied EarthWorks monitored the project during construction, identifying "numerous important archaeological resources […] along the project route that required individualized treatment measures, including the careful exhumation of eleven burials from a Native American cemetery prior to construction." The organization also identified Victorian subdivisions and the Casella Ranch Complex and several relics associated with the 1890s Spanishtown, and others. (Applied EarthWorks 2009)

Engineering News reports that ACTA spent $50,000 on partnering Native Americans with archaeologists before heavy digging. "Pre-excavation work included scraping inches at a time. A dozen complete skeletons have been recovered." (Cho 2000)

Project appraisal types before, during and after construction

No public domain data available.

Complaints procedures

No public domain data available.

Land acquisition

Number of compulsory acquisitions

In 1994 the San Pedro Ports bought the right-of-way from the railroads for $394m. (Agarwal 2004)

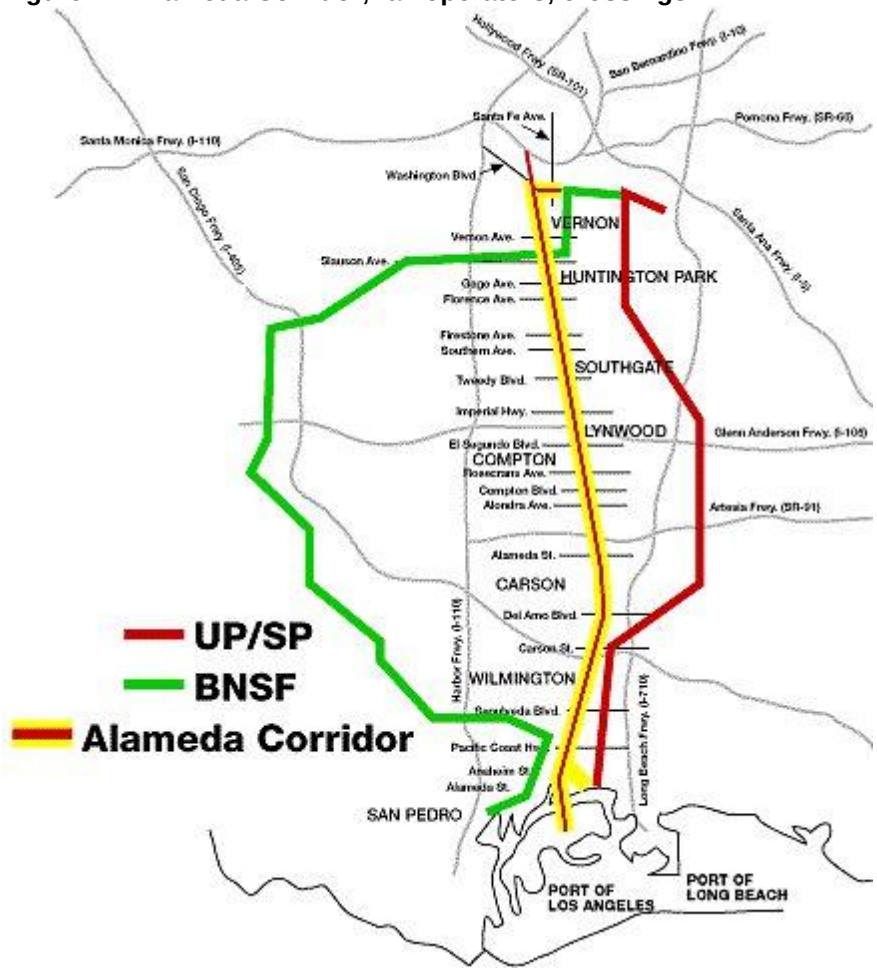
[Quote from FHWA; details need to be confirmed:] “The construction of the Alameda Corridor will require up to 40 full acquisitions and up to 16 partial acquisitions of commercial properties. Under the Uniform Relocation and Assistance Act, comparable housing has been identified and assistance with relocation for both residents and business people has been provided.” (FHWA w/o year)

C PRINCIPAL PROJECT CHARACTERISTICS

Detailed descriptions of route

The Alameda Corridor (Figure 11) connects the ports of Los Angeles and Long Beach in the south and goes for approximately 20 miles straight north to the railyards near downtown LA, where it turns east into the UP and BNSF Railyards and will later lead into the Alameda Corridor East. For a detailed overview of the localities over which it passes, also see Figure 8.

Figure 11: Alameda Corridor, rail operators, crossings



Source: (Railway Technology 2008)

Project costs

$2.432bn:

- Construction, design and engineering: $1.7bn;
- Financing and legal costs: $338m;
- Right-of-Way acquisition: $394m (NCHRP 2003).

Construction cost forecasts 1998

> "According to ACTA officials, the trench is expected to be the most expensive segment of the Corridor, costing about $700m, or about one-third of project's total estimated cost. […] The trench will require vertical walls whose construction is expected to cost about $350m. Although ACTA officials consider the trench less costly than a tunnel, they are encouraging potential contractors to propose innovative methods in order to reduce the costs of constructing the walls while keeping Alameda Street open to traffic during construction. […]
>
> Other issues associated with constructing the trench may increase the project's costs. For example, the trench will be built in an industrialized area where, according to a railroad official, many utility lines are buried. Relocating these lines could be costly, as could any delays in relocating them. Clearing hazardous wastes from the trench area could also increase the project's costs. According to the Corridor's 1996 environmental impact statement, 46 high-priority hazardous materials sites were located within 400ft of the Corridor. Removing underground water from the trench, if necessary, and managing traffic along Alameda Street and its cross streets could further increase the project's total cost." (GAO 1998).

Timeline of project cost estimates

1994: $1.8bn (Glover 1994; Lamb 1994), 18 miles corridor (Glover 1994);
1996: $2bn (Kanter 1996), $1.8bn (GAO 1996);
1997: $2bn (Lamb 1997);
1998: $2.1bn, $2bn (GAO 1998);
1999: $2.4bn.

(prices not adjusted)

Timeline/overview of project delivery

Table 1: Project delivery dates for Alameda Corridor subprojects

	Construction to start	**Projected completion**		**Actual completion**
		1998*	**1999****	
North End Projects: **L.A. River Bridge** **Santa Fe/ Wash Blvd Grade Separation** **Redondo Junction**	5/1997 1/1999 8/1998	10/1998 (✓) 3/2001 12/2000	10/1998 9/2001 4/2001	
Mid-Corridor Project	10/1998	3/2001	12/2002	4/2002 – begin revenue serv.
South End Projects **Henry Ford Ave** **Compton Creek/ Dominguez Channel**	7/1999 3/1999	2/2001 8/2000	2/2002 9-11/2000	

*(Office of the Inspector General 1998)
**(Office of the Inspector General 1999)

Main engineering features

The following summary and presentation of some technical details of the Alameda Corridor is taken from the Railway Technology webpage.

"Rolling Stock

Trains using the line are standard US rolling stock, with large General Motors or General Electric diesel locomotives hauling container wagons, often stacked two high, piggyback trains, mixed freight and other bulk goods such as coal or oil. In 2005, ACTA began trials with an alternative fuel locomotive for shunting duties at the yards of Pacific Harbour Line, to try and reduce further the amount of air pollutants released by the ports. The 'Green Goat' Bo-Bo locomotive uses a small diesel generator combined with a set of high powered long life batteries, which reduce emissions by more than 80%. Although no new locomotives had been ordered by 2006, the trials were an all-out success.

Infrastructure

Construction work began in 1997, and started on the bridge over the Los Angeles River at Redondo Junction in May 1998. All work was completed by 2002, with the Redondo Junction allowing a three-minute journey time reduction for passenger trains from Los Angeles Union Station due to the loss of tight curves. Motorists also benefited from the construction of the new line, as 200 level crossings which were often blocked by 2.5km long trains have been removed.

The central feature of the Alameda Corridor is a 33ft-deep trench, running for 10 miles parallel to Alameda Street from downtown LA to ports on the Pacific Ocean coast. This is the centrepiece of the Alameda Corridor, and the largest contract to be awarded. Construction of the trench took three years between 1998 and 2001.

Tracks and Signalling

The ten-mile (16km) Mid-Corridor Trench at the centre of Alameda Street, which carries the line under the existing road from Route 91 in Compton to 25th Street near Los Angeles city centre, is 15.2m wide, and accommodates two tracks plus a roadway for maintenance access. This could be converted into a third rail line if required. The trench has an overhead clearance of 7.5m for double-stack container trains.

Linking the new route with existing rail lines at its northern end has required extensive construction works. The line curves eastward at 25th Avenue, and rises to surface level alongside Santa Fe Avenue, where major grade separation works will be needed.

A two-track link is provided between the corridor, over an existing bridge over the Los Angeles river, into Union Pacific's East Los Angeles Yard, connecting with existing lines to the north. A new double-track flyover and bridge over the Los Angeles River also avoids freight movements along the new corridor conflicting with Amtrak and Metrolink passenger services. At the southern end, there is a grade separation to carry the corridor over Henry Ford Avenue in Wilmington. Another major river crossing is over the Dominguez Channel in Long Beach.

In December 2007, the Alameda Corridor Transport Authority […] contracted So Pac Rail to begin construction of the CP Thenard Track Connection (also known as K-Pac Track Connection), which will provide a signalised track connection from the BNSF Railway's Watson Yard to the former Southern Pacific Railroad's San Pedro Branch. The

estimated $8.8m project is to provide an alternate connection from Long Beach Lead to the corridor and is scheduled for completion by late 2008." (Railway Technology 2008)

Track Structure

- Rails : 136 lbs. (68kg per m).
- Rail Hardness : Tangent track non-head hardened rail and curved track head-hardened rails).
- Sleepers : Concrete sleepers 19.5in centre to centre.
- Ballast cushion: : 30in.
- Centre to centre spacing : 15ft
- Mid corridor stretch : 33ft deep and 50ft wide.
- Speed : 45mph.
- Train loads : 220 containers.
- Train spacing : 1.5-2 miles
- Geometry car : Runs once in a year.
- USFD : Once in a year.
- Grinding : Once every year.
- Vertical clearance between rail top and bottom of strut: 24ft8in.
- Steepest gradient in the corridor: 3.2%.
- Maximum number of trains in a day: 67 trains (capacity is 150 trains per day).
- Lubrication of gauge face of rail: There are 19 curve lubricators.

Initially only two tracks were laid. The third track was also laid expeditiously, much before it was actually needed, to keep it outside the purview of a forthcoming Federal legislation that required a 20ft centre-to-centre distance to provide minimum safety distance to men and machines working on a track from trains running on adjacent track.

- 20 miles of railroad tracks (two mainlines);
- ten miles of Mid-Corridor Trench, 33ft deep and 50ft wide;
- More than 750 underground and overhead utilities were relocated or reconstructed;
- A bypass track was built to ensure continuous rail service during construction;
- More than four million cubic yards of excavation;
- An estimated 450,000 tons of contaminated soils were removed and properly disposed of;
- 27,000 holes were dug and rebar cages built to support the trench wall pilings;
- 2,200 pre-cast concrete struts were installed across the trench top;
- 30 bridges were built to carry street traffic over the trench.

(railway-technology.com 2008)

Engineering: detailed statistics of engineering projects

Inconclusive public domain data available.

Construction

Inconclusive public domain data available.

Contract for ten miles Mid-Corridor trench: to Tutor-Saliba, October 1998, $712m (ACTA 1998); other bidders were Bechtel Infrastructure Corp. and Kiewit Pacific Co.; for this contract ACTA used the competitive sealed proposal method as defined in the City of Los Angeles Charter (ACTA 1998).

> “Utility relocation tops the list of challenges, says Dick Chan, chief engineer for Alameda Corridor Engineering Team, a local joint venture of Daniel, Mann, Johnson, & Mendenhall and Moffatt & Nichol Engineers. More than 600 utility lines must be protected, abandoned, or relocated. The Tutor-Saliba team must contend with tight easements throughout the alignment and groundwater on the southern part of the trench, Chan says.
>
> The budget includes a $200m contingency for unknown construction conditions. After that, the Tutor-Saliba team will pay the first $10m in increased costs stemming from unknown conditions. ACTA will pick up the next $10m and further increases will be evenly split between ACTA and Tutor-Saliba. The contractor is liable for liquidated damages of $125,000 to $150,000 for each day the project is late.
>
> Several other major contracts are in the works. ACTA plans to advertise a $140m grade separation in November and another $140m grade separation contract in early 1999. Completion is expected by the end of the year on a $6m railroad bridge spanning the Los Angeles River. Overall, Hicks says, "We're still on target for finishing in February 2002."

Source: (ENR 1998)

About Tutor-Saliba:

> “Tutor-Saliba has successfully handled many large construction projects such as the Hyperion Water Treatment Plant in Los Angeles County and renovation of the Oakland-Alameda County Coliseum. But the company also has been associated with some of the worst mishaps encountered by the Metropolitan Transportation Authority in its attempt to build the Metro Rail subway system. The corridor authority's officials say they hope to avoid some of the MTA's problems by using a design-build process, in which the main contractors are responsible for both the trench design and construction. "This bid will be negotiated, and everyone is conscious of the issues with Tutor-Saliba," said county Supervisor Yvonne Brathwaite Burke, who serves on the corridor authority's board. "Every effort will be made to reduce problems with this contract, not only for this company, but for any company selected." Burke said there was no public discussion about the board's selection because city law requires the agency to authorize negotiations with bidders who submit proposals with the lowest ultimate cost.” (Weikel 1998)

It seems that 19 or 20 contracts were awarded. In addition to the main Mid-Corridor Trench contract, “contractors are working on bridge and street-widening projects grouped into northern and southern end corridor segments.” (Cho 2000). At the Northern Segment, for example, a $36m contract held by Santa Ana, Calif.-based Steve P. Rados Inc, includes grade separations for Washington Blvd. and Santa Fe Ave. Another Northern End contract is the $44m Redondo Junction grade separation held by Shimmick Construction Co. and Obayashi Corp.

At the Southern Segment there is the $70m Henry Ford Bridge separation, the $8m bridge over Compton Creek, and the $14m railroad over Dominguez Channel… (Cho 2000).

D PROJECT TIMELINE

Project timeline

"The cities and ports of Long Beach and Los Angeles and surrounding communities have long sought ways to improve transportation systems to accommodate steadily increasing cargo volumes while minimizing the impact on residents and businesses. One result of their efforts is the Alameda Corridor, a 20 mile long rail expressway linking the ports to the transcontinental rail yards near downtown Los Angeles.

The $2.4bn Alameda Corridor is a testament to the vision, cooperation and perseverance of many disparate parties. Here are some key dates in the evolution of the Alameda Corridor from a low-budget planning study to on-time on-budget delivery of one of the nation's largest public works projects.

1970s

Facing increases in cargo crossing their docks, ports of Long Beach and Los Angeles begin to study comprehensive rail and highway improvements to improve the efficiency of cargo movements.

October 1981

Southern California Association of Governments (SCAG) forms Ports Advisory Committee (PAC) in response to growing concerns about the ability of ground transportation systems to accommodate increasing levels of cargo flowing through the ports. Members include local elected officials and representatives of the ports, the US Navy, Army Corps of Engineers, railroads, trucking industry and the Los Angeles County Transportation Commission (predecessor to the Metropolitan Transportation Authority).

March 1982

PAC recommends comprehensive list of highway improvements, including the widening of Alameda Street from State Route 91 south to the ports.

December 1984

SCAG Executive Committee adopts plan recommended by PAC to consolidate port-related rail traffic from four branch lines into the former Southern Pacific Railroad's San Pedro Branch, a 20-mile line running parallel to Alameda Street between the ports and the transcontinental rail yards near downtown Los Angeles. This would become the general route of the Alameda Corridor.

February 1985

SCAG forms Alameda Corridor Task Force to pursue consolidated rail cargo expressway. Task force begins to develop consensus on institutional arrangements, phasing and funding. Membership similar to PAC, with addition of California Public Utilities Commission and each of the eight cities along the route.

November 1988

Ports of Long Beach and Los Angeles publish Consolidated Rail Corridor Strategic Plan recommending rail cargo expressway.

August 1989

Joint powers authority formed by cities and ports of Long Beach and Los Angeles to design and construct a rail cargo expressway. The agency was originally called the Consolidated Transportation Corridor Joint Powers Authority. The Governing Board originally included 16 members, with representatives of all the cities along the route in addition to Long Beach and Los Angeles, the two ports and other agencies.

April 1990

Governing Board selects first General Manager, opens temporary agency office at Huntington Park, Calif., City Hall, and selects joint venture of Daniel Mann Johnson Mendenhall (DMJM) and Moffatt & Nichol Engineers to conduct feasibility study, prepare environmental documents.

March 1991

Governing Board recommends agency name change to Alameda Corridor Transportation Authority to better reflect the selected route along Alameda Street. City and port approvals follow.

January 1993

ACTA Governing Board approves 'Plan for the Alameda Corridor' and certifies Environmental Impact Report (EIR) required by the state for the project to proceed.

December 1994

Ports complete purchase of necessary Rights-Of-Way from railroads for $394m.

October 1995

Governing Board selects joint venture of civil engineering firms, known as Alameda Corridor Engineering Team (ACET), to serve as lead program manager. ACET includes the firms of Daniel Mann Johnson Mendenhall (DMJM), Moffatt & Nichol Engineers, Jenkins-Gales & Martinez, Inc., and TELACU.

November 1995

National Highway System Designation Act becomes law and names Alameda Corridor a 'high-priority corridor', making the project eligible for a federal loan. During debate, Senators refer to Alameda Corridor as a 'project of national significance'.

January 1996

ACTA establishes permanent offices in Carson, Calif., and expands professional staff.

February 1996

Governing Board certifies federal Environmental Impact Statement (EIS), and federal transportation officials approve permit to construct project.

September 1996

Congress approves Transportation Appropriations Bill that includes $58.68m needed to back a $400m Department of Transportation loan for the Alameda Corridor.

January 1997

Then-President Clinton hosts White House signing ceremony for $400m loan, attended by ACTA officials, the Mayors of Long Beach and Los Angeles, and port officials.

January 1997

Composition of ACTA Governing Board changed to seven members: two representatives from each of the two ports; a representative of the Long Beach City Council; a representative of the Los Angeles City Council, and a representative of the Los Angeles County Metropolitan Transportation Authority.

April 1997

Construction commences with work on three-track rail bridge over Los Angeles River, replacing a single-track bridge first built in 1905.

June 1997

Governing Board requests authorization to utilize design-build approach on the Mid-Corridor Trench, the project's biggest contract. Subsequent Los Angeles City Council authorization saves an estimated 14-18 months from traditional project delivery approach by allowing simultaneous design work and construction of certain elements.

October 1998

Governing Board approves Use and Operating Agreement with Union Pacific Railroad and Burlington Northern Santa Fe Railway. The agreement calls for railroads to pay fees for use of the Alameda Corridor, creating a revenue stream needed to pay off the federal loan and bonds.

October 1998

Governing Board awards contract for Mid-Corridor Trench, the project's single largest contract and centerpiece, to team led by Tutor-Saliba Corporation.

November 1998

ACTA dedicates first completed project of the Alameda Corridor, the Los Angeles River Bridge.

December 1998

Construction on Mid-Corridor Trench commences with groundbreaking ceremony attended by federal, state and local elected officials.

February 1999

Private investors purchase last of $1.16bn in ACTA revenue bonds, completing the project's funding package.

November 2000

Project reaches peak construction period, with up to 1,500 people working up and down the route on any given day.

July 2001

Governing Board authorizes ACTA to manage design and construction of additional project, the Pacific Coast Highway Grade Separation. Area legislators had urged ACTA's involvement to expedite California Department of Transportation project.

August 2001

ACTA dedicates Redondo Junction project, a series of five separate bridge structures stretching the length of eight football fields and separating cargo rail lines from street traffic as well as commuter rail lines.

September 2001

Excavation of Mid-Corridor Trench completed.

December 2001

Testing of electronic revenue collection system begins.

March 2002

Railroad track installation completed in Mid-Corridor Trench.

April 2002

Revenue operations begin following grand opening ceremony attended by federal, state and local elected officials.

April 2005

Third Anniversary marks $173m in collected revenues, 45,000 trains, over five million containers (9,000 TEUs) carried, and 1169 tons and 49 tons reduction of NOx and PM pollutants respectively."

Source: (Goodwin 2002)

Key timeline issues

Key issues in the project development were the pushing of the ports and regional agencies for improved freight transportation to and from the mainland, the purchase of the Right-Of-Way from the railroads, the law suit of four Corridor Cities against the project, the change in the composition of the ACTA board and the accompanying Memoranda of Understanding between ACTA and some of the Corridor Cities, the agreement about the public works parts and all aspects of the project's complex funding structure.

E PROJECT FUNDING/FINANCING

Introduction

> "The project has been funded by a public-private partnership to raise the necessary $2.4bn. Of this $1.165bn has come from revenue bond proceeds, $394m from the port authorities, $347m administered by the Los Angeles County Metropolitan Transportation Authority and $154m from other state and federal sources. The $400m federal loan will be repaid by user fees from the railroads, which initially cost $15 for each loaded 20ft equivalent unit (TEU) container, $4 for each empty container, and $8 for other types of loaded rail cars such as tankers and coal carriers. Depending on inflation, fees are set to increase by between 1.5% and 3% over a 30-year period. As of 1 January 2008, fees stood at $18.67, $4.73 and $9.47 respectively."

(railway-technology.com, 2009)

Background to funding/financing

Use fee and container charges

> "Railroads initially paid $15 for each loaded 20ft equivalent unit (TEU) container, $4 for each empty container, and $8 for other types of loaded rail cars such as tankers and coal carriers. Over a 30-year period, fees will increase between 1.5% and 3% per year, depending on inflation. Effective 1 January 2009, fees are $19.31, $4.89 and $9.77 respectively."

(ACTA)

> "A financial milestone was reached on 6 May 2004 when the Alameda Corridor Transportation Authority […] paid, in full, the balance of its groundbreaking 1997 loan with the US Department of Transportation (DOT) for the Alameda Corridor project. The ACTA paid US DOT nearly $573m to retire the $400m loan plus accrued interest – 28 years ahead of its scheduled final maturity in 2032."

(AASHTO 2009)

Overview of key stages in Funding Approach

October 1994

The two ports sign a memorandum of understanding with Union Pacific, Southern Pacific and Santa Fe railroads. Getting the final agreement signed was crucial because the project was supposed to be paid with bonds, backed up by container fees. (Cunningham 1998)

December 1996

Los Angeles and Long Beach ports and city councils, impatient with the demands of four Corridor Cities to exercise stronger control over project finance (Kanter 1996), strengthened control over the project by voting to restructure the authority's governing board to reduce the number of seats.

January 1997

Approval of $1.2bn financial plan by city councils and harbour commissions of Long Beach and LA allows the Alameda Corridor to move ahead.

December 1997

An IRS ruling on the tax-exempt status of the Corridor's revenue bonds sets out the types of construction activities that are for public purposes (such as highway overpasses) and so could be financed through tax-exempt revenue bonds (GAO 1998).

"As of December 1997, ACTA had secured commitments for about $1bn, or about 48% of the required funding" (GAO 1998).

1998

Financial controlling system/controller (GAO 1998).

February 1999

Private investors purchase the last of ACTA revenue bonds to the value of $1.16bn, completing the project's funding package.

Traffic forecasts and financing/funding response

> "The projected revenue stream allowed ACTA to finance the $1.1bn revenue bonds issue and also helped in securing the $400m federal loan."

(Agarwal 2004)

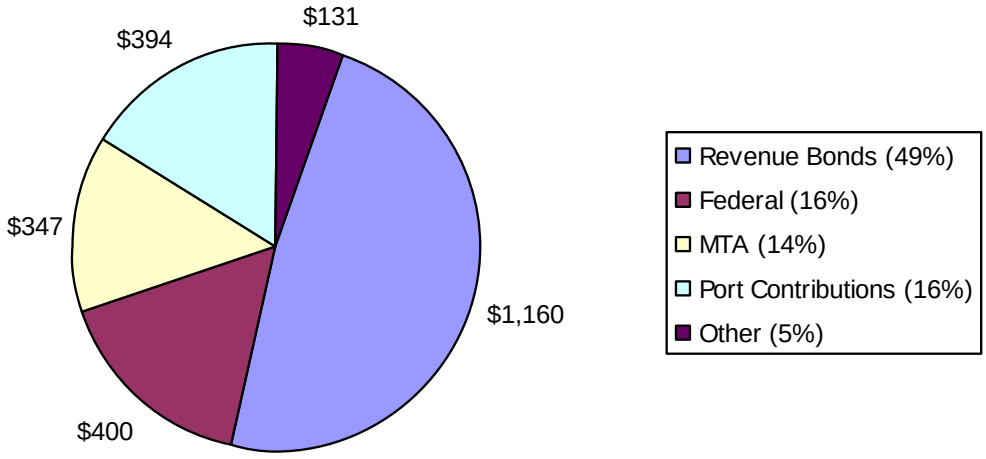
> "The strong demand for the bonds reflects the financial strength of the project, and the project's need", ACTA Chief Financial Officer Dean Martin said. "Private investors were interested in the bonds because we were able to demonstrate that cargo volumes would be increasing at a rate sufficient to pay off the bonds", Martin said. "In fact, the volume of containers moving through ports is increasing at a rate even greater than what we projected before the bonds sale".

(n.a. 2002)

As Rodrigue argues, Alameda Corridor's freight share doesn't meet the initial expectations; it is (1) the general increase in port activities which would keep up the performance levels and (2) the empty container discount, after the empty-container share has risen, too. (Rodrigue 2006)

Funding sources

Figure 12: Alameda Corridor funding sources (in $m)



Source: (NCHRP 2003)

Table 2: Alameda Corridor cost estimates and sources of funding

Alameda Corridor Sources of Funding Projected and Actuals 1998, 1999, 2003 (in $m)			
	1998*	**1999****	**2003*****
Revenue Bonds (Revenues +/- Interests)	946	1,229	1,160
Federal	474[1]	428	400
DOT Loan	400[2]	400	131[3]
FHWA Federal Aid	72	71	
Direct Federal Grants	2[1]	2	
State and MTA	291	362	347
Port Contributions	392	412	394
	$2,103	**$2,431**	**$2,432**

[1]North End, [2]mid-corridor, [3]unspecified,
*Office of the Inspector General (1998). Review of the Alameda Corridor Project
**Office of the Inspector General (1999). Review of the Alameda Corridor Project
***NCHRP Report

Numbers provided by DOT:

- Revenue Bonds $1.229bn; Federal DOT loan $428m;
- LACMTA contribution £355m;
- Ports contributions $394m;
- Railroads contributions (Purchase of Right-of-Way) $18m;
- State of California $7m.

Total $2.431bn (U.S. DOT, 1999)

Revenue sources

- Corridor Use Fees;
- Container Charges.

F OPERATIONS

Traffic Volume

Trains

The number of trains using the Alameda Corridor since its opening has been increasing, with a peak in 2006. In April 2008 it reached 100,000 trains after six years of operation (ACTA 2008). Expectations had been expressed that the daily number of trains would be around 100, and the actual capacity of the Corridor is 150.

Number of trains per year and daily average:

2002 – 10,259 (39)
2003 – 14,558 (40)
2004 – 15,972 (44)
2005 – 17,306 (47)
2006 – 19,924 (55)
2007 – 17,837 (49)
2008 – 16,105 (44)

(ACTA 2008)

The decline in 2007 may be attributed to the parallel decline in capacity handling of the two ports which the Corridor serves.

(Rodrigue 2006)

Containers/freight volume

During the first six years more than 12m containers – 21m Twenty-foot Equivalent Units – were transported. This is more than 7,200 containers (13,000 TEUs) each day now, and makes up almost a third of the port's average daily volume (ACTA 2008).

This number, however, indicates that two-thirds of the daily volume of the two ports is still managed by trucks. The Corridor therefore did not do as well as planned. Among the reasons may be the continuing competitiveness of truck transportation: about 50-60% of freight remains in the area, being hauled directly by truck. The relative costs of truck transportation have fallen since the 1980s, due to strong rationalization in this area, rendering them competitive against the Corridor fees. While transportation via the Corridor may have gained speed, traffic bottlenecks arise at the ports while loading the trains. Transportation economics indicate that rail transportation only makes sense when transporting more than 1,000 miles, due to high intermodal costs. Another reason may be that the Freight Distribution Centers in the LA metropolitan area are designed for trucks rather than for trains (Rodrigue 2006) .

According to Cunningham, port executives expected more than 100 trains a day to use the corridor to transport freight within 15 years (Cunningham 1998). As shown above, the actual daily average fell for the first time in 2007 to 44 trains (for the measured months available) in 2008. Future predictions are difficult.

How traffic forecasts were formulated

No public domain data available.

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H GLOSSARY

ACET	Alameda Corridor Engineering Team
ACTA	Alameda Corridor Transportation Authority
ACTF	Alameda Corridor Task Force
CEQA	California Environmental Quality Act
COE	U.S. Army Corps of Engineers
DBE	Disadvantaged Business Enterprises
DOT	Department of Transportation
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FWS	Fish and Wildlife Service
ISTEA	Intermodal Surface Transportation Efficiency Act
JPA	Joint Powers Agency
MPO	Metropolitan Transportation Organization
NEPA	National Environmental Protection Act
PAC	Port Advisory Committee
ROW	Right-of-Way
SAFETEA-LU	Safe, Accountable, Flexible and Efficient Transportation Equity Act
SCAG	Southern California Association of Governments
TEA-21	Transportation Equity Act for the 21st Century