A Brief History of Transit in California

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In 2015, the California Transit Association marked the 50th anniversary of its founding. While it’s certainly a cause for celebration, we’ve all along regarded the occasion as an opportunity to build on half a century of success in order to shape the next 50 years of achievements on behalf of public transit in California.

But the anniversary is also a natural opportunity to look back, to commemorate significant events, to honor past leaders and accomplishments while recounting the history of transit in California and how our communities have changed for the better as transit has evolved.

In short, to understand where we’re going, it’s important to know where we’ve come from.
This book represents one component in the Association’s initiative to celebrate the past while forging the future. It begins with a brief overview of the development of public transportation from its 17th-century beginnings to the present day, along the way progressing from a predominantly private-sector enterprise to the indispensable publicly provided service we know today. Subsequent chapters drill down into specific factors that have impacted transit’s development, from the evolving role of state and federal governments as sources of both funding and regulatory oversight to the influence on transit’s mission spurred by late 20th-century social and environmental considerations. The section concludes with some thought-provoking speculations about trends that could shape public transit over the next 50 years.

Two additional sections provide further insight into transit’s history and how the past has molded the present and portends the future. Appendix A features a timeline of key trends and events over the last five-plus decades, beginning just prior to the Association’s founding when public takeover of private transit operations was just getting started, and covering through the 2015 introduction of California’s integrated transportation vision for the first half of the 21st century. Appendix B presents a series of individual case studies, examining challenges faced and accomplishments realized by transit agencies in California, with perspectives ranging from retrospective to visionary.

This publication is the product of a collaboration between the Association and Elizabeth Deakin, Professor of City & Regional Planning and Urban Design at the University of California, Berkeley. To facilitate the project, Deakin devoted a semester’s worth of in-class curriculum to study the history of transit in California and penned Chapters 1 through 7. The elements comprising Appendix B represent independent papers written by ten of Deakin’s students. These papers include some provocative takes on the state of transit in California and represent solely the views of the student-authors. The Association exercised no editorial control over the content of these papers.

Since its 1965 founding as the California Association for Publicly Owned Transit Systems, the Association has served as the leading voice for public transit in California, guided by the belief that with better public transit comes better quality of life for riders and non-riders alike. We encourage you to explore this publication to learn about the events of our past that have laid the foundation for what is yet to come. We also invite you to visit our commemorative website at caltransit.org/50-years/ to learn more about the people, places, events and institutions that have fostered the last 50 years of transit history.

Our many thanks go out to Professor Deakin and her students, Association staff for whom this project has become a labor of love, and the members of the 2013-15 Executive Committee who embraced and approved the project, not just as a means to pay due respect to the past, but also to lay the foundation for the next 50 years of public transportation in the Golden State.

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California and National Transit History Overview

Overview

California has a long and varied history of transit. Streetcars, cable cars, ferries, buses, rail systems, shuttles, jitneys, paratransit, and company buses have offered services to the state’s cities and suburbs, and in rural areas as well. Transit services have been provided by private operators, local governments, special districts, state agencies, and partnerships comprising these entities. Services have been deployed by developers seeking to open up new real estate markets, by private for-profit companies, by public agencies hoping to reduce congestion and reinforce city centers, by social service agencies wishing to serve the poor and the disabled, by employers aiming to expand their labor pools, and by individuals seeking a way to make a living. Funding for the services has come from user fees, private resources, and public tax dollars — federal, state, and local.

This chapter presents a brief history of California’s transit services, creating a timeline of major events that have shaped transit’s performance and the services offered, and documenting the experiences of particular transit agencies. While early years are discussed briefly, the focus is on the five decades since the mid-1960s, when the Urban Mass Transportation Administration (now the Federal Transit Administration) was established and the California Transit Association was established.

Any book on California’s transportation history must be selective. For one thing, California transportation history is intertwined with larger national and international trends and technological changes. Even California-specific topics, such as state and local funding approaches for
transit, are complex topics that could easily justify a book-length treatment. Since the goal here is more modest — to provide an overview — criteria have been established to sort out what to report. The criteria for inclusion are: trends that have shaped and are shaping transit markets, legislation that has affected the expectations for transit service and its evaluation, technologies that have shaped how transit is delivered, and events that marked a new direction for transit either in California or nationwide. Of necessity, many locally important events are omitted.

The paper draws upon the academic and professional literature, websites, available histories of transit systems, and archival data on legislation, events, and institutional and technological changes that have shaped transit. To help prioritize this information, the views on key events and factors affecting transit were solicited from more than 40 national and state transit experts; 30 of them provided suggestions and comments. Their views as well as those of the author are reflected in the choice of coverage.

A timeline of key trends and events is included as Appendix A. The timeline focuses on the last five-plus decades, encompassing the period when most transit agencies in the United States and California were taken over by public entities. During this period, the federal government began both to fund transit and to call upon it to contribute to social, economic, and environmental objectives, but government roles in transit became increasingly contentious. In addition to chronicling the evolution of the federal government’s role in transit, the timeline highlights key actions at the state level that have both helped and hindered transit funding, while also further expanding the vision of public transportation as an increasingly-vital public service.

The following chapters explore six other key issues — the role of federal government in transit; California funding for transit; linkages between urban development and transit; the growing importance of social and environmental considerations in providing transit service; institutional arrangements for transit provision; and future scenarios for transit.

An additional ten papers prepared by students at the University of California, Berkeley provide further readings on California transit history. The papers (comprising Appendix B) investigate the proliferation of public transit agencies in California, especially in the San Francisco Bay Area; the impact of Proposition 13, the property tax limitation measure that revolutionized government funding in California beginning in the late 1970s; labor costs as a transit issue; ridesharing and its relationship to transit; the increased attention to walking as a transit access mode; factors affecting the varying reception of bus rapid transit in the state; factors affecting attitudes toward transit in San Francisco; and histories of specific transit services including Los Angeles’ rail proposals, the San Diego trolley, and Berkeley’s rail services.

The following sections of this chapter present some of the key trends and events, from the early years when public transit was developing and being rapidly deployed, to the first half of the 20th century — when war, the Depression, overextension, underinvestment, heavy but uneven use, and competition all took their toll — to the form the automobile created, followed by discussions of transit in its period of post-WWII decline, the advent of federal and state funding and mandates, and retrenching.
Public transportation has been around for centuries. It has been reported that in 1662, Blaise Pascal introduced a public horse-drawn bus with established routes and schedules in the streets of Paris. By the late 1700s steam engines were being developed for ships and rail transport, and soon facilitated passenger service. Fulton's intercity steam-powered ferry provided service to both passengers and freight along the Hudson River between New York and Albany in 1807; in 1811, Stevens' mechanically powered (steam) commuter ferry began operation between Hoboken and Manhattan.

While rail transportation had been developing for decades and was increasingly used for transporting building materials, coal, and other products, in 1830 the Liverpool Manchester Railway became the first to operate without horses or stationary engines and rope pulls. In the United States, 1830 marked the opening of the Baltimore and Ohio (B&O) railroad, chartered in 1827. The B&O offered passenger service. The railroad boom was on, and over the next four decades intercity rail systems were built throughout the United States. Cities and states vied to have the railroads come their way, recognizing the advantage that their superior level of accessibility and mobility would provide. They offered incentives in the form of right of way, tax abatements, and land grants — as well as cash in some cases.

Urban rail systems were developing as well. In 1833, the 4½-mile New Orleans and Carrolton Railroad began carrying passengers to the resort village of Carrolton. The railroad was eventually absorbed into the New Orleans streetcar system as the St. Charles Avenue line, and is the oldest continually operating rail line in the world. Other technologies were also developed for urban service. Cable cars opened in San Francisco in 1872; in 1884 East Cleveland Street Railway became the first electric streetcar. By 1892 the San Francisco & San Mateo electric railway began operating and, two years later, streetcars replaced Market Street horsecars. Over the next three decades electric-powered streetcars and heavy rail systems were built in cities across the world.
Technological innovations were central to the development of these new urban travel modes. In 1852, Elisha Otis developed the safety elevator, which found application in deep subways as well as in high-rise buildings. In 1868, George Westinghouse developed compressed-air brakes for railcars, increasing their efficiency and safety. The electric power system that made streetcars and underground railways clean and practical was the result of a century of research on electricity as well as the practical inventions of Thomas Edison and others in the late 1800s.

Technology also was developing rapidly for personal transportation during this period. In 1862, Etienne Lenoir developed a gasoline-powered motor vehicle, but it was largely a curiosity. Within 20 years, however, Karl Benz had developed a practical motor vehicle with an internal combustion engine, and his wife had driven it over a long distance, children on board, to visit her family. Automobile development became a highly competitive arena, with numerous power technologies — steam, gasoline, diesel fuel, electricity — all being developed.

Bicycles also emerged as a practical travel mode during this period; the first bicycles were developed in the late 1700s-early 1800s, but it was with the advent of cycles with equal-sized front and back wheels, pedals, and brakes that cycling took off. By the late 1800s cyclists were organizing to lobby for improvements to roads, which in many areas were little more than dirt tracks.

### Competition and Expansion — The Dawn of the Twentieth Century

The early years of the 20th century saw the beginnings of flight, with the Wright brothers completing the first successful powered, piloted flight in 1903. Air transport developed rapidly over the next several decades, supported in part by mail service contracts.

Cities were growing rapidly and, with this growth, traffic became a problem. Pedestrians, horse-drawn carts and carriages, horsecars, electric streetcars, steam-powered railways, and then the new motor vehicles all vied for street space, especially in the city centers. By 1894, Boston had created the first public transport commission, charged with addressing the “congestion evil.” One of their recommendations was to build an electric underground mass transportation system. Transportation safety also was an issue. In 1905, New York City took over the Staten Island Ferry from the Vanderbilts after their second major disaster with loss of life — the first recorded public takeover of a major urban transit service.

A few years later, in 1912, the San Francisco Municipal Railway was established — the first major public transit system in the United States. (Bismarck, ND, had a state-operated street railway in 1904 and Monroe, LA, was the first municipally owned street railway.)

While nearly all of the new transit lines built during this period were private enterprises, they were usually franchised or licensed by city governments. In return for granting an operator the right to install rails and offer services on a particular route, government demanded the right to regulate that service, usually including fares (a standard public utilities model at
In the early years of the 20th century, automobiles were luxury goods and most people walked or took transit. In 1908, however, Henry Ford began producing the Model T motorcar on an assembly line, allowing mass production of automobiles. The price of a car began dropping, and car ownership was within reach of working households. While World War I increased the use of transit somewhat, auto ownership was growing fast, and states began to register autos and license drivers. As the number of motor vehicles expanded, dirt roads became increasingly unacceptable and states found themselves spending a growing share of their budgets on road improvements. They pushed for federal involvement and in 1916 Congress responded with the first federal-aid highway act. States were required to provide matching funds for the road improvements on the federal-aid system, which connected major metropolitan areas. In 1919 Oregon addressed the highway funding problem by introducing the first state gas tax. In the next decades all other states and the District of Columbia followed suit, in most cases hypothecating the tax for highway purposes only.

By the 1920s Model T sales had reached 2 million a year and the price had dropped below $400 (half of the price in 1908). In addition to motorcars, the time). When jitneys (shared taxi services) began to compete with the rail services — operating along the same routes and picking up passengers ahead of the streetcar — San Francisco, Bakersfield, and other cities quickly banned the jitneys.
motorized buses were being produced as well as trucks. While motorbus lines had been introduced years earlier — a bus line opened on Park Avenue in New York City in 1905 — by the 1920s motorbuses began to replace streetcar lines, some of which were wearing out, a trend that continued over the following decades.

Transit use had continued to grow even as auto ownership did so; in 1926 United States transit systems served an estimated 17.2 billion passenger trips. Troubles in the industry were increasingly visible, however. Overexpansion into thin markets had resulted in closures of some lines early on; in some cases transit lines had been built as a real estate development tool and, once the land was developed, the operator had far less interest in running it. Heavy regulation, especially regulation that kept fares low, made it hard for transit companies to accumulate the capital or secure the loans needed to update their systems. Labor problems began to appear as well during this period, especially in areas where automobiles had captured a large share of the off-peak market, leaving transit with an increasingly peaked passenger load.

The stock market crash of 1929 ushered in the Great Depression. Massive unemployment further cut into transit ridership. Most transit systems lacked the capacity to reinvest in aging rail and rolling stock, and services deteriorated. Increasing numbers of rail companies were consolidated and many lines were abandoned, while others were replaced by buses. Rail construction had all but halted. (One exception was the construction of rail transit projects in Chicago and other big cities under Roosevelt Administration jobs programs.)

In 1940, urban bus ridership exceeded urban rail ridership for the first time. However, at the end of the next year, the United States entered into World War II, and the nation redirected industrial capacity to the war effort. Automobile manufacturing and sales were restricted, gasoline and tires were rationed, and transit was heavily used — but with little maintenance or rehabilitation of the already stressed systems. The year after the war ended, 1946, saw the highest level of transit ridership ever recorded in the United States, a record 23.4 billion trips. But the systems were worn out, dilapidated and, for the most part, broke.

Postwar Blues: The Decline of Private Transit Companies and Public Takeovers

Post-war, civil aviation bloomed, and passenger services began to ply U.S. airways, cutting into the markets for passenger rail. By 1958, pressed by the railroads, Congress preempted state authority to determine whether railroads could discontinue passenger service, transferring oversight to the Interstate Commerce Commission. A spate of rail passenger services were discontinued across the United States in the aftermath.

Also, states began building modern highways, many of them turnpikes (intercity toll roads) that connected to urban motorways. The federal government debated building a system of high speed, limited access interstate highways, having studied the options in the 1930s, but it was not until after a second major study in 1956 that consensus was reached to move forward with the system. The Federal Aid Highway Act of 1956 authorized a
41,000-mile Interstate Highway System, with federal funding of 90 percent of the cost. The massive new program was to be paid for through a highway trust fund created by earmarking federal fuel taxes under the companion Highway Revenue Act.

Highway building supported, and most likely accelerated, suburbanization in the United States, as did housing policies that underwrote mortgages for single-family homes. Much of the growth occurred at the urban fringes, where sufficient land was available for mass production of housing developments. Suburbanization of employment also accelerated, with industrial parks, shopping centers, and office parks proliferating in the 1950s and 1960s. For the most part, this development was built at low densities and in areas with little or no transit service. In the cities, meanwhile, urban renewal programs were undertaken that often involved clearing away older sections of the city for redevelopment. In some renewal locations, demand for rebuilding failed to materialize, leaving the city with swaths of unused land.

While both urban renewal and freeway building had been widely supported before the on-the-ground effects were seen, once construction was under way the programs were challenged. As early as the 1950s urban renewal had led to protests against the "federal bulldozer" and its destruction of cherished urban fabrics. Likewise, highway protests in Boston led to tunneling under Chinatown, rather than cutting through it and removing the Chinese Merchants' Building. Opposition to the construction of massive new highways began to appear in many cities as the Interstate program got into full swing. By the 1960s, freeway revolts had erupted in San Francisco, Boston, Atlanta, Memphis, New Orleans, and numerous other cities across the United States. In California, freeways were cancelled due to local opposition in San Francisco, Berkeley, Oakland, Los Angeles, Sacramento, San Diego, and Orange County, and many other freeways were forced to be redesigned or heavily mitigated.

Nevertheless, as suburbanization and auto ownership grew in the postwar years, transit ridership declined precipitously and many transit companies found themselves in a downward spiral. Cutbacks, consolidations, closures and bankruptcies became frequent. In some cities transit simply went out of business, but in many cities government stepped in and took over, sometimes creating a special district to consolidate and reorganize the services and sometimes planning entirely new services. The BART system, for example, was planned in the 1950s, with the San Francisco Bay Area Rapid Transit Commission issuing a final report arguing that any transportation plan must be coordinated with future development and — since no such plan for development existed — prepared one itself. (The plan was adopted a decade later by the Association of Bay Area Governments.) As another example, in 1960, Oakland-based AC Transit took over from the Key System and its predecessors, which had carried passengers via horse-drawn rail, electric streetcars, ferries and buses over the previous 100 years.

The 1960s: Federal Involvement Begins and the State of California Steps Up Its Role

As more and more local governments around the country found themselves the new owners and operators of transit systems, they began looking for financial help from state and federal government, especially in light of the massive backlog of capital needs most systems had accumulated. While some in Congress and in state legislatures were supportive,
others saw transit as a local issue best handled locally — or as a private business whose market had been lost, best left to reposition itself or fade away. Unions also were wary of government takeovers because they feared they would lose hard-fought wages, benefits, and work rules. Thus it was not an easy sell to get support for transit in Congress or in many states.

This began to change in Washington in the early 1960s. John F. Kennedy had been elected by urban constituents, and the Massachusetts Democrat came to office with an urban agenda. The 1961 Omnibus Housing Act included loans and grants for transit demonstration projects as part of urban renewal efforts; this marked the first federal funding for transit other than the Roosevelt New Deal jobs projects of the 1930s. In 1962, the Federal Aid Highway Act took a small step toward reining in state highway building in cities over the opposition of local officials. The Act required the establishment of a new planning process for all areas exceeding 50,000 population. In those areas, highway projects were required to be part of a long range transportation plan, coordinated with anticipated development and adopted through a continuing and comprehensive metropolitan transportation planning process carried out cooperatively by the state and local communities (the 3-C planning process). Kennedy also proposed legislation to fund capital grants to transit and, while he did not live to see it enacted, the 1964 Urban Mass Transportation Act created the federal program and capital funding for transit that continues today. Two years later the U.S. Department of Transportation was created, bringing under one roof the separate agencies for highways, urban transit, and aviation.

The Federal Highway Administration, charged with aiding states to complete the Interstate system as well as to continue programs for other primary and secondary federal-aid roads, began to broaden its horizons at this time. For example, in 1967, FHWA issued a policy allowing reserved lanes for buses on federal-aid highways including those on the Interstate system. FHWA also instituted an experimental program providing assistance in traffic operations and management, including transit priority treatments and transit stop improvements on urban arterials and local streets. This program was established in the 1968 Federal Aid Highway Act as the TOPICS (Traffic Operations Program to Improve Capacity and Safety) program.

Nationwide, protests against urban renewal and highway programs built upon larger movements fighting for civil rights, demanding an end to discrimination in jobs and housing, and opposing the escalating war in Vietnam. While protests were against highways, they were for equal access to transit: the civil rights movement helped put an end to discriminatory practices in transportation. The 1954 U.S. Supreme Court decision Brown v. Board of Education (347 U.S. 483) had set the stage, declaring that state-supported segregation was a violation of the 14th Amendment, and repudiating the Court’s earlier Plessy v. Ferguson decision (1896) which had allowed “separate but equal” facilities (the facilities in question had been rail cars). Civil rights in transportation also had been promoted by the case of Rosa Parks, who in 1955 sparked the Montgomery Bus Boycott by refusing...
to give up her seat to a white man, for which she was arrested. The boycott lasted more than a year, until the city finally repealed its law requiring segregation on the buses. Across the country there was a push for greater democratization of decision-making, with increased citizen participation and greater deference to the views expressed by local elected officials and members of the public. When the landmark Civil Rights Act of 1964 was enacted, it created a formal framework for ending discrimination, as the protests had demanded.

California was one of the states that experienced massive protests against urban renewal and urban highways (as well as for civil rights and against the war). The state legislature became increasingly active in supporting a more balanced transportation system, especially by enabling local initiatives for transit. The Legislature created special districts for transit in many areas and also authorized cities and unincorporated territories to organize and establish transit districts. In addition, the 1963 Collier-Unruh Local Transportation Act allowed counties to increase the in-lieu tax by one-half cent to develop rapid transit systems. This became an important funding source for the new BART system, in addition to the bonds approved by voters in Alameda, Contra Costa, and San Francisco counties for the system’s construction.

New technologies in the 1960s included high-speed rail, introduced in 1964 in Japan (the Shinkansen). Also, modern computers began to be used in transportation planning and design, allowing simulation models to become a technology supporting the 3-C planning process.

**The 1970s: Federal Involvement and Expanded Roles for Transit**

By 1972 transit ridership in the United States had dropped to its lowest level in the 20th century. At the same time, Congress was stepping up its role. Federal involvement in transit expanded both directly and indirectly during the 1970s. In addition to capital projects, the feds provided operating assistance; the amounts available substantially increased and the federal view of what counted as transit broadened: heavy rail, light rail, buses, paratransit. While intercity rail issues were treated in separate legislation, this was also the period when the federal government created Amtrak.

As federal support for transit increased, so did the number of requirements that transit would have to meet. Transit agencies were expected to play an important role in urban development and to support a variety of social and environmental programs. Transit programs were to connect people to jobs, shopping, and recreation; provide transportation for elderly and disabled; reduce petroleum dependence; and help reduce transportation’s environmental impact by attracting drivers away from their cars.

Environmental and energy legislation had a significant influence on federal transportation policy.
in the 1970s, though the results in practice were mixed. In the waning days of 1969, Congress passed the National Environmental Policy Act, creating federal requirements for environmental reporting and consideration of alternatives. In 1970, Clean Air Act Amendments established an aggressive federal approach to air pollution reduction, mandating pollution controls on automobiles and industry (“stationary sources”), establishing national ambient air quality standards, and requiring states to develop plans to meet the standards by controlling existing and new sources of emissions and also imposing “transportation controls” if necessary. The 1973-74 OPEC oil embargo led to a new concern: energy prices and availability, and the role that energy was playing in pushing up inflation. As one response, the 1975 Energy Policy and Conservation Act directed the U.S. Department of Transportation to promulgate corporate average fuel economy (CAFE) standards for automobiles, raising fuel efficiency from 18 miles per gallon in 1978 to (a planned) 27.5 mpg by 1985. Other provisions of the act included promotion of carpooling and vanpooling. Then in 1977, after most states had missed the deadline for achieving the national air quality standards, additional amendments to the Clean Air Act were passed, extending deadlines for attainment but also (among other things) requiring that metropolitan planning organizations: engage in transportation air-quality planning; consider a list of emission-reduction measures including transit investments, tolls, parking pricing, and ridesharing incentives; and assure regional transportation plans are consistent with air quality plans.

Social policies for transportation also were strengthened during this period. In particular, in 1973 Section 504 of the Rehabilitation Act stated that no person who is otherwise qualified should be discriminated against in federal-aid projects. UMTA began developing guidance for improving access to transportation services for the elderly and handicapped in response to this mandate, issuing a statement first in 1976 and another with tougher requirements in 1979. Transit agencies opposed the UMTA approach as too costly, and sued — leading to a court decision that UMTA had exceeded its authority. UMTA backed off, but this set off a renewed lobbying effort by the disabled community to strengthen their rights to access.

While federal funding for transit had begun in 1964, the amounts appropriated were very small. The 1970 Urban Mass Transportation Assistance Act was the first act to establish substantial federal funding for transit, and it attracted a new wave of applications, not only for rehabilitation of older systems but for new systems. Even with the higher level of funding, UMTA found that demand exceeded available funding levels. Four years later, the 1974 National Mass Transportation Assistance Act authorized a new federal program for transit operating assistance, further increasing the federal scope of responsibilities. In a move reminiscent of earlier local regulations of transit, a condition imposed by the 1974 Act was that off-peak fares for the elderly and handicapped be half-price. The bill also mandated an integrated highway/transit 3-C planning process, and created a transit data system to which federal aid recipients were required to report. The reporting system went into effect in 1979 with more than 400 transit operators providing data
on ridership, costs and revenues, organizational structure, safety, and operating performance.

Highway legislation during this period included a few provisions favorable to transit. The 1973 Federal Aid Highway Act allowed urban areas to relinquish funds for interstate highway projects in return for funds for transit. Several cities took advantage of this provision to fund light rail projects. The act also strengthened the role of metropolitan planning organizations in project selection, requiring that projects be part of an approved plan in order to be implemented in urban areas. This stopped (or at very least slowed) the practice of state highway agencies or highway commissions from adding projects that had not been approved to the metropolitan program of projects.

A major change to highway legislation during this period was the 1976 Federal Aid Highway Act provision allowing federal funds to be spent on highway maintenance (defining construction to include resurfacing, rehabilitation, and restoration). Previously the understanding was that the federal government would help build the systems but it was up to the states to operate and maintain them (something for which many states had not prepared). The change reflected both the slowing of new highway construction activities and the reality that many of the highways first built in the 1950s were showing their age.

By the mid-1970s, then, both UMTA and FHWA had begun to shift attention to maintaining transport systems as well as building them. In 1975, UMTA and FHWA issued joint highway/transit planning regulations calling for a regional transportation plan that included both a long-range element and a short-range Transportation System Management element including actions to make efficient use of road space, reduce demand in congested areas, improve transit services, and increase transit efficiency.

UMTA followed this in 1978 with a policy on rail transit new starts emphasizing alternatives analysis, demand management, coordinated land use planning for higher densities and urban revitalization, and incremental implementation of usable segments of a planned system. The new regulations not only emphasized better management of transit and highway systems but also had a metering effect on new starts in transit, creating additional performance criteria against which new starts applications could be evaluated.

In 1978, the federal Surface Transportation Assistance Act included highways and transit in
the same legislation for the first time. The Act also included funding for transit in non-urban areas. However, the mood in Congress was beginning to change: the role of the federal government in transportation was becoming a contentious issue. The change in thinking about federal roles was reflected in the 1979 National Transportation Policy Study Commission report, which stated that federal funding levels were insufficient to meet future needs, that government overregulation was impeding private investment, and that federal involvement should be reduced.

California also experienced a burst of activity in transit and in legislation affecting transit in the 1970s. In 1970 the first high-occupancy vehicle lane in California opened on the western approach to the Bay Bridge toll plaza. In 1972, revenue service began on BART, the first computer-controlled transit system. The Santa Clara County Transit District, authorized by the Legislature in 1969, was approved by voters in 1972 and took over three struggling private transit operators the following year. Many other transit agencies were created by local action, including the Sacramento Regional Transit District.

Probably the most significant piece of California transit legislation during this period was the 1971 Mills-Alquist-Deddeh Act, commonly known as the Transportation Development Act (TDA). TDA created a Local Transportation Fund derived from a statewide quarter-cent sales tax allocated by a formula that considered both population and transit revenues in each county. It was later amended to include a State Transportation Assistance Fund (STA) derived from sales taxes on vehicle fuels, returned to the county from where the tax was generated. TDA quickly became a major source of funding for transit in California, along with legislatively authorized and voter-approved bond measures. (Legislative changes were made to TDA in 2010 and 2011, replacing the sales tax on gasoline with a higher excise tax, in order to create the ability to use the funds to pay transportation bond indebtedness.)

On the downside for transit, in 1978 Proposition 13 was passed by California voters, sharply reducing property taxes and making it harder to adopt a property tax fund for transit.

The 1980s: Debates Over the Role of Transit

If the 1970s were a period of federal activism, the 1980s were a period of federal retrenchment. With the election of Ronald Reagan to the presidency, support for “big government” urban programs diminished and greater emphasis was placed on limited federal initiatives.

Shortly after taking office in 1981, President Reagan issued an executive order delaying implementation of new regulations and establishing a Task Force on Regulatory Relief to develop procedures requiring benefit-cost analysis of all regulations. The next year Executive Order 12372, Intergovernmental Review of Federal Programs, did away with federal oversight of intergovernmental coordination and required greater deference to state and local views on federal regulation. Responding to the new approach favoring minimalist federal interventions, in 1983 FHWA and UMTA revised their planning regulations to remove considerations not specifically required by law. The following year UMTA revised its capital grant policy to prioritize projects with local funding support and a high level
of cost-effectiveness, comparing capital investment proposals to a TSM alternative involving upgraded buses, parking management, etc.

Congress was more ambivalent. In 1981 legislators began earmarking UMTA capital grant funds for specific projects rather than leave the choices to UMTA staff. In 1982 the new transportation legislation, the Surface Transportation Assistance Act, included provisions which: raised the gas tax by five cents, with one cent going to transit; redirected transit funding, creating a new formula grant program whose funds could be used for planning, capital projects, or with some restrictions, operations; and, called for greater involvement of the private sector in transit provision. While formula block grants and private sector roles were Reagan Administration emphases, Congress also mandated social service functions for transit in the act, directing the USDOT to issue regulations setting forth minimum service requirements for the elderly and handicapped.

That same year, after years of debate about the role of paratransit, UMTA issued a policy statement supporting it as a supplement to conventional transit, a service suitable for special needs groups, and a possible substitute for conventional transit in low density and rural areas. The following year draft regulations on “elderly & handicapped” service were issued, emphasizing paratransit services. This set off bitter debates, with advocates for the disabled arguing for equal access (installation of elevators in subway systems and wheelchair lifts on buses, in particular) as well as paratransit for those unable to use such retrofitted systems, while others argued for less-costly approaches.

Meanwhile, little was happening with environmental legislation or even with finding a new direction for transportation policy. In 1987, reports from the National Council on Public Works Improvement documented the poor state of repair of the nation’s public works, including its transit systems, and the failure of funding to keep up with inflation and growth. Congress passed the Surface Transportation and Uniform Relocation Assistance Act over President Reagan's veto — he felt it was too costly — and wrote UMTA’s capital grants prioritization procedure into law.

In California, the state had begun the decade by amending TDA to include the State Transit Assistance (STA) fund, at the time derived from the statewide sales tax on gasoline and diesel fuel. In 1981 San Diego’s light rail transit (LRT) line opened, the first of the United States’ second-generation light rail systems and one paid for largely from local funds.

Local option sales taxes for transportation also played an important role in funding California transportation finance during this period, with 13 counties adopting half-cent sales taxes in the 1984-89 period.
Light rail systems opened in Sacramento and San Jose in 1987 to much celebration. However, the decade ended with a disaster: the 1989 Loma Prieta earthquake caused the collapse of one section of the upper deck of the San Francisco-Oakland Bay Bridge and damaged freeways in Oakland and San Francisco, including the Embarcadero Freeway. BART, virtually undamaged, stepped up to carry a 50 percent increase in passengers in the following months.

Also in 1989, faced with a backlog of unfunded transportation improvement projects, the California Legislature enacted the Transportation Blueprint for the 21st Century, which was subsequently approved by voters in 1990 (Proposition 108). The Blueprint doubled the state gas tax, authorized funding of rail transit projects, and set forth a ten-year spending plan for its new revenues.

The 1990s: New Approaches Begin to Emerge

In the 1990s new legislation changed federal policy relevant to transit substantially. With George H.W. Bush in the White House, environmental legislation once again was considered and in 1990 amendments to the Clean Air Act (which had been held back because of President Reagan’s hostility to the legislation) were adopted. The Clean Air Act Amendments of 1990 designated metro areas by severity of pollution violations and tightened requirements for planning while extending attainment deadlines for areas with most severe problems, including most California metro areas. Buses were held to strict pollution control standards.

Also in 1990, the Americans with Disabilities Act (ADA) was signed into law. ADA prohibited discrimination based on disability, either mental or physical, and included segregation as a prohibited form of discrimination. The law thus provided civil rights similar to those established in the Civil Rights Act of 1964 and required accommodation of disabled people. Title II applied to public transportation and required the provision of paratransit services by public entities that provided fixed-route services.

A new approach to surface transportation was adopted the following year. The Intermodal Surface Transportation Efficiency Act (ISTEA) increased flexibility in spending, gave metropolitan planning organizations (MPOs) more say over transportation choices in urban areas, and created new programs, the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality (CMAQ) program. Transit projects could compete for these funds. Among its many other provisions, ISTEA called for the designation of up to five high-speed rail corridors in various parts of the country, including California. In 1998 TEA-21 — the Transportation Equity Act for the 21st Century — largely continued the framework established by ISTEA.

California saw a number of important transportation activities move forward in the 1990s. The western span of the Bay Bridge was retrofitted for additional earthquake safety, while a plan to replace the eastern span proceeded amidst considerable controversy over the design and construction. The damaged Embarcadero Freeway was removed and replaced with a surface boulevard and transit, and a damaged freeway in Oakland that had divided an African-American neighborhood was relocated, with a boulevard installed in the old freeway right-of-way. The damaged Central Expressway in San Francisco also was replaced with a boulevard.

Financing for transportation continued to come from bonds, TDA, and self-help sales taxes. Because the purchasing power of the gas tax had declined drastically with inflation and more fuel-
efficient vehicles, Proposition 111 was passed in 1990, increasing the California gas tax from nine to eighteen cents. The bond measure Proposition 116 was affirmed by the voters, providing funds for passenger and commuter rail as well as for ferries, paratransit, and bicycle projects. Several more counties adopted local option sales taxes. However, in 1996 California voters passed Proposition 218, requiring a two-thirds vote for new taxes imposed by cities, counties, or special districts, upping the level of support needed for a transportation tax.

Los Angeles experienced several important events. The Blue Line, first of the metropolitan area’s new rail transit lines, opened in 1990. In 1993, the Southern California Rapid Transit District and the Los Angeles County Transportation Commission were merged to form the Los Angeles County Transportation Authority (Metro). The following year the Northridge earthquake caused $20 billion in damage in the Los Angeles area, and closed I-10. L.A. Metro buses and train services provided needed transportation for the affected populace.

New ideas were tested: In 1995, high occupancy/toll (HOT) lanes were implemented on SR91 in Orange County, the first such application of the new concept, and then on I-15 north of San Diego in 1996. HOT lanes then spread to the Bay Area and to other states. Also during this period, intelligent transportation systems began to capture attention and funding, and modern car-sharing programs began to take off, allowing self-service, short-term auto rentals.

Transit at the Beginning of the 21st Century

The 2001 terrorist attacks in the United States, crashing hijacked planes into the New York City World Trade Center twin towers and the Pentagon, changed the nation’s outlook on transportation. Heightened transportation security on all transportation modes became the norm. Terrorist attacks in Paris and Spain reminded observers that trains are also potential targets.
While actions to improve security were quickly instituted, there was a continued lack of consensus about the direction of the federal surface transportation program. With declining balances in the trust funds, a series of short-term continuations of transport bills and transfers from the general fund to support transport programs became the new norm. TEA-21 was extended a dozen times, avoiding shutdowns but creating considerable uncertainty about the future for funding recipients. In 2005, another bill with a clever acronym — SAFETEA-LU (the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) — continued most elements of TEA-21. Seven years later, after ten short-term extensions of SAFETEA-LU, the current federal transportation legislation, MAP-21 (the Moving Ahead for Progress in the 21st Century Act) was passed. It again largely continues previous programs, though it retreated a bit from earmarks, added funding for state of good repair, asset management, and safety programs, and made bus programs a formula grant.

In the midst of this legislative turmoil, the severe recession beginning in December 2007 and continuing into 2009 hit transportation funding, reducing driving and revenues from gas taxes as well as other taxes (sales tax was highly volatile in most states and counties, for example). The 2009 Transportation Investment Generating Economic Recovery (TIGER) program, created as part of the American Recovery and Reinvestment Act (ARRA), provided federal funding on a competitive basis for highway, transit, freight, port, bike/pedestrian, and multimodal projects. About 18 percent of funds released through 2011 went to transit projects.

Technology once again began to transform transportation in a variety of ways. Transit agencies began to introduce reloadable contactless smart card systems, such as the Clipper Card in the San Francisco Bay Area, the Compass Card in San Diego County, and the Transit Access Pass in Los Angeles County.

Cell phone ownership grew rapidly (to 86 percent of the U.S. population) and with this growth, applications (or, “apps”) appeared, providing real time information on transit schedules, travel times, highway congestion — and the nearest gas station, pizza place, or hamburger joint. Home computers and internet use also became the norm, with about three-quarters of the U.S. population reporting having internet at home.

Facebook, the online social networking service, was founded, creating a new means of communicating with friends and communities of shared interest. Then came Twitter, an online social networking service that enables users to send and read short, 140-character messages. Both services proved to be wildly popular, especially with younger people, and both private businesses and public agencies began to use them to communicate with constituents. Other forms of sharing, from short-term rental of one’s house or spare bedroom, to bikesharing and peer-to-peer carsharing, began to find market footholds as well.

California transportation systems continued to be funded through state and local ballot initiatives, which for the most part proved successful despite the higher voting margins required. Notable voter-approved transportation actions included the 2002 Proposition 42, which required that starting in 2008–09 gasoline sales tax revenues be allocated 20 percent to public transportation, 40 percent to projects funded in the
State Transportation Improvement Program, and 40 percent to local streets and roads improvements, with half going to counties and half to cities; 2006’s Propositions 1A-E, which protected and increased transportation funding; 2008’s Proposition 1A, providing for the sale of $950 million in bonds for high-speed rail and connectivity projects; and L.A. Measure R, a half-cent increase in sales tax to fund transportation throughout Los Angeles County, including rail, subway, and freeway improvements. Legislative action proved more controversial: A tax swap intended to provide greater flexibility altered TDA funding, led to litigation and propositions that necessitated legislative “repairs.”

Innovations in services also appeared. For example, in 2000-02 LACMTA implemented bus rapid transit service on 26 routes. In 2007 Caltrans adopted policies supporting BRT on state highways. In 2008 the California Office of Planning and Research adopted “complete streets” requirements for general plans in response to AB 1358, which requires universal access by all users and modes of transportation consistent with the urban, suburban, or rural context. And in 2009, combining cellphone and computer apps with sharing concepts, Uber was launched in San Francisco, allowing customers to submit a trip request, which is then routed to drivers willing to share a ride for a fee. Private buses also grew in use during this period, especially for tech workers.

Finally, California launched a number of pathbreaking environmental laws. While the United States had declined to participate in the Kyoto Protocol to reduce greenhouse gases, in 2006 California committed to do essentially that through AB 32, the Global Warming Solutions Act. AB 32 requires the California Air Resources Board to develop a Scoping Plan to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. Two years later SB 375 was passed, mandating that metropolitan planning organizations undertake the development of plans for reducing greenhouse gas emissions by fostering higher densities and transit-oriented development.

Looking Ahead for Transit

In 2012, 10.6 billion passenger trips were made on U.S. transit systems. This is up considerably from its low in the 1970s but still only half that of transit’s 1946 high of 23 billion trips, made at a time when the U.S. population was about half its current size. The country is richer now, more people are in the work force, auto ownership is higher, and a large chunk of the population — and employment — are in low-density suburbs that are hard to serve by transit. In a state like California, where growth still seems likely (despite the drought), new growth patterns may foster a different and more congenial set of opportunities for transit. In other parts of the country, where growth is far more modest, changing the transit mode share may be a harder task.

Some trends in consumer behavior may increase transit use, including later driver licensure and lower levels of auto ownership and driving among teens and young adults. Whether this is a reflection of new values and preferences, or the result of tougher licensing
and insurance laws, recession, and unemployment, requires further monitoring and investigation.

Meanwhile the Transportation Research Board lists system reliability, resilience, safety, greenhouse gas emissions, energy, environmental impacts, and effects of sprawl on the sustainability of the transport system as critical issues for coming years. The California Transportation Plan for 2040, currently under review, reflects these concerns as well and aims to produce a sustainable transportation system that improves mobility, strengthens communities, and enhances the quality of life for all in California. With SB 375 plans under way, transit may well have a big role to play in fulfilling those objectives.
The Role of Federal Government in Transit

Introduction

Many reports mark the 1960s as the beginning of a federal role in transit. However, the federal role in other transportation systems, particularly railroads and highways, strongly influenced how cities were shaped and transit performed. This paper provides a brief review of federal roles in transportation in the 1800s, the first half of the 20th century, and the past 50-60 years when the federal role became direct and explicit.

Early Years

In its early years, the federal government shied away from funding transportation. While Article I of the U.S. Constitution authorized a postal service and "post roads," early presidents questioned the constitutionality of a significant expenditure on public infrastructure (especially infrastructure that was “internal” to the United States) and vetoed attempts to provide funds for canals and highways. Early highways were built for the most part by localities and by the private sector. Especially in New England and the Middle Atlantic states, toll roads (often called turnpikes) were a private
sector provision of highways that sometimes, but not always, involved state and local government participation through franchises and assistance with right of way acquisition. However, not all of the early toll roads were successful, and states and localities often took over failing toll roads to keep them open for the public.

With the advent of railroads in the 1830s, state and local grants to encourage the railroad to come to town became increasingly common. In the 1850s land grants were used to finance railroads in the Midwest, with the first federal land grant made to the Illinois Central. Congress also authorized the War Department to investigate alternative transcontinental routes, but no agreement could be reached on the route selection until southern states seceded from the Union. Then a central route was chosen and, in 1862, Congress authorized federal government loans (financed through the sale of bonds) as well as massive land grants to help build a transcontinental railroad from the banks of the Missouri to Sacramento. A checkerboard pattern of land grants was utilized, along with grants of public lands along the right of way. The total amount of federal land transferred to the railroads between 1851 and 1871 was larger than the state of Texas.

By the 1880s, the power of the railroads was felt through much of the economy, and abuses of that power led to the creation of the Interstate Commerce Commission (ICC). The ICC was charged with regulating the railroads and, later, other common carriers to protect the public interest. How well it did so is debated; critics argue that the ICC was an example of regulatory capture and in fact protected the railroads’ interests (and later that of other common carriers including trucks and intercity buses). Regulation did not prevent decline as competition for passengers and freight grew, and by the 1970s Congress began deregulating the common carriers, and eventually abolished the ICC (1995).

Urban transit systems were also proliferating across the United States in the 1800s as industrialization drove the growth of cities and technologies made new systems possible. Stagecoaches, horsecars, and horse-driven omnibuses had been around for centuries (Blaise Pascal is credited with introducing an omnibus with fixed routes and schedules in Paris, in 1662), but large numbers of horses plying their way along city streets on frequent schedules posed problems of waste and disease in crowded cities. As steam trains expanded, they served urban stations and served commuters, intercity passengers, and freight. However, the wood- and coal-fired locomotives created noise,
pollution and fire hazards. The advent of cable cars and especially electric traction in the late 1800s was a great advance. By the turn of the century, electric streetcars were the most popular form of conveyance in cities (though walking remained the main means of transportation for the masses). Simultaneously, metros were being built in the larger cities around the world. Elevators and escalators as well as modern steel, developments of the 1800s, made higher urban densities possible and also facilitated the placement of metros in deep tunnels.

The streetcars, metros, and commuter rail lines had consequences beyond their transportation function: they were a force for decentralization, making it possible for those who could afford it to live in the suburbs and commute to jobs in the city. Ferries also served to support decentralization in such cities as New York (where ferries supported growth in Brooklyn and New Jersey) and the San Francisco Bay Area. It’s worth noting that while decentralization was sought by the middle and affluent classes in the United States, the attractions of suburban life were not universally admired: in Paris, for example, it was the poor who were pushed out to the city’s edges. At the same time that streetcar use was growing, another technology was being introduced: the automobile. A gasoline-powered automobile was developed by 1862. By 1882 Karl Benz had developed a motor vehicle with an internal combustion engine, and two years later his wife Berthe had driven it some 66 miles to visit relatives, demonstrating its practical utility. As the auto moved from a curiosity to a marketable item, automobile companies proliferated in the late 1800s and early 1900s. They employed a variety of technologies for locomotion, from steam to electricity to diesel and gasoline. Over time, however, liquid fuels won out because their high energy content made a substantial travel range possible.

The First Half of the 20th Century: Federal Funding for Highways — Not for Transit

During the first half of the 20th century horses, streetcars, railroads, and automobiles were all in use. Bicycle technology had also improved and in the early years of the century cycling grew tremendously.

The first automobiles were costly and mostly hand-built, putting them out of reach for most. However, with assembly-line production of Henry Ford’s Model T, car prices dropped rapidly.
In 1908 the Model T cost $850, still a luxury for most Americans; by 1924, when transit ridership had reached its peak, the car’s price had dropped to only $350 and was far more affordable to the average household. Car ownership boomed, and motorists joined bicyclists in pressing state and local governments to improve roads.

With growing auto ownership came a decline in transit ridership in many urban areas. The decline was uneven across sub-markets: commuting to downtown jobs remained a strong transit market, but the auto made big incursions into travel for family outings, shopping, and other personal and household activities. The resulting peaking in the system meant either that crowding during the peak periods would be severe, or systems sized to the peak would have costly excess capacity for most of the day.

Transit companies also had overextended, reaching into thin markets; as their ridership was eroded by the automobile, many companies retracted, cut services, or consolidated with other companies. In contrast, in many city centers heavy competition among transit providers (and in some cases jitneys — motor vehicles offering shared rides along the same routes) was seen as one of the causes of chaotic and congested traffic. A number of cities responded by licensing various companies to serve particular routes; in return for this market advantage they imposed a variety of requirements, often including low fares for the riders. A few cities took over particular transit services.

During this period the federal government began its assistance to highway programs. Pressed by states, which with cities and counties were devoting an unprecedented share of local budgets to highways, the first federal aid to roads was authorized by Congress in 1916.

This combination of competition, regulation, and overextension hit transit hard, and when the Depression also reduced employment, transit operators suffered; many further reduced services or consolidated with other operators. In some cases state or local government took over (e.g., Staten Island Ferries, 1905; San Francisco Municipal Railway, 1912; construction of several New York subway lines, 1930s). Many other transit companies simply went out of business. Ridership picked up again during World War II, when automobiles, auto parts, and fuel were strictly rationed, hitting its all-time high in 1946; but this was a mixed blessing, putting stress on an already worn system.

Postwar — as auto manufacturing resumed, incomes increased, and many new families were started — federal housing programs combined with road investments to accelerate suburbanization. New developments were often built at densities that were hard to serve with conventional rail transit — heavy or light rail. Even buses (which were less costly to operate, being able to run on publicly funded roads) had difficulties with finances and service quality in the sprawling new suburbs.

The Federal Aid Highway Act of 1956 was a particular milestone for federal support of highways. It authorized a 41,000-mile Interstate Highway System, with federal funding of 90 percent of the cost. Companion legislation, the Highway Revenue Act, set up a highway trust fund created by earmarking federal fuel taxes. While opposition to freeway
construction quickly developed in San Francisco, Boston, Atlanta, and numerous other cities across the United States, the beltways and radial interstates in metropolitan areas both supported and attracted suburban growth.

In short, while the federal government did not fund transit until the 1960s, it played an important role in undermining transit through suburban-oriented mortgage subsidy programs and road building.

1960s and 1970s: Federal Funding for Transit, and Increased Expectations for Performance

As an increasing number of transit companies foundered, public takeovers accelerated in the late 1950s and 1960s, and urban interests looked to the federal government for help. The first Omnibus Housing Act included loans and grants for transit demonstration projects as part of urban renewal efforts, but Congress declined to vote for a bill to provide capital grants for transit at that time. With the election of John F. Kennedy, there was a push for new urban programs of all kinds, but it was not until 1964 under President Lyndon B. Johnson that the first federal Urban Mass Transportation Act became law. The act created capital funding for transit systems, awarded on a competitive basis. It also included labor provisions that assured jobs for employees of acquired companies, continued their collective bargaining rights, and protected against a worsening of employment conditions — removing Labor opposition to federal funding. However, it was not until six years later, with the passage of the Urban Mass Transportation Assistance Act of 1970, that a substantial level of federal funding for transit was established.

Several other federal actions that affected transit were initiated during this period. First, the scope of what was considered a transit project expanded. In 1967, the Federal Highway Administration confirmed that reserved lanes for buses were permissible on federal aid highways including the Interstates, opening up opportunities for express bus services. A year later, the Federal Aid Highway Act included the Traffic Operations Program to Improve Capacity and Safety (TOPICS) program (which previously had been experimental). TOPICS, while short-lived, provided funding for a variety of urban traffic operations and management strategies, including transit priority treatments and transit stop improvements on urban arterials and local streets. In addition, paratransit services, especially dial-a-ride services, were deployed in a number of regions in the early 1970s. In 1974, the National Mass Transportation Assistance Act authorized the use of federal funds for transit operating assistance in addition to the capital grants program. Several strings were attached: an integrated highway/transit regional planning process was mandated, as was the creation of a national transit data reporting system. In addition, federal funding recipients were required to provide half-price off-peak fares for the elderly and handicapped. The next year UMTA and FHWA issued joint highway/transit planning regulations calling for a regional transportation plan that included both a long-range element and a short-range Transportation System Management element including actions to make efficient use of road space,
reduce demand in congested areas, and improve transit services. The requirements were explicitly intended to require transit operators to increase transit efficiency before receiving additional capital funding.

Second, social impacts of transportation began to be addressed legislatively. In 1964 the landmark Civil Rights Act was signed into law. While the Act did not have an immediate effect on transit, it eventually came to shape the way transit and other transportation projects are evaluated from an equity perspective. In 1973, Section 504 of the Rehabilitation Act mandated that no person who is otherwise qualified should be discriminated against in projects receiving federal aid. UMTA responded first with a policy statement in 1976, and then with tougher requirements in 1979, leading to considerable contention.

Third, environmental legislation became tougher. In the waning hours of 1969, the National Environmental Policy Act passed, creating federal requirements for environmental reporting and consideration of alternatives. The following year the Clean Air Act Amendments of 1970 were adopted, establishing national ambient air quality standards, and requiring states to develop plans to meet the standards, using transportation control measures if necessary; the requirements for consideration of transportation measures were made more explicit in the 1977 amendments. And in the middle of the decade and again at the end, oil embargos — the first one tied to OPEC actions, the second fallout from the Iranian revolution — led to heightened concern about energy prices and availability, and created a push for increased transit use and ridesharing. Overall, energy and environmental legislation raised the performance bar for transportation agencies and increased expectations that transit would play a role in providing more livable and resilient cities.

The growing demands on transit had a mixed reception. Some welcomed the broader mandate and believed it gave transit a broader base of support. Others felt strongly that transit agencies should focus on operating the rail or bus system, period — that social and environmental mandates were at best distractions and at worst a serious misuse of transit funds. Some perceived an anti-auto sentiment in much of the legislation, a form of dangerous social engineering that would restrict consumer choice and lead to less-efficient travel overall. Others viewed the legislation as providing a much-needed correction to previous decades of exuberant spending on highways.

During this period, transit ridership in the United States hit its low point for the 20th century (16.6 billion unlinked trips in 1972) and then began to increase again. However, it did not increase as fast as auto trips, so mode share declined.

1980s: Challenges to the Federal Role

In the waning years of the 1970s, challenges to federal requirements became louder. In 1979, the National Transportation Policy Study Commission issued a report stating that federal funding was insufficient to meet future needs, but at the same time arguing that the federal government’s involvement in transportation should be reduced. This perspective was heavily colored by the idea that the government had overstepped its authority in regulating transportation and that government overregulation was impeding private investment as well as innovation. In addition, there were concerns about the performance of both the highway and the transit system and the worry that federal funding availability had biased project selection and contributed to overspending. What followed was a series of challenges to federal policies, procedures,
and ultimately to the role that the federal government should play in transit.

One widely cited example of “federal overstepping” was the federal position on paratransit. After years of debate about its role, in 1982 UMTA issued a policy statement supporting paratransit as a supplement to conventional transit, a service suitable for special needs groups, and a possible substitute for conventional transit in low density and rural areas. This was seen by most transit agencies as simply acknowledging what was already happening and potentially providing flexibility in the use of funds. But the draft regulations on service requirements for the elderly and handicapped issued in 1983 set off bitter debates, with advocates for the disabled arguing for equal access, and transit interests arguing for less costly approaches.

The Reagan Administration policies toward transportation showed considerable doubt about the desirability of a federal role in transit, which was seen as mostly a local issue. Shortly after his election in 1981 President Reagan, who had served two terms as California governor, issued an executive order delaying implementation of new regulations and allowing a Task Force on Regulatory Relief to develop procedures requiring benefit-cost analysis of all regulations. The following year, in 1982, he issued Executive Order 12372, Intergovernmental Review of Federal Programs, which together with revisions in 1983, did away with federal oversight of intergovernmental coordination (the OMB A-95 review process) and instead required greater deference to state and local programs and views. USDOT officials, in response, backed off on regulations requiring planning steps not specifically required by legislation, such as their Transportation Demand Management (TDM), short-range plan, and long-range plan requirements, which the DOT characterized as “best practice” rather than required.

In keeping with a broad “New Federalism” agenda, the Reagan Administration advocated devolution of the transportation programs to the states and proposed converting federal programs to block grants, over which states would have considerable discretion. There was little support in Congress for this approach, however; it was seen as the federal government taking responsibility for taxing the public but then giving up authority over the spending of those taxes. Reagan also pushed for greater private sector involvement in transit. The private sector had long been active partners with public transit agencies, serving as planning and analysis consultants, construction contractors, and equipment and material providers and, for some transit agencies, as contract service providers. The Administration’s interest emphasized the latter — contracting out services — however, this was a position that in many areas led to heavy opposition. Many agencies were irritated by the requirement, seeing it as meddling in their management decisions, and in many areas there was heavy opposition by unions, who feared that their circumstances would worsen since many private operators offered lower wages, fewer benefits, and part-time positions.
Congress, during this period, also showed some ambivalence about federal transit funding but ultimately was unwilling to back the Reagan devolution proposals. Beginning in 1981, Congress began earmarking UMTA capital grant funds for specific projects; the Administration called this “pork” while Congressional leaders retorted that transit grants had been used in presidential campaigns harking back to Richard Nixon. And in 1987, the Surface Transportation Assistance Act — the last transportation legislation of the Interstate era — raised the gas tax by five cents, with one cent going to transit (which previously had depended solely on appropriations from the general fund). STAA also put new emphasis on completion of the Interstate system and created incentives to do so, but it also added a new formula transit grant program whose funds could be used for planning, capital projects, or, with some restrictions, operations. Reflecting the Reagan-era debates, the Act also called for greater involvement of the private sector in transit provision and directed USDOT to issue regulations setting forth minimum service requirements for the elderly and handicapped. In effect, it wrote UMTA’s capital grants prioritization procedure into law. President Reagan vetoed the bill (for many reasons, including its costs and the “pork” projects), but was overridden by Congress (by a comfortable margin in the House but only by one vote in the Senate). This was the only transportation act to be vetoed in the 20th century.

The 1990s — Landmark Legislation, New Technologies

The 1990s began with landmark legislation: the Americans with Disabilities Act (ADA) was signed into law, providing civil rights and requiring accommodation of disabled people. Title II of ADA applies to fixed-route services. The year 1990 also saw a major update to the Clean Air Act. The 1990 amendments designate metro areas by severity of pollution violations, and tighten requirements for planning while extending attainment deadlines for areas with the most severe air pollution problems, including most California metro areas.

In 1991, the Intermodal Surface Transportation Act (ISTEA) established new directions for the first post-Interstate surface transportation legislation. ISTEA increased flexibility in spending — the first federal legislation to include programs where highway and transit can compete for funding (in the Surface Transportation Program [STP] and Congestion Mitigation and Air Quality [CMAQ] programs). ISTEA also gave metropolitan planning organizations (MPOs) more say over transportation choices, reducing the ability of state agencies to override or ignore MPO priorities.

TEA-21 — Transportation Equity Act for the 21st Century — followed in 1998, after a year extension of ISTEA. For the most part, the legislation continued ISTEA programs and requirements. It added transit funding guarantees, extended highway user taxes at the same rates when the legislation was enacted, strengthened safety programs, and added Border Infrastructure, Transportation Infrastructure, Finance and Innovation, and jobs access programs, and put new emphasis on the use of Intelligent Transportation Systems to help improve operations and management of transportation systems and vehicle safety.

Transportation in the 21st Century: Congressional Gridlock?

As the new century began, continuing lack of consensus about the direction of federal transport programs, and declining balances in the highway and transit trust funds, led to a series of
short-term continuations of transport bills and transfers from the general fund to keep existing programs afloat. TEA-21 expired on September 30, 2003. Congress could not agree on funding levels for a new bill; consequently, TEA-21 was extended for short periods 12 times. Eventually, a reauthorization act, the Safe, Accountable, Flexible, Efficient Transportation Equity Act — A Legacy for Users (SAFETEA-LU), became law in 2005. Like TEA-21, SAFETEA-LU largely continued earlier programs. But as its end date drew near, once again Congress did not agree on funding levels or certain specifics — in particular, members of the House had added provisions that the Senate could not accept — and so the bill was extended 11 times. Finally, MAP-21 — the acronym stands for Moving Ahead for Progress in the 21st Century — was passed in 2012. It again extended SAFETEA-LU programs for the most part; its most significant changes from the previous two bills were to consolidate some programs and end a few others. Because MAP-21 was only a short-term bill, some provisions have already had to be extended and others expired at the end of May 2015. Congress may be heading for another spate of short-term extensions since the drafts of a new bill are likely to require considerable negotiations. In addition, unless action is taken to raise the gas tax or find another source of funds for transportation, funding may not be available.

The debates echo issues raised during the Reagan Administration: increasing private sector participation, reducing certain environmental and social mandates, and giving states greater flexibility.
References

(2014 historical data)


Introduction

California has more than 400 transit operators providing rail, bus, and paratransit services. About a billion boardings were recorded in 2013. The American Public Transit Association (APTA) reported that 45 of the transit agencies in California have more than two million boardings per year (Table 1). A dozen of these agencies ranked among the top 50 in the United States in passenger trips and/or passenger miles and account for much of the state’s total ridership (Table 2). However, transit agencies throughout the state, including small operators in rural areas, play an important role in providing mobility and access to millions of riders.

One reason for California’s comparatively high level of transit use is the funding that California has made available for transit, with funds not only from the farebox but also from funding provided by state, local, and private sector sources. This paper provides a brief overview of that funding.
Table 1. Large Transit Agencies in California (Over Two Million Boardings in 2013)

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<td><strong>Monterey-Santa Cruz:</strong></td>
<td>Monterey-Salinas Transit</td>
</tr>
<tr>
<td><strong>Oxnard-Santa Barbara:</strong></td>
<td>Metrolink</td>
</tr>
<tr>
<td><strong>Riverside-San Bernardino:</strong></td>
<td>Metrolink</td>
</tr>
<tr>
<td><strong>Sacramento:</strong></td>
<td>Sacramento RTD</td>
</tr>
<tr>
<td><strong>San Diego:</strong></td>
<td>**North County TD</td>
</tr>
<tr>
<td><strong>San Francisco-Oakland:</strong></td>
<td>AC Transit</td>
</tr>
<tr>
<td><strong>San Jose:</strong></td>
<td>Caltrain</td>
</tr>
<tr>
<td><strong>Santa Rosa:</strong></td>
<td>Golden Gate Transit</td>
</tr>
<tr>
<td><strong>Stockton-Modesto:</strong></td>
<td>Modesto MAX</td>
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</table>

Source: APTA 2013
Table 2. Rankings of California Transit Agencies Among Top 50 Largest Nationwide — Passenger Trips and/or Passenger Miles (2011)

<table>
<thead>
<tr>
<th>Transit Agency</th>
<th>Passenger Trips (000)</th>
<th>Nat'l. Rank</th>
<th>Passenger Miles (000)</th>
<th>Nat'l. Rank</th>
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<tr>
<td>Los Angeles County Metropolitan Transp. Auth. (LACMTA)</td>
<td>456,001.8</td>
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<td>2,189,194.2</td>
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<td>San Francisco Municipal Railway (MUNI)</td>
<td>214,653.0</td>
<td>8</td>
<td>451,070.0</td>
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<td>San Francisco Bay Area Rapid Transit District (BART)</td>
<td>111,099.0</td>
<td>12</td>
<td>1,442,860.8</td>
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<td>San Diego Metropolitan Transit System (MTS)</td>
<td>81,529.4</td>
<td>20</td>
<td>375,687.4</td>
<td>23</td>
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<tr>
<td>Alameda-Contra Costa Transit District (AC Transit)</td>
<td>58,085.9</td>
<td>27</td>
<td>194,486.8</td>
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<td>Orange County Transportation Authority (OCTA)</td>
<td>53,801.3</td>
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<td>256,226.2</td>
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<tr>
<td>Santa Clara Valley Transportation Authority (VTA)</td>
<td>42,491.8</td>
<td>34</td>
<td>211,365.1</td>
<td>37</td>
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<td>Long Beach Transit (LBT)</td>
<td>27,912.5</td>
<td>45</td>
<td>86,092.6</td>
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<td>City of Los Angeles Department of Transportation (LADOT)</td>
<td>27,825.6</td>
<td>46</td>
<td>63,866.0</td>
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<td>Sacramento Regional Transit District (Sacramento RT)</td>
<td>26,161.3</td>
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<td>120,385.2</td>
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<td>Southern California Regional Rail Authority (Metrolink)</td>
<td>11,270.2</td>
<td>(a)</td>
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<td>Peninsula Corridor Joint Powers Board (Caltrain)</td>
<td>14,046.6</td>
<td>(a)</td>
<td>292,354.0</td>
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</table>

Notes: (a) Not among 50 largest transit agencies in this category.
Rank based on agencies reporting to the Federal Transit Administration 2011 National Transit Database

Source: extracted from APTA Fact Book 2013 tables
Sources of Funding for Transit in the United States

Across the United States, a wide variety of funding sources are used to support transit. Fares collected from passengers, employer and university bulk transit pass purchases, parking revenues, advertising revenues, and revenues from the lease or rental of transit agency properties are among the most common.

Few transit operators are supported on their own revenues alone. (Federal grants and loans, covered elsewhere, are a significant source of capital funding; federal funds are also available for operating subsidies.) However, for most transit agencies federal support is a modest share of overall costs. In addition to their own revenue generation, most transit agencies receive state and local support to cover a portion of their capital and operating expenses.

A sales tax is the most common form of state and local taxation for transit. Especially for local sales taxes, voter approval may be a condition of implementation (local option sales taxes), although some sales taxes have been adopted by the state legislature and are permanent. State general funds, local property taxes, and a portion of gas tax revenues are also used in a number of states to subsidize transit. In a few states, special income taxes, business taxes, and payroll taxes are used. Also, some transit operators receive excise taxes on petroleum products or underground tanks, a portion of the revenues from vehicle registration fees, or a portion of toll-road revenues. Developer impact fees go to transit operators or are shared with them in some locales. Value capture from properties developing around a transit station area through benefit assessment districts or tax increment financing are also used in some areas. Interest on revenues and bond sales are important sources of revenue for some operators.

The wide range of instruments used to subsidize transit reflects differing views on the efficiency, relationship to public objectives, volatility (stability), equity, and political acceptability of different types of taxes or fees. Some taxes and fees are easier to collect than others — for example, it is easier to levy a gas tax at the wholesaler than to levy a special tax on properties within a 15-minute walk of a transit station. Likewise, there is a clearer nexus between a tax on motor vehicles being used to fund transit than there is in using a tax on, say, cigarettes. In addition, some taxes are more volatile than others — for example, oil severance taxes have been subject to wild swings as oil prices have bounced up and down in recent years. Some taxes and fees are more regressive than others, e.g., sales taxes in states that apply them to basics such as food. Political acceptability of a tax may depend on how well the public understands the funding options and how much they and their household will pay; also, the greater the specificity of uses to which the tax or fee will be put, the more likely that the public will support it.

The economic downturn of 2008 put tremendous pressure on many of the funding sources for transit across the country. In a survey of operators conducted by APTA in 2009, over 80 percent of the respondents reported flat or declining revenues from local and state government. In response, the operators reported having to make cuts in off-peak service, shrink geographic coverage, raise fares, cut staff positions, or a combination of these strategies. Despite this, transit ridership increased, putting additional pressures on the services that remained.

For all of these reasons the search for more stable funding continues. Many operators are seeking to raise fares, though there are strong concerns about the impact on low-income riders. In addition,
operators in many parts of the country are engaged in discussions about removing some of the subsidies for auto use (e.g., free or deeply discounted parking) in order to level the playing field for the modes.

**Transit Funding in California: Overview**

California’s transit operators’ share of operating revenues coming from the farebox varies widely, depending on the markets served and the type of service. A display at the end of this chapter presents an extract of data on revenues, costs, and farebox recovery ratios for some 250 California operators for 2013. On average in the United States, farebox covers about 30 percent of operating costs; this is lower than farebox recovery levels in Canada or the European Union, which average about 50 percent, and far below the systems in Hong Kong, Singapore, and Tokyo, where a combination of auto restrictions, very high densities, and high capacity transit result in profit-making transit. Readers should note that farebox recovery does not necessarily track subsidy per passenger; a high-cost service may have a high farebox recovery and still have a higher subsidy per ride or per passenger-mile than a less costly service with a lower farebox recovery. Also, the data show operators’ various types of service (e.g., heavy rail and demand-response service) separately; a consolidation of the data by operator would change the rankings somewhat.

To cover capital and the portion of operating costs not covered by the farebox, transit operators draw upon a variety of sources including federal, state, regional, local, and private sector funding. The mix is different for different operators. For example, AC Transit receives considerable funding from property taxes. San Francisco Muni uses development impact fees, parking revenues, and city/county general funds. VTA in Santa Clara County gets 47 percent of its operating revenue from its permanent sales tax and nine percent from fares; BART gets over 60 percent of its operating revenue from fares and about 30 percent from its permanent sales tax. Unlike most transit agencies, Caltrain lacks a dedicated local transit tax and its operating subsidies are paid by the three transit agencies in the counties it serves (San Francisco, San Mateo, and Santa Clara). Even within one metropolitan region, the variation in funding approaches for funding operations is large.

Capital costs for transit also vary, with federal and state grants and loans (including TIFIA loans), bond revenues, sales taxes, and toll revenues among the sources of funds.

The following sections discuss the most important sources of California state and local funding for transit. The references provide further reading on funding options.

**State Funding**

The main sources of funding for transportation from the State of California are excise taxes on gasoline and diesel fuel, vehicle weight fees, and sales taxes. In addition, the Legislature has authorized and voters have approved a number of bonds for transportation purposes. In recent years, legislative action has increased some of these taxes and fees and changed the allocation of some of the funds. Controversies stemming from these actions have led to a series of additional legislative interventions.

**Transportation Development Act**

One of the most important pieces of California legislation for transit has been the Mills-Alquist-Deddeh Act (SB 325), commonly known as the Transportation Development Act (TDA), enacted in 1971. TDA provides two funding sources: the Local Transportation Fund (LTF) and the State...
Transit Assistance Fund (STA). The LTF is funded by a quarter cent of the general sales tax, collected statewide and allocated to counties on the basis of taxes generated there. In rural counties LTF funds can be used for local streets and roads upon a finding that there are no unmet transit needs. Until recently, the STA was funded from sales tax on gasoline and diesel fuel. These funds were appropriated by the state legislature and allocated by the state controller according to formula, 50 percent based on population and 50 percent based on operator revenues (farebox and local option sales taxes) from the previous year. STA now is funded by sales tax on diesel fuel only, as explained in the following section.

TDA generated $1.8 billion in 2012-13. It has been an important source of funding not only in urban areas of the state, but also in rural areas where transit ridership is low but people who cannot drive, or are otherwise dependent on transit for mobility and access, need assistance. It also has been the subject of considerable controversy in recent years.

**Fuel Taxes, “Spillover” and the Tax Swaps of 2010-11**

Prior to 2010, California imposed both an excise tax and a sales tax on motor vehicle fuel (gasoline and diesel). The taxes were allocated by statutory formulas to cities and counties for local road construction and maintenance as well as to Caltrans (the state department of transportation) for construction, maintenance and operation of the state highway system and intercity rail projects.

Because TDA and STA funds were subject to state appropriations, funds were reallocated from time to time to the General Fund, a practice especially prevalent during times of state fiscal crisis. In the mid-2000s, during another period of severe General Fund deficits, the Legislature and governor began to transfer certain revenue streams away from public transit programs — revenues previously dedicated to the STA program — and into General Fund programs, in order to make up for deficits in the General Fund.

This practice escalated as a particular source of transit funding — colloquially known as “spillover” revenues — started to grow very large, making an attractive target for cash-strapped state budget officials. These so-called spillover revenues occurred when collections from the sales tax on gasoline (first authorized by TDA) increased at a faster rate than all other taxable items. The transfer is based on a theoretical calculation required by law to be made by the Board of Equalization and the Department of Finance every year, which compares the revenue estimated to be generated by a state sales tax rate of 5 percent on all goods except gasoline to the revenue generated by a sales tax rate of 4¾ percent on all goods plus gasoline. If the amount estimated at 4¾ percent is greater than the amount estimated at 5 percent, then the difference is transferred to the Public Transportation Account. This mechanism is defined in Revenue & Taxation Code section 7102(a)(1).

In 2010, the Legislature enacted a “tax swap” intended to create more budget flexibility. Before the tax swap, fuels were subject to a state excise tax of 18 cents a gallon, as well as state sales tax of 6 percent. Under the swap, the excise tax on gasoline was raised initially to 35.3 cents a gallon and the sales tax was eliminated. The additional 17.3 cents in excise tax was needed to produce the same amount of revenues as had the sales tax. The additional excise tax was to be adjusted annually to maintain tax “neutrality” — i.e. it was adjusted to collect the same amount as would have been collected in excise tax on gas, before the gasoline excise tax was discontinued. The excise
tax on diesel fuel was to be 13.6 cents a gallon and the sales tax on diesel was to be 6.75 percent.

The tax swap legislation was intended to provide immediate budget relief to the state through a loan from fuel excise tax revenues to the General Fund, as well to make future budgeting easier by increasing use of flexible funding sources.

The swap also provided funding from the new excise tax to “backfill” gasoline sales tax revenues that would have been provided under the old funding system to local agencies for their streets and roads programs. Funding for the State Transportation Improvement Program, which previously came from the sales tax, was also maintained at approximately the same levels that had previously been provided. However, the Public Transportation Account (PTA), which had received a large share of the gasoline sales tax revenues prior to the swap, was hurt by the 2010 action. Partial compensation for the loss of gasoline sales tax was made up by increasing the sales tax on diesel fuel and depositing this tax into the PTA.

Two propositions approved by voters in the November 2010 elections threw a wrench in the works. Proposition 22 restricted the state’s ability to pay for transportation debt service using fuel excise tax revenues, prohibited borrowing of fuel excise tax revenues as well as certain other transportation funds, and required that future gasoline sales tax revenues (if any) be used only for transportation purposes. Proposition 26 required a two-thirds vote of both houses of the Legislature for any change in statute that results in any taxpayer paying a higher tax and provides that any tax adopted after January 1, 2010, but prior to November 3, 2010, that was not adopted in compliance with the two-thirds vote requirement shall be void, unless reenacted by the Legislature with a two-thirds vote. AB 105 (2011) responded to both of these propositions. It re-stated the 2010 gas tax swap, including provisions eliminating the sales tax on gasoline and replacing it with the price-base excise tax to be adjusted annually, and also authorized the redirection of vehicle weight fees from the State Highway Account to the General Fund to pay off obligation bond debt service for specified voter-approved transportation bonds, thus avoiding conflict with Proposition 22. This measure was passed with the two-thirds supramajority vote required in Proposition 26, thus ensuring the gas tax swap’s insulation from legal attack.

**Local Transportation Sales Taxes**

In addition to TDA and excise taxes, California has authorized local transportation sales taxes to support transportation programs. As of 2013, four transit authorities (BART, San Mateo, Santa Clara and Santa Cruz) have approved permanent local half-cent sales tax measures for transportation. Counties may adopt up to a one-percent sales tax increase for transportation programs, subject to two-thirds voter approval and, as of 2013, 19 counties had such self-help transportation sales taxes. In addition to the transit authority sales tax, Santa Clara County also has self-help sales taxes for general transportation purposes (expires 2046) and for BART extension (expires circa 2043). Los Angeles County has a permanent one-cent transportation sales tax measure and an additional half-cent measure (Measure R) that expires in 2039. Seventeen additional counties have approved half-cent sales tax measures for transportation, with tax expiration dates ranging from 2022 to 2050. Sonoma County and Marin County jointly adopted a sales tax with a quarter-cent earmarked for the SMART rail project; Sonoma County has an additional quarter-cent sales tax for other transport projects. The amount of revenue generated by these transportation sales taxes is estimated to range from $7 million (Madera
County) to more than $1.3 billion (Los Angeles County’s 1-percent tax).

The local option sales taxes can be and are used for a variety of projects, including highway, transit, bicycle and pedestrian projects, maintenance and rehab, and operations. Most urban counties in California have presented voters with a list of projects to be implemented over a 10- to 30-year period (after which the tax expires unless renewed). Funding is generally shared by different transportation entities (cities, county, transit agencies, etc.).

Other State Support for Transit

Several other state programs provide funding that can assist transit operators. For example, SB 142 (2013) authorizes California transit operators to create benefit-assessment districts within a half-mile of stations to pay for transit improvements. This value capture tool could help transit operators finance a variety of improvements in and around their stations. In addition, grants related to the implementation of SB 375 can help transit operators by supporting transit-oriented development that can generate off-peak as well as peak ridership and make feeder services to transit hubs more efficient.

Commentary

Changes in the economic environment have created significant budget challenges over the past six years. The severe recession of 2008-09 and the slow recovery from it created budget problems for the state and its counties and cities, which in turn have been less generous toward transit than previously. Declines in sales tax revenues have been a problem for both TDA and the county and agency sales taxes that support transit throughout the state. Gas tax revenues were also lower than expected. Recovery, while well under way, has been slow and uneven. The tax swap of 2010-11 ultimately created more flexibility for the state but at a cost of budget problems for many transit operators. Voter-imposed restrictions on the use of funds and requirements for two-thirds votes to adopt new taxes are likely to add pressures in the future.

The Legislature’s moves to create opportunities for greater flexibility in funding for transit operators — such as benefit assessment districts — are a step forward.


Transit investments have long been linked to urban development. American suburbs grew along railroad lines and by means of ferry services in the early 1800s. Horsecars linked small towns to city center jobs in cities across the country. Streetcars were built in a number of cities to facilitate commutes and, in several, to promote development. In Los Angeles, for example, Henry Huntington’s Pacific Electric Railway supported the development and marketing of housing in the San Fernando Valley and in then-remote Orange County. With electrification, rapid expansion of rail systems brought streetcars to hundreds of cities.

Transit shaped urban growth during the 19th century and the early years of the 20th century because it offered a massive increase in accessibility. Compared to walking — the most common means of urban transport during the period — transit traveling at 10 miles an hour could triple the distances covered and make a vastly increased territory accessible — depending on network density and configuration, up to 100 times as large an area as could be reached on foot. The emergence of the automobile as a
its travel time advantage, especially since in nearly all applications buses traveled in mixed traffic with cars and trucks but had to make many more stops to pick up and discharge passengers (and therefore became a slow travel mode).

During the Depression years, many transit companies focused on maintaining existing markets rather than expanding to new ones; during World War II, when cars, fuel, and tires were rationed, transit provided crucial services. Transit ridership reached an all-time high in 1946. However, after the war, federal housing assistance policies and a new wave of road building, including the Interstate Highway system, shrank the market for transit.

The post-war housing and transportation policies supported a vast increase in suburban development, this time centered on the automobile. In the new low-density suburbs, transit services were cities were stepping in to municipalize transit services. By the mid-1960s, when federal aid to public transit companies became available, the majority of urban transit service had shifted to the public sector. In addition, in a number of United States cities investigations were under way on how to provide new transit services that would meet the needs of growing regions such as the San Francisco Bay Area and the Washington Metropolitan Area.

Also during this period there were growing expectations for transit, not just as a transportation mode but as a symbol of equality, a solution for environmental problems, and a shaper of growth. In the 1950s, 1960s, and 1970s, movements for civil rights and environmental protection sometimes focused on transit — desegregating it, providing it with added subsidies for the disabled and elderly, supporting its use as a way to reduce pollution and congestion. The BART plan for this period looked to
a new transit system to shape growth throughout the Bay Area. Many other transit plans aimed to support downtown development or redevelopment.

The ability of new transit investments, especially rail transit, to deliver on these expectations was challenged during the 1980s and 1990s. Critics pointed to cost overruns and lower-than-forecast ridership as evidence that rail transit in particular was not cost-effective. They in turn drew criticism from those who argued that ridership would build up over time, and that the underpricing of auto-highway externalities (congestion, pollution, and crashes in particular) created a biased field for evaluation. The BART Impacts Study found that BART had reinforced development in San Francisco but the presence of stations alone was not enough to alter development patterns overall. The idea that regional and local plans supportive of transit were needed began to take root.

In cities such as Portland, OR, San Diego, and Sacramento, transit-oriented development began to be planned in conjunction with new rail systems. The Federal Transit Administration began to look for transit-supportive land development policies around transit stations and corridors rather than assuming that land use changes would happen regardless of local policy. Regional planning studies in Portland, Salt Lake, Seattle, and the Bay Area compared transit-focused, compact growth to highway-oriented futures, and the public preferred transit.

By 2013, transit ridership was up to 10.7 billion riders, its highest level since 1946 and a 37 percent increase from 1995. Ridership increases were hurt by the recession during 2008-10 (as was auto use). Nevertheless, over the entire period reported, transit showed growth faster than population or employment growth. APTA attributes the growth in recent years to greater public support, higher (or unstable) fuel prices, and a preference for city living among increasing numbers of empty nesters and young adults. Higher real costs for the auto would make urban living more attractive, all else being equal, whereas changes in location preferences would increase urban markets for transit.

Meanwhile public policies for transit also have been growing stronger. While in the 1970s and 1980s air quality planning relied in part on transit to achieve air quality goals, by the 1990s policies coordinating land use and transportation began to be more common, especially at the state and local level. Some cities began to reduce parking requirements in transit-rich areas and others gave density bonuses for projects located near transit.

California has provided leadership in connecting transportation and land use planning to greenhouse gas reduction through two groundbreaking pieces of legislation. In 2006, California passed Assembly Bill 32, the Global Warming Solutions Act of 2006, which calls for reducing GHG emissions to 1990 levels by 2020. In addition, then-Governor Arnold Schwarzenegger signed Executive Order S-3-05 in 2005, calling for even larger reductions, to 80 percent below 1990 levels by 2050.

The California Air Resources Board (CARB) is responsible for implementing AB 32. Many of CARB’s strategies address transportation emissions because they account for over a third of the total GHG emissions in the state. CARB’s strategy for reducing GHGs from passenger transportation requires improving fuel efficiency, improving vehicle efficiency, and reducing vehicle travel. The first two strategies account for nearly all of the short-term reductions, but the third strategy, reducing vehicle miles traveled (VMT), is considered essential over the longer run because as the state’s population grows,
overall VMT increases could erode the emissions benefits attained from technological improvements.

To reinforce state action on VMT reduction, in 2008, California passed SB 375. SB 375 calls on the state’s 18 metropolitan planning organizations (MPO) to achieve GHG emission reduction targets for 2020 and 2035 through more efficient transportation and land use. Under the law, regional targets were established collaboratively by CARB and the MPOs, and then each MPO developed a “Sustainable Communities Strategy” (SCS) as part of its regional transportation plan (RTP). The SCS is a regional development scenario forecasted to reduce GHGs from automobiles and light trucks by the targeted amount.

SB 375 builds incrementally upon existing planning processes. SCSs are a modification of long-range land use and development projections that MPOs have long produced to estimate impacts of proposed investments. Similarly, SB 375 builds upon the process by which MPOs must demonstrate conformity of RTPs with federal and state air quality standards. MPOs already face mandated targets for reducing various air pollutants through their RTPs; SB 375 adds a new target for reducing CO₂ emissions.

However, SB 375 introduces new land use planning elements into these traditional processes. Traditionally, MPO investments were geared to address transportation needs related to development patterns determined largely by local governments. The SCS approach changes expectations by calling for consideration of alternative land use scenarios as a basis for improving transportation efficiency, and for adoption of RTPs with coordinated land use and transportation measures to achieve climate goals.

Thus, SB 375 requires close planning collaboration between MPOs and local governments to succeed. To accomplish this, SB 375 builds upon planning innovations in California’s largest metropolitan regions during the past decade, specifically, “blueprint planning,” undertaken by MPOs to help achieve air quality conformity and make efficient investments. Between 2005 and 2012 the state government has provided $20 million for blueprint planning, and seven plans have been completed — four in the state’s largest regions (the Los Angeles, San Francisco Bay, San Diego, and Sacramento areas), two in the counties of Shasta and San Luis Obispo, and another by a consortium of eight MPOs in the Central Valley. By 2009, one-third (38 percent) of California cities located in regions with an adopted blueprint plan reported having aligned their General Plan — the “constitution” for local development — with the regional blueprint. For the most part these blueprints called for more compact growth and transit-oriented development.

One limitation of SB 375 is that it provides few incentives for implementation of new plans for compact growth and transit. The primary incentive for local participation in SCS development is streamlined environmental review under the California Environmental Quality Act (CEQA) for “infill” projects consistent with SCSs. Under CEQA, public agencies must evaluate and require mitigation, if feasible, of significant adverse environmental impacts of proposed development projects and plans. SB 375 reduces review requirements for certain infill projects deemed consistent with an approved SCS or APS.

The CEQA streamlining provision will ease infill development for communities motivated to build such projects in the first place. A few
recent state policies support infill; in particular, CEQA guidelines, modified in 2010, now require review and mitigation of climate impacts, making greenfield development more challenging. However, various other state policies work in the opposite direction, including recent state budget cuts to local transit and redevelopment funds, and the lack of systematic, ongoing support for infill and associated infrastructure needs. Substantial cuts to state funding for transit operations have dealt a particularly severe blow to “smart growth” strategies being modeled by MPOs for SB 375 compliance.

The Bay Area provides an example of planning under SB 375. In July 2013, the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) jointly adopted Plan Bay Area, the first SB 375-guided plan for the region. Plan Bay Area encourages future growth in transit-rich locations to reduce GHG emissions from cars and light trucks by 15 percent by 2035.

Transit is a key to Plan Bay Area’s implementation, and especially the BART system. The Plan allocates 47 percent of new jobs (311,000) and 41 percent of new households (166,000) for the four BART-served counties to areas within a half-mile of a BART station. For its part, BART is continuing to work on station area planning designed to improve station access and increase the number of residents within walking distance of its stations. BART staff work with city staff and with private developers on land use plans on BART property and in the areas around a number of stations including West Oakland, Lake Merritt, 19th Street Oakland, Coliseum/Oakland Airport, Warm Springs, Powell Street, Embarcadero, North Concord, Concord, and Walnut Creek. Developers currently are building affordable housing on BART property at the MacArthur station and will also be starting construction at San Leandro and South Hayward stations in the near future. Staff continues to develop plans and negotiate with developers at Millbrae, Glen Park and Coliseum stations. Other transit operators including Caltrain, VTA, AC Transit, and Muni also have been active in encouraging and supporting transit-oriented development.
References


Environmental and energy legislation has had a significant and growing influence on transit. Likewise, social legislation and court decisions addressing civil rights and their implications for transit have resulted in significant changes in practice over the past five decades. Today numerous federal, state and local programs rely upon transit to help reduce the environmental impacts of transportation, to support economic development, and to provide mobility and access for groups who might otherwise have fewer opportunities to travel, work, handle personal and household duties, and enjoy life.
Here we review only a handful of the key social and environmental laws that have shaped transit in California. The references at the end provide a more complete listing of legislation for those interested in greater detail.

**Environmental Review and Mitigation of Adverse Impacts**

In the waning days of 1969, Congress passed the National Environmental Policy Act, creating federal requirements for environmental reporting and consideration of alternatives. NEPA applies to federal actions; a number of states have adopted similar legislation that applies to actions by state and local governments. For example, the California Environmental Quality Act (CEQA) was adopted in 1970.

Both NEPA and CEQA require agencies to consider environmental impacts in their decision-making, to investigate the impacts that their projects might have, to make their findings on likely environmental impacts publicly available, and to consider public comment. Additionally, CEQA requires mitigation of impacts unless there are overriding considerations.

Transit projects are subject to NEPA if they receive federal funding or approvals and, in California, are subject to CEQA if they require a discretionary action by a state or local agency. (There are exceptions for certain projects.) Under NEPA and CEQA, transit agencies have addressed negative environmental impacts from transit such as noise, emissions, and severance of properties.

**Air Quality**

The Clean Air Act (CAA) and its state counterparts have also affected transit. In 1970, the federal Clean Air Act Amendments established an aggressive nationwide approach to air pollution reduction, mandating pollution controls on automobiles and industry (“stationary sources”), establishing national ambient air quality standards, and requiring states to develop plans to control existing and new sources of emissions and impose “transportation controls” if necessary. In 1977, after most states had missed the deadlines for achieving the national air quality standards, additional amendments to the CAA were passed, extending deadlines for attainment but also (among other things) requiring that metropolitan planning organizations engage in transportation-air quality planning, consider a list of emissions reductions measures (including transit investments, tolls and parking pricing, and ridesharing incentives), and assure regional transportation plans are consistent with air quality plans. Additional amendments were passed in 1990, designating metro areas by severity of pollution violations and tightening requirements for planning while extending attainment deadlines for areas with the most severe problems, including most California metro areas. Buses were held to strict pollution control under the act.

It is important to note that under the CAA, California has had an exemption allowing it to enact tougher auto emissions and fuel standards than those imposed by EPA, and other states have had the option to adopt the California standards. Thirteen states, covering 40 percent of the U.S. population, now apply the California standards.
The transportation control plans of the 1970s and 1980s were only marginally effective because most areas failed to fully implement the strategies they identified, overestimated the benefits of cleaner cars and fuels, and overestimated the benefits of traffic flow improvements, though legislation did lead to significant vehicle and stationary source emissions reductions. In addition, analyses of transportation control measures showed that major transit investments and level of service improvements could produce higher transit mode shares, and illustrated how transit-oriented development could increase transit ridership and reduce VMT as well as emissions. These analyses also created an impetus for more rigorous modeling and forecasting, which FTA supported and mandated. However, they also showed that the longer the delays in implementing transit improvements, the cleaner the auto and truck fleet is likely to be — reducing the benefits of transit from an air quality perspective.

**Fuel Efficiency**

The 1973-74 OPEC oil embargo led to a new concern: energy prices and fuel availability. The 1975 Energy Policy and Conservation Act directed the U.S. Department of Transportation to promulgate corporate average fuel economy (CAFE) standards for automobiles, raising fuel efficiency from 18 mpg in 1978 to (a planned) 27.5 mpg by 1985. Light trucks were also regulated starting in 1979. Other provisions of the act included promotion of carpooling and vanpooling.

The CAFE standards were relaxed somewhat in the late 1980s and then returned to the 27.5 mpg standard in 1990, though light truck standards were loosened until 1994. In 2007, Congress enacted — and President George W. Bush signed — the Energy Independence and Security Act (EISA), which the House and Senate had passed with broad support, and which set a goal for the national fuel economy standard of 35 mpg for both automobiles and light trucks, to be achieved by 2020.

In 2009, a National Program to implement new fuel efficiency standards was hammered out between the federal government, states, and auto manufacturers. The agreement reflects a court decision, *Massachusetts v. EPA*, in which the Supreme Court found that greenhouse gases could be regulated under the Clean Air Act, forcing EPA to begin setting emissions standards for GHGs. The National Program was intended to make the new fuel efficiency standards consistent with greenhouse gas emission reduction standards. Phase II of the national program, which goes into effect in 2017, will gradually raise CAFE for new car and light truck fleets to about 55 mpg by 2025. (Note that CAFE measures new cars; the vehicle fleet today averages about 21 mpg despite the CAFE standard of 27.5 mpg, and the 55 mpg standard, if attained, will produce an on-road fleet that averages 36-37 mpg.)

**Civil Rights in Transportation**

Social policies for transportation over the past 50 years have been changed by a wide range of interventions, from court decisions that banned racial discrimination in public services to legislation that mandated access for the disabled.

The 1954 U.S. Supreme Court decision *Brown v. Board of Education* (347 U.S. 483) had set the stage, declaring that state supported segregation is a violation of the 14th Amendment and repudiating the Court’s earlier *Plessy v. Ferguson* decision (1896) which had allowed “separate but equal” facilities (the facilities in question had been rail cars). Civil rights in transportation also had been promoted by the case of Rosa Parks, who in 1955 sparked the Montgomery bus boycott by refusing to give up her seat to a white
man, for which she was arrested. The boycott lasted over a year, until the city finally repealed its law requiring segregation on the buses.

When the landmark Civil Rights Act of 1964 was enacted, it created a formal framework for ending discrimination on the basis of race, color, religion, sex, or national origin. Among other things, the act specifically outlawed discrimination in public accommodations. The act was strengthened several times in the following years, especially with regard to its enforcement provisions.

Federal laws also began to address the problem of discrimination on the basis of age or disability. Section 504 of the Rehabilitation Act of 1973 stated that no person who is otherwise qualified should be discriminated against in federal-aid projects. The Urban Mass Transit Administration (now FTA) began developing guidance for improving access to transportation services for the elderly and handicapped in response to this mandate, issuing a statement first in 1976 and another with tougher requirements in 1979. Transit agencies opposed the UMTA approach as too costly and sued — leading to a court decision that UMTA had exceeded its authority. UMTA backed off, but this set off a renewed lobbying effort by the disabled community to strengthen their rights to access.

In 1990 the landmark Americans with Disabilities Act (ADA) was signed into law. The ADA prohibits discrimination based on disability, either mental or physical, and includes segregation as a prohibited form of discrimination. The law thus provides civil rights requiring accommodation of disabled people, similar to those established in the Civil Rights Act of 1964. Title II of the ADA applies to public transportation and requires the provision of paratransit services by public entities that provide fixed route services.

Disparate impact of federal policies also became an issue in the 1980s and 1990s, beginning with controversies over the siting of waste dumps but quickly spreading to consider the impact of other infrastructure decisions. An executive order signed in 1994, Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority and Low-Income Populations” mandated that every federal agency make environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.” In response, the U.S. Department of Transportation outlined how environmental justice analyses should be performed, and mandated public involvement procedures for all federal aid projects, including transit projects. Transit agencies thus had an additional responsibility to assure that not only the intent but the consequences of interventions were fair and balanced.

Overall, civil rights legislation and related interventions opened up transit to more people and
created additional planning requirements for transportation agencies. Transit agencies were directed to pay attention to the potentially discriminatory impact of their policies and investment choices by conducting careful analyses of the equity of their proposed actions.

**Greenhouse Gas Reduction**

California launched path-breaking environmental laws and policies in the 1990s concerning greenhouse gas emissions. While the United States had declined to participate in the Kyoto Protocol to reduce greenhouse gases, in 2006 California committed to do essentially that through AB 32, the Global Warming Solutions Act. AB 32 requires the California Air Resources Board to develop a Scoping Plan to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. Two years later SB 375 was passed, mandating that metropolitan planning organizations undertake the development of plans for reducing greenhouse gas emissions by fostering higher densities and transit-oriented development.

In April 2015, Governor Jerry Brown issued an executive order that sets a more stringent greenhouse gas reduction target for the state, requiring that California’s GHG emissions be reduced by 2030 to a level that is 40 percent below 1990 levels. This is the same target that was set by the European Union last October. Achieving such a massive reduction will require major changes in all sectors of the economy and, in transportation, will require major reductions in vehicle emissions and use.
References


A variety of institutional arrangements are in use worldwide for providing transit service:

- Public financing, planning, design, construction and operation of services
- Public financing of competitively bid construction contracts with public planning and operations of the services
- Turnstile build-operate-transfer projects (many variations)
- Competitively bid route-level service contracts with central planning of the services
- Competitively bid operations and management contracts
- Deregulated/open entry bus services with incentive payments for meeting publicly set service quality standards
- Competitively bid paratransit services.

U.S. transit operations are managed differently from those in much of the rest of the world. In developing countries it remains common for private operators to provide much (or all) of the urban transport services, using vans, small buses, or full-sized buses.
that compete for riders. Current efforts in a number of these countries are aimed at better organizing the transit services to improve service quality, reliability, safety, and energy and environmental performance. In the EU, transit service is increasingly contracted out, with competitive bids for operation of services; but numerous variations are in use, with government commonly involved in planning, contract management, service monitoring and evaluation, and subsidy provision. In the United States, it is far more common for public agencies to plan, finance and operate services, typically through a complex set of relationships among federal, state and regional agencies and the transit operator. However, many U.S. transit agencies contract for consulting services for engineering, design and construction of fixed facilities, as well as for general services to assist with route planning and with monitoring and evaluation of system performance. In addition, many operators contract out for paratransit services for the elderly and handicapped, and small transit agencies may contract out virtually all services, with government retaining an oversight responsibility.

Transit in California is provided in virtually all of these ways by the state’s many transit providers. Funding is provided by pass-through of grants from the federal government (principally through programs administered by the Federal Transit Administration, although Federal Highways, Housing and Urban Development, and the Environmental Protection Agency are also involved in some cases, as is the IRS through its supervision of federal tax benefits for transportation). State funding comes from fuel taxes, sales taxes, and bond measures, as well as from general funds in some instances; Caltrans is the principal agency involved, but Cal EPA, the Dept. of Finance, and the Strategic Growth Council also have roles with regard to some funding sources. Also, state funding may be authorized by the Legislature or via voter propositions. Carbon taxes have become a new source of funding for transit projects in California in recent years.

At the local level, local sales taxes, local property taxes, and developer exactions and impact fees have been used to fund transit, with the local option sales tax the dominant source of funds today. Transit agencies themselves receive revenues from dedicated sales taxes, dedicated property taxes, and in some cases, toll revenues; they also have revenues from advertising, real estate holdings, service contracts with employers and universities, and fares paid by users.

Planning, building, operating, and monitoring transit services is equally varied from an organizational perspective. Local governments, regional agencies, special districts, joint powers authorities, nonprofits, Caltrans, and the private sector all have a hand in delivering transit services. At the state level, Caltrans manages two intercity routes operated by Amtrak, the Pacific Surfliner and the San Joaquin, and financially supports a third, the Capitol Corridor (managed by Capitol Corridor Joint Powers Authority). At the regional level, metropolitan transportation organizations plan and program transit projects in cooperation with operators. Some regional entities do more, e.g., the Bay Area Toll Authority allocates a portion of bridge toll revenues to transit. County transportation sales taxes are often administered by a county transportation commission created for the purpose. Cities impose development exactions and impact fees to improve transit facilities in some cases and administer them through the planning, public works, or finance departments with city council oversight.

Nongovernmental organizations also are involved in transit provision. Nonprofits provide services to the elderly, disabled, and in some cases to low income and youth populations, often using
social services funding but in some instances using transportation funds as well. Increasingly, corporations, business groups, and public-private partnerships sponsor shuttle services in commercial districts and to cover the “last mile” to and from a public transit link. In addition, several corporations such as Google offer private commuter buses for their employees’ journey to work.

In a few cases, private operators also provide transit and paratransit services on their own accord. For several years now, Uber and similar services have offered rides (shared or single) using mobile apps to make the connection between rider and driver. Recently a private bus began operation in San Francisco, offering limited stop service to downtown in an amenity-filled bus at a premium price.

The specific legal framework under which these institutional arrangements operate varies. Some of the state’s transit districts were authorized by the Legislature and confirmed by voters (e.g., AC Transit, BART) while others were created under enabling legislation authorizing counties and cities to form transit districts. A number of services are run under joint powers agreements (e.g., Caltrain). Many paratransit services are run under contract with private companies, as are certain commuter routes.

One issue raised by the current institutional arrangements for transit is whether adequate coordination can occur. County-level transit operations provide considerable local control over costs and services, but can make it complicated to make a multi-county trip by transit. A recent report reviewing transit operations in the Bay Area notes problems with a multitude of fare policies as well as gaps in service that it attributes to excessive fragmentation of services, and recommends coordinated action by the MPO, the congestion management agencies, and the transit operators to rectify the situation.

Private shared-ride services and private buses also have come under scrutiny recently because they appear to some to be skirting regulations that govern the provision of transit and bus services. Their use of public infrastructure such as bus stops and local streets has also raised a stir in some communities. Nationwide, states and localities have taken widely disparate views of these services, from welcoming accommodation to outright bans. In California, the outcomes of the current debates are not yet clear.

A possible institutional arrangement that is beginning to receive more attention in California is the multi-functional transportation agency. Such agencies have responsibility for street design and operation, and parking management and pricing, as well as transit planning and operations, and thus have the ability to coordinate across modes and cross-subsidize services.
References

Amin, Ratna, and Sara Barz, Seamless Transit: How to make Bay Area public transit function like one rational, easy-to-use system. SPUR Report, San Francisco, April 2015


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Looking Ahead for Transit

In 2012, 10.6 billion passenger trips were made on U.S. transit systems. This is up considerably from its low in the 1970s but still only half that of transit’s 1946 high of 23 billion trips. The population is about double what it was then, and more people are in the work force (2009 data show 1.34 workers per household with an average household size of just 2.5), but the country is also richer, auto ownership is higher (1.89 vehicles per household and 1.36 vehicles per worker in 2009), and a large chunk of the population and employment is in low-density suburbs that are hard to serve by transit.

Today, the auto-dominated U.S. transportation system is suffering from underinvestment, with numerous streets and highways, bridges, and transit systems in need of repair, rehabilitation, and renewal. The current transportation system remains dependent on petroleum products and it continues to impose environmental damage. The Transportation Research Board lists system reliability, resilience,
safety, greenhouse gas emissions, energy and environmental impacts, and effects of sprawl on the sustainability of the transport system as critical issues for coming years. The California Transportation Plan for 2040, currently under review, reflects these concerns as well and aims to produce a sustainable transportation system that improves mobility, strengthens communities, and enhances the quality of life for all in California.

By 2050, the U.S. population may be in the 400-440 million range, and California’s population is projected to reach 50 million. The population of both the nation and the state will be older, as well. Such growth and change will put added pressure on the transportation systems of the future.

How might future transportation systems become more reliable, resilient, environmentally sound, and sustainable? What role will transit play in plans for a more sustainable future? Some argue that technological change will show the way forward, pointing to new vehicle and fuel technologies and new ways of organizing their delivery. Others argue that, particularly in a state like California where substantial growth still seems likely, learning to grow in more sustainable ways will foster a different and more congenial set of opportunities for transit.

This chapter takes a brief look at alternative futures for transportation in California over the next 50 years, outlining both a technology-driven future and one that relies more heavily on social and institutional change.

**Background**

Transit constitutes a small share of overall travel in the United States, about 2 percent, but it is a vitally important mode in major urban areas, where its share of trips is much higher, and also for those who do not or cannot drive an automobile. Nationwide, for example, about 5 percent of work trips are made by transit, but this varies from 31 percent in New York City to 13 percent in San Francisco-Oakland, 6 percent in Los Angeles, and 3 percent in Sacramento and San Diego. About 9 percent of households in the United States do not own a car, but urban areas show wide differences in car ownership levels, with 56 percent of New Yorkers, 31 percent of San Franciscans, and 13 percent of Los Angeles households going carless, compared to 5.8 percent of households in San Jose.

What will these data look like in the future? The American Public Transportation Association has created a vision of 2050 in which transit ridership has increased fivefold, the result of demographic and economic trends, technological advances, and changes in policy that provide stable and predictable funding and comprehensive transportation and urban development planning. In the APTA vision of the future, all Americans have adequate access to transit, transit operators see themselves as mobility managers providing the most appropriate service for each customer and trip, and public policies have been reformed to reflect consumer preferences for livable communities and convenient multimodal accessibility.

Some trends in consumer behavior may increase transit use, including later driver licensure and lower levels of auto ownership and driving among teens and young adults. Whether these trends are a reflection of new values and preferences or the result of tougher licensing and insurance laws, recession and unemployment is an issue requiring further monitoring and investigation; there is evidence, however, that they started before the 2008 economic downturn. Likewise, since immigrants are
more likely to use transit than U.S.-born Americans, a continued high rate of immigration may increase transit use.

In addition, both hard and soft technologies could increase transit use over time. These include new information and communications systems that make transit more accessible to users, as well as new vehicle, fuel, and guideway technologies that could make transit cleaner, quieter, and more energy efficient.

Public policy also can increase transit use, both by providing the financial means for transit systems to be built and operate at high levels of service, and by providing the policies that help create urban environments conducive to transit. California has taken steps to increase transit use in its metropolitan areas. In 2006 California passed AB 32, the Global Warming Solutions Act, which requires the California Air Resources Board to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. While most of the short-term gains will be accomplished through technological change, strategies to reduce vehicle miles traveled (VMT) are acknowledged to be needed going forward. In 2008, SB 375 was passed, mandating that metropolitan planning organizations develop plans for reducing greenhouse gas emissions by using transportation and land use strategies. For most MPOs, this has meant identifying areas where it is possible to build at higher densities and foster transit-oriented development.

Other policies that support increasing transit use include tolling and other road user charges, including parking charges, that reflect the actual costs of travel. These charges reduce the subsidies for the automobile and provide price signals to motorists about the costs of their mode choice. California has experimented with both road pricing and parking pricing, and while neither is widely implemented today, more applications seem likely in the future. In addition, “complete streets” policies support transit (as well as walking and biking) by creating safe and efficient road space for these modes. In 2011, AB 1358 went into effect, requiring local governments to update their General Plans to provide for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, transit users, and commercial goods movers, including children, seniors, and persons with disabilities.

There are, however, alternative views of the future which are less positive for (conventional) transit. In one such scenario, by 2050 the automobile fleet will become highly fuel efficient (even feeding power back into the electric power grid), low polluting, quiet, intelligent (equipped with highly accurate and sophisticated routing, crash avoidance, and other driver assistance technologies), and automated (capable of traveling in platoons to increase capacity and speed, capable of self-parking, including parking at remote locations if appropriate). Carsharing (access to the vehicle fleet via subscription rather than direct ownership) will become common in this scenario, allowing consumers to have access to a wide variety of vehicles without having to make a major investment in them. In very high density corridors transit vehicles, or perhaps platoons of cars and trucks, might ply the roads. Both transit and commercial vehicles also could be automated.

Considerable research needs to be done on the technologies to make this second scenario feasible, and there is as yet no clear agreement on whether such a scenario would support central places or decentralize them, or whether consumers will regard the resulting street designs, traffic flows, travel conditions, and urban places as desirable
or unattractive. Regardless, in this scenario the role of conventional taxi, transit, paratransit, and ridesharing services seems likely to diminish, with a blurring of the boundaries among them. At the very least, public transportation would be something quite different from what we know it as today.

Steps Toward a Transit-Friendly Future

In this section we outline steps that would help assure a transit-friendly future, regardless of whether major technological change alters the role of transit.

Linking Transit to Goals for Healthy Communities

- Transit-oriented development captures an increasing share of California growth, reducing environmental impact and providing efficient markets for transit, biking, and walking.
- Complete street designs in cities and towns throughout California support multimodal travel and are given high priority for funding.
- Performance standards emphasize moving people, not vehicles; as a result, transit is given priority treatment.
- Carsharing programs reduce auto ownership, with heavy declines in multi-vehicle households in urban areas. Parking requirements are revised to reflect the new pattern of car ownership and use.
- Parking pricing is introduced to reflect the actual cost of parking, reducing a large subsidy for the automobile.

Harnessing New Technologies

- Vehicles of all types — cars, trucks, buses, trains — are designed to use lighter-weight, more recyclable materials and to use cleaner fuels, reducing cradle-to-grave environmental impacts.
- New vehicles and fuels reduce greenhouse gases and criteria pollutants from transit, automobiles, and other transportation sources.
- New transit vehicles and systems are quieter and therefore less intrusive in residential neighborhoods.
- Information technology makes transit and ridesharing easier to use.
- Information technology and sharing economy initiatives blur the distinctions between public transit, for-hire private services, and private transport.
- Automation reduces demand for labor in transit and other transport industries, including freight services.
- New technologies improve transport options for the disabled and the growing share of elderly travelers.

In rural areas, telecommuting, subscription, and on-demand shared ride services are coupled with town center/Main Street clusters of services to reduce driving and increase the use of collective modes.
Creating Flexible Institutions

- Transit agencies offer a range of services matched to markets: rail, bus rapid transit, local bus, paratransit, ridesharing.

- Transit agencies work out agreements with labor to protect worker rights and maintain good jobs while allowing for contracting out of specialized services.

- Public-private partnerships for transportation are increasingly deployed, with businesses contracting for transportation services for employees, and developers supporting station area transportation improvements and complete street designs.

- Metropolitan planning organizations support and encourage regionwide planning for seamless, cost-effective transit services. Statewide planning supports and encourages interregional travel by public transportation.

- Joint powers agreements, special districts, and other legal instruments for multijurisdictional collaboration are facilitated so cross-border services can be provided expeditiously and efficiently.

- Multimodal transportation agencies with authority over street design, parking management and pricing, tolls, HOV lanes, signal timing, bus priority treatments, bike and pedestrian facilities become the norm and coordinate with land use planners and development policies to produce a more sustainable urban development pattern.

Providing a Sound Financial Footing for Transportation

- Federal and state laws are amended to allow for flexible financing of all modes of transport — for pedestrians, bicycles, transit, paratransit, and private passenger and freight vehicles.

- Over time, implementation of toll roads, congestion pricing, and parking pricing begin to level the playing field between transit and highways, with both systems expected to internalize a larger share of costs of operations.

- Benefit assessment districts are increasingly used to help finance transit, shuttles, and related projects. Impact fees are also commonly used to cover costs of service expansions.

- Transit finance is stabilized and becomes predictable and sustainable, using a combination of user fees, benefit assessments and impact fees, and public-private partnerships to augment government subsidies.
References

APTA, Transit Vision 2050, Washington, DC. 2008


A timeline of key trends and events is included as Appendix A. The timeline focuses on the last five-plus decades, encompassing the period when most transit agencies in the United States and California were taken over by public entities. During this period, the federal government began both to fund transit and to call upon it to contribute to social, economic, and environmental objectives, but government roles in transit became increasingly contentious. In addition to chronicling the evolution of the federal government’s role in transit, the timeline highlights key actions at the state level that have both helped and hindered transit funding, while also further expanding the vision of public transportation as an increasingly vital public service.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 11, 1960</td>
<td>Public Pioneers: Following 1956 state legislation permitting the creation of publicly owned transit districts, the Alameda-Contra Costa Transit District takes over from the Key System and its predecessors, which carried passengers via buses, horse-drawn rail, electric streetcars, and ferries over the previous 100 years.</td>
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<tr>
<td>June 30, 1961</td>
<td>Transit and Housing: Federal Omnibus Housing Act includes loans and grants for transit demonstration projects as part of urban renewal efforts.</td>
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<tr>
<td>October 23, 1962</td>
<td>Synchronized Growth: The Federal Aid Highway Act calls for a long-range transportation plan coordinated with anticipated development and a continuing, comprehensive metropolitan transportation planning process carried out cooperatively by the state and local communities for all areas over 50,000 in population.</td>
</tr>
<tr>
<td>November 5, 1964</td>
<td>South State Consolidation: Created by an act of the State Legislature, the Southern California Rapid Transit District takes over bus operations in Los Angeles, San Bernardino, Orange and Riverside counties that were previously operated by the Metropolitan Transportation Authority and ten different private bus operators.</td>
</tr>
<tr>
<td>February 1, 1965</td>
<td>Association for Transit: Representatives from transit systems in Oakland, Long Beach, Santa Monica, San Diego, Sacramento, Stockton and Fresno form the California Association of Publicly Owned Transit Systems (CAPOTS). In 1986, the organization changes its name to the California Transit Association.</td>
</tr>
<tr>
<td>October 15, 1966</td>
<td>USDOT Created: U.S. Department of Transportation created by an Act of Congress. The department began operating the next year.</td>
</tr>
<tr>
<td>November 4, 1971</td>
<td>TDA to the Rescue: California’s Mills-Alquist-Deddeh Act, commonly known as the Transportation Development Act (TDA), is signed into law by Gov. Ronald Reagan, creating a Local Transportation Fund in each county, derived from a statewide 1/4-cent sales tax; the new revenues are dedicated to public transit purposes. TDA was later amended to include the State Transit Assistance (STA) program.</td>
</tr>
<tr>
<td>August 1, 1972</td>
<td>EOM Objectives Established: The Urban Mass Transportation Administration issues its External Operating Manual, which states that near term objectives are to increase the mobility of non-drivers, and in larger urban areas, to reduce congestion and improve urban quality of life.</td>
</tr>
<tr>
<td>September 11, 1972</td>
<td>BART Begins Service: Revenue service begins on BART — the first computer-controlled mass transit system.</td>
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<tr>
<td>September 26, 1973</td>
<td>Controversial Guidelines: Section 504 of the Federal Rehabilitation Act states that no person who is otherwise qualified should be discriminated against in federal-aid projects. UMTA begins developing guidance, issuing a statement first in 1976 and with tougher requirements in 1979 — which transit agencies opposed — leading to a court decision that UMTA had exceeded its authority.</td>
</tr>
<tr>
<td>November 26, 1974</td>
<td>New Federal Mandates: The National Mass Transportation Assistance Act authorizes the use of federal funds for transit operating assistance, mandates an integrated highway/transit 3-C planning process, requires that off-peak fares for the elderly and handicapped be half price, and creates a transit data reporting system.</td>
</tr>
<tr>
<td>September 1, 1975</td>
<td>Emphasis on Planning: UMTA and FHWA issue joint highway/transit planning regulations calling for a regional transportation plan that includes both long-and short-range elements, including actions to make efficient use of road space, reduce demand in congested areas, improve transit services, and increase transit efficiency.</td>
</tr>
</tbody>
</table>
**November 6, 1962**

**Bonds for BART**

Voters approve a bond to build the San Francisco Bay Area Rapid Transit (BART) rail system in Alameda, Contra Costa, and San Francisco counties.

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**July 8, 1963**

**Taxes for Transit**

California’s Collier-Unruh Act allows counties to increase the in-lieu tax by one-half cent to develop rapid transit systems.

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**July 9, 1964**

**Federal Role Established**

The federal Urban Mass Transportation Act (UMTA) creates a new federal agency and capital funding for transit.

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**September 1, 1967**

**Exclusive Access**

Federal Highway Administration confirms policy allowing reserved lanes for buses on federal aid highways including the Interstates and permits opening up such lanes to a limited number of other vehicles.

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**August 24, 1968**

**Tackling Traffic**

Federal Aid Highway Act confirms TOPICS program, which provides for traffic operations and management including transit priority treatments and transit stop improvements on urban arterials and local streets.

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**August 24, 1968**

**Tackling Traffic**

Federal Aid Highway Act confirms TOPICS program, which provides for traffic operations and management including transit priority treatments and transit stop improvements on urban arterials and local streets.

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**October 15, 1970**

**UMTA Supplement**

Federal Urban Mass Transportation Assistance Act establishes substantial federal funding for transit and guarantees labor protection negotiations in public transit agencies.

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**January 1, 1973**

**New Bay Area District**

Approved by the State Legislature in 1969 and by voters (on its third attempt) in 1972, the Santa Clara County Transit District takes over three struggling private transit operators and launches service.

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**April 1, 1973**

**Capital Connections**

Sacramento Regional Transit District begins operations.

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**August 13, 1973**

**Funding Alternative**

The Federal Aid Highway Act allows urban areas to relinquish funds for Interstate highway projects in return for funds for transit. The act also strengthens the role of metropolitan planning organizations in project selection.

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**February 1, 1978**

**New Demands on Rail**

UMTA issues a policy on rail transit emphasizing alternatives analysis, demand management, coordinated land use planning for higher densities and urban revitalization, and incremental implementation of usable segments of a planned system.

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**August 7, 1977**

**Combating Emissions**

Federal Clean Air Act Amendments of 1977 require metropolitan planning organizations to engage in transportation air quality planning, consider a list of emissions reductions measures including transit investments, and assure regional transportation plans are consistent with air-quality plans.

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**February 6, 1977**

**Increased Access**

Buses equipped with wheelchair lifts begin service in San Diego.
**June 6, 1978**
**Game Changer**
Proposition 13 is passed by California voters, sharply reducing property taxes, a major source of local funding for many transit agencies.

**Nov. 6, 1978**
**Key Funding Enhancement**
The Federal Surface Transportation Assistance Act includes highways and transit in the same legislation for the first time. The act includes funding for transit in non-urbanized areas.

**January 1, 1979**
**Reporting Requirements**
Federal Section 15 transit reporting requirement goes into effect with over 400 transit operators providing data on ridership, costs and revenues, organizational structure, safety, and operating performance.

**January 1, 1981**
**Earmarks Limit Discretion**
Congress begins earmarking UMTA capital grant funds for specific projects.

**July 15, 1981**
**Trade for Transit Funds**
Sacramento becomes the first city in the country to convert funds from an abandoned freeway project (the I-80 Bypass) for use in establishing rail transit.

**July 19, 1981**
**Light Rail Debuts**
San Diego’s light rail transit (LRT) line opens, the first U.S. modern light rail system.

**May 18, 1984**
**Reliance on Locals**
UMTA revises its capital grant policy to prioritize projects with local funding support and a high level of cost-effectiveness.

**January 1, 1987**
**Light Rail Launch**
First Sacramento light rail line begins operations.

**April 2, 1987**
**Reagan Rebuffed**
Federal Surface Transportation and Uniform Relocation Assistance Act passes over President Reagan’s veto. The act writes UMTA’s capital grants prioritization procedure into law.

**June 5, 1990**
**Bond Act Passes**
California voters approve Proposition 116, a $1.99 billion bond act funding passenger and intercity commuter rail. The proposition also provided funds for ferries, paratransit, and bicycle projects.

**July 14, 1990**
**Blue Line Debuts**
The Blue Line opens, the first of the Los Angeles metropolitan area’s new rail transit lines.

**July 26, 1990**
**ADA Enacted**
Federal Americans with Disabilities Act signed into law, providing civil rights and requiring accommodation of disabled people. Title II applies to public transportation and requires the provision of complementary paratransit services by public entities that provide fixed-route services.
**June 8, 1979**  
**Insufficient Funds**  
National Transportation Policy Study Commission issues report stating that funding is insufficient to meet future needs, that government over regulation is impeding private investment, and that federal involvement should be reduced.

**June 15, 1979**  
**STA Fund Created**  
With Gov. Jerry Brown’s signature on Senate Bill 620, the Transportation Development Act is amended to create the State Transit Assistance (STA) program, derived from the statewide sales tax on gasoline and diesel fuel, providing formula funding to transit agencies.

**February 1, 1980**  
**Integrated Development**  
SF Muni’s Metro Market Street upper level opens in 1980 and full operation begins in 1982; additional projects follow.

**October 1, 1982**  
**UMTA View on Paratransit’s Role**  
After years of debate about the role of paratransit, UMTA issues a policy statement supporting it as a supplement to conventional transit, a service suitable for special needs groups, and a possible substitute for conventional transit in low density and rural areas.

**January 6, 1983**  
**Funding, With a Catch**  
The Federal Surface Transportation Assistance Act raises the gas tax by five cents, with one cent going to transit; puts new emphasis on completion of the Interstate system; and creates a new formula grant program whose funds could be used for transit planning, capital projects, or, with some restrictions, operations.

**September 9, 1983**  
**Access at a Cost**  
Draft federal regulations on elderly and handicapped service are issued, setting off bitter debates, with advocates for the disabled arguing for equal access and transit interests arguing for less costly approaches.

**December 1, 1987**  
**Light Rail in the South Bay**  
Light rail transit begins operation in San Jose.

**July 10, 1989**  
**21st Century Vision**  
Faced with a backlog of unfunded transportation improvement projects, the California Legislature enacts the Transportation Blueprint for the 21st Century, which was subsequently approved by voters in 1990.

**June 5, 1990**  
**Gas Tax Hike Approved**  
California’s voters approve Proposition 111, implementing a doubling of the state’s gas tax over a five-year period, part of the recommendations included in the Transportation Blueprint for the 21st Century. The Public Transportation Account is allocated the sales tax revenue on the excise tax increase.

**November 15, 1990**  
**Strict Pollution Controls**  
Federal Clean Air Act Amendments of 1990 designate metro areas by severity of pollution violations and extend attainment deadlines for areas with most severe problems, including most California metro areas. Buses are held to strict pollution controls.

**December 18, 1991**  
**Flexibility Via ISTEA**  
Federal Intermodal Surface Transportation Act (ISTEA) increases flexibility in spending and gives MPOs more say over transportation choices. Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) funding categories are created.

**April 1, 1993**  
**Merger of L.A. Systems**  
The Southern California Rapid Transit District and the Los Angeles County Transportation Commission merged to form the Los Angeles County Metropolitan Transportation Authority.
**Timeline 1995–2015**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>July 1, 1996</td>
<td><strong>MTC Empowered</strong>&lt;br&gt;California Legislature designates the Metropolitan Transportation Commission (MTC) as the state-authorized transit coordinator in the Bay Area, requiring MTC to adopt rules and regulations to promote the coordination of fares and schedules and require every system to adopt fare revenue-sharing with connecting systems.</td>
</tr>
<tr>
<td>June 2, 1998</td>
<td><strong>A Vote Against Transit</strong>&lt;br&gt;L.A. voters ban the use of sales tax to fund rail transit projects (lifted by another vote in 2006).</td>
</tr>
<tr>
<td>September 27, 2006</td>
<td><strong>Emission Control</strong>&lt;br&gt;Assembly Bill 32, the Global Warming Solutions Act of 2006, is adopted in California. AB 32 (authored by Assemblymember Fran Pavley and Assembly Speaker Fabian Nunez) requires the California Air Resources Board to develop a Scoping Plan to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020.</td>
</tr>
<tr>
<td>November 7, 2006</td>
<td><strong>Transportation Package Approved</strong>&lt;br&gt;California voters pass Propositions 1A-E, which protect and increase transportation funding. Proposition 1B provides $5 billion in bonds funds to transit capital projects.</td>
</tr>
<tr>
<td>September 30, 2008</td>
<td><strong>Fostering Smart Growth</strong>&lt;br&gt;California’s SB 375 (Steinberg) is signed into law, requiring metropolitan planning organizations to undertake the development of plans for reducing greenhouse gas emissions and meeting AB 32 goals, such as by fostering transit-oriented development and funding more transit service.</td>
</tr>
<tr>
<td>November 4, 2008</td>
<td><strong>Voters Approve High-Speed Rail</strong>&lt;br&gt;California’s Proposition 1A, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, is approved by California voters, providing $9.95 billion in bonds for the new intercity rail system, including $950 million for local transit connectivity projects.”</td>
</tr>
<tr>
<td>November 4, 2008</td>
<td><strong>Funding Boost for L.A. County</strong>&lt;br&gt;Measure R is approved by Los Angeles County voters, authorizing a 1/2-cent sales tax increase to fund transportation throughout Los Angeles County, including bus, rail, subway and freeway improvements.</td>
</tr>
<tr>
<td>November 2, 2010</td>
<td><strong>Voters Protect Transit Funding</strong>&lt;br&gt;California’s voters overwhelmingly pass Proposition 22 — co-sponsored by the California Transit Association — which limits the Legislature’s ability to redirect transportation taxes, and provides further constitutional protection for various transportation and local government funds, including certain revenue streams dedicated to transit.</td>
</tr>
<tr>
<td>July 1, 2011</td>
<td><strong>STA Funding Restored</strong>&lt;br&gt;In response to the passage of Proposition 22, and in keeping with the transit funding litigation, California Governor Jerry Brown and the Legislature restore and fully fund the STA program.</td>
</tr>
<tr>
<td>July 6, 2012</td>
<td><strong>MAP-21 Enacted</strong>&lt;br&gt;Federal MAP-21 — Moving Ahead for Progress in the 21st Century — includes funding for state of good repair, asset management, and safety programs, and makes bus programs a formula grant.</td>
</tr>
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</table>
**June 24, 2000**  
**Metro Launches BRT**  
L.A. Metro implements bus rapid transit on the Ventura and Wilshire Whittier lines. The “Metro Rapid” program eventually grows to 26 routes.

**February 14, 2007**  
**BRT on Highways**  
The California Department of Transportation (Caltrans) adopts policies supporting Bus Rapid Transit (BRT) on state highways.

**February 11, 2007**  
**Fare Media Innovations**  
Transit agencies begin to introduce reloadable contactless smart card systems, such as the Clipper Card in the San Francisco Bay Area, the Compass Card in San Diego County, and the Transit Access Pass in Los Angeles County.

**September 30, 2008**  
**Complete Streets**  
AB 1358 (Leno), which requires universal access by all users and modes of transportation consistent with the urban, suburban or rural context, is signed into law. California’s Office of Planning and Research subsequently adopts complete streets requirements for general plans.

**February 10, 2003**  
**Composite Construction**  
The Los Angeles County Metropolitan Transportation Authority becomes the first agency in the U.S. to deploy buses made of composite materials, which greatly reduce weight and increase fuel efficiency.

**March 5, 2002**  
**Gas Tax Allocations**  
California’s Proposition 42 passes, requiring that starting in 2008–09 gasoline sales tax revenues be allocated 20 percent to public transportation, 40 percent to projects funded in the State Transportation Improvement Program, and 40 percent to local streets and roads improvements, with half going to counties and half to cities.

**February 17, 2009**  
**TIGER Fund Created**  
Federal Transportation Investment Generating Economic Recovery (TIGER) program provides federal funding on a competitive basis for highway, transit, freight, port, bike/pedestrian, and multimodal projects. 18 percent of funds have gone to transit projects (through 2011).

**September 30, 2009**  
**Courts Protect Transit Funding**  
In response to shifts of state funding away from transit, by the governor and legislature, to the state’s general fund, the California Transit Association sues (in 2007) to stop such diversions. The California Supreme Court ultimately upholds an appellate court ruling in transit’s favor, restoring hundreds of millions in transit funding from the sales tax on gas.

**March 1, 2010**  
**Gas Tax Swap**  
In part as a response to the California Transit Association’s litigation, and in anticipation of an initiative qualifying for the general election ballot, California’s Legislature enacts a complex fuel tax swap intended to provide general fund relief, by converting the sales tax on gas to an excise tax, thus eliminating billions in potential transit funding. To compensate somewhat, the swap does raise the sales tax on diesel fuel, and dedicates the new revenue to the STA program.

**January 6, 2015**  
**High-Speed Rail Construction Begins**  
Construction of first phase of California High-Speed Rail begins in Central Valley.

**March 1, 2015**  
**Transportation Plan 2040**  
The California Transportation Plan for 2040, currently in draft form, aims to produce a sustainable transportation system that improves mobility, strengthens communities, and enhances the quality of life for all in California.
The following ten papers were prepared by students at the University of California, Berkeley, and provide further readings on California transit history. The papers investigate the proliferation of public transit agencies in California, especially in the San Francisco Bay Area; the impact of Proposition 13, the property tax limitation measure that revolutionized government funding in California beginning in the late 1970s; labor costs as a transit issue; ridesharing and its relationship to transit; the increased attention to walking as a transit access mode; factors affecting the varying reception of bus rapid transit in the state; factors affecting attitudes toward transit in San Francisco; and histories of specific transit services including Los Angeles’ rail proposals, the San Diego trolley, and Berkeley’s rail services.
Abstract

AC Transit rose as a public agency out of the ashes of a formerly held private agency. For nearly 20 years from 1960 to 1978, it enjoyed the benefits of levying property tax assessments to fund its service. During those years, AC Transit’s budget continued to grow faster than its passenger miles served, bus hours operated, or seemingly any other measure of vitality. In 1978 a referendum passed to amend the state constitution. Seemingly overnight, the most consistent revenue source for AC Transit and many other agencies disappeared. The result has been decades of fallout, with AC Transit constantly scrambling for revenue sources and making tough cost-cutting decisions. This paper examines the nature of AC Transit’s funding before and after Proposition 13 and the long-term effects on the agency’s performance.

The Early Days of AC Transit

In 1955, the state of California was faced with a choice between reliance on private transit operators — which had played out disastrously elsewhere in the country by that time — or a public alternative. In the San Francisco Bay Area, the “Key Routes” pioneered as streetcar lines by transportation mogul Francis “Borax” Smith had been bought by National City Lines in 1946 and converted exclusively to bus operations. In 1953, a 76-day strike tarnished the image of the privately held transit operator, leading in part to legislation that would enable the creation of publicly owned transit districts.

One year later, voters of Alameda and Contra Costa counties approved the creation of AC Transit, and in 1959 they approved $16.5 million bond financing its creation. The bond included $7.5 million to buy out the remaining assets of the Key System and $7.7 million for new buses (1, 2).

A period of rapid service expansion followed; the district-provided route system maps in 1960 and 1975 (displayed at the end of this paper) show the vast improvements to network coverage and density. Its component districts initially served 25 cities and unincorporated areas split across two service districts. The
cities listed in Table 1 were added to AC Transit’s coverage during the 1970s, as well.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cities Annexed</th>
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<tbody>
<tr>
<td>1975</td>
<td>Concord</td>
</tr>
<tr>
<td></td>
<td>Pleasant Hill</td>
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<tr>
<td>1976</td>
<td>Moraga</td>
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<td>Orinda</td>
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<tr>
<td>1977</td>
<td>Antioch</td>
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<td></td>
<td>Brentwood</td>
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<td></td>
<td>Pittsburg</td>
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</table>

In fact, from 1960 to 1977, the annual number of passengers AC Transit served grew from 48,411,106 to 61,304,908. Figure 1 shows the overall trend in passenger trips served. Note that in June 1970, employees were on strike for 19 days; in 1975 and 1978, employees were on strike for 61 and 70 days, respectively. The trend in passenger trips has some yearly fluctuations but trends positively overall. Similarly, Figure 2 shows the annual trend in bus miles operated; this number grew from 21.8 million bus miles in fiscal year (FY) 1962 to 30.6 million for FY 1979 (3–21). The bus fleet grew as well, from 630 buses to approximately 820 in 1980.

More telling than the modest growth of passenger trips, bus miles, and fleet size was AC Transit’s budget growth from its inception through 1980. The district’s operating budget continued to balloon, outpacing its growth by any other measure — especially its farebox recovery rate. Discussion of the budget’s growth merits explanation of the financial structure of California transit agencies in the 1970s.

“From 1972 to 1978 . . . it is evident that the governing boards of [SF MUNI and AC Transit] were reluctant to increase fares in order to finance their increased costs. Much of this reluctance undoubtedly stemmed from the growth in federal and state operating and capital subsidies which occurred during the 1970s.” — California Legislative Analyst’s Office, 1986 (22).
The transit district was created with the good graces of the Alameda and Contra Costa voters, with a $16.5 million bond to prove it. For many years, it was able to operate under those good graces. Donald Larson, longtime planning and scheduling manager with AC Transit, explained it this way: “There was no ‘x’ number of dollars in your budget and then how is it being expended . . . [there was no] Are you controlling your expenditures?” (23). Of course, the nature of the district’s revenues evolved considerably from 1960 to 1978, as will be discussed below.

**Farebox Revenues**

Since its inception, AC Transit has charged different rates for local trips and transbay trips (those traveling to or from San Francisco). However, the initial local fares were 15 cents for youth and 25 cents for adults; those base rates would not change until July 1978 (24). In its inaugural year of service, AC Transit’s passenger fare revenue represented 94 percent of total operating revenue at $8.5 million; by 1978, fare revenue represented merely 32 percent of operating revenue at $13.4 million (18, 25).

**Property Tax Assessments**

The AC Transit authorizing legislation mentioned above had a very powerful detail buried within section 25891:

25891 — POWER, PURPOSE OF TAX

A district *may* levy, and collect or cause to be collected, taxes for any lawful purpose.

Functionally, this ability to levy taxes allowed AC Transit to set its level of service, collect revenues, and assess the property tax level necessary for its revenues to match its expenses. As is evident in Figure 4 and Figure 5 below, what was initially merely a supplement ballooned quickly, reaching almost 50 percent of operating revenue by 1974 (3–21).
Urban Mass Transportation Act (UMTA)

As a supplement to a federal 1961 program providing low interest rate loans for transit capital improvements, the 1964 Urban Mass Transportation Act (UMTA) added a capital grant program. Importantly, UMTA was later amended to include non-capital funding and, in 1970, expanded considerably. It was in the 1970s that the program began to include operating funding — including the ability to shift funding from highways and interstates to transit systems. According to Smerk, UMTA programs grew from a few hundred million dollars in the 1960s to an annual $4 billion in the 1980s (26). AC Transit enjoyed tremendous support from the UMTA through the 1960s solely for the purpose of capital expenditures (generally for the purchase of new buses). It was not until FY 1975 that federal operating assistance showed up on the balance sheet for AC Transit, and the steady increase through the end of the decade is shown in Figure 6 (3–21).

Transportation Development Act (TDA)

In 1971, the California Legislature passed the TDA to provide county-level funding in two main categories. The first category, the Local Transportation Fund (LTF), comes from a quarter-cent sales tax and is meant for transit use, unless the county can demonstrate that all transit needs are met¹. The second category of TDA funding is the State Transit Assistance fund (STA), which is exclusively for transit improvements.

The TDA also requires that any recipients of either LTF or STA funding submit fiscal audit reports annually. This stipulation was one step toward better understanding how transit agencies operated and may well have opened the possibility for the research behind this paper to exist.

¹ The Metropolitan Transportation Commission (MTC), the San Francisco Bay Area’s municipal planning organization (MPO), is the conduit through which this money flows and the gatekeeper which decides if transit needs are met.
Assembly Bill 1107 (AB 1107)

In 1977, in the face of transit costs outstripping revenues, the California Legislature passed AB 1107, a measure to promote financial stability among three Bay Area transit operators: AC Transit, MUNI, and Bay Area Rapid Transit (BART). The thrust of the bill was to make half-cent sales and use taxes permanent and to allocate that revenue among the three operators. BART was to receive 75 percent of proceeds, and the Metropolitan Transportation Commission (MTC) was to allocate the remaining 25 percent among the operators to facilitate service improvements (22). One stipulation that would prove difficult for AC Transit was the requirement to keep fare box revenues to above 33 percent of total operating revenues.

The Great Earthquake of 1978: Proposition 13

Given the nature of ballooning transit budgets and subsidies relative to services (passenger trips, bus miles) provided, it is perhaps not surprising that the glory days of transit funding came to an end. But it was hard to envision the window slamming closed so hard quite as abruptly and harshly as Proposition 13 brought on.

The Environment Surrounding Legislation

With the state of California sitting on somewhere between a $3 billion–$5 billion budget surplus under the tenure of Governor Jerry Brown, the stars aligned for what was popularly referred to as a tax revolution (27). Enter Howard Jarvis, the head of the Apartment Association of L.A. County, and Paul Gann, a retired real estate mogul, with a ballot initiative to fuel the tax revolution. Jarvis and Gann would be the primary sponsors of the legislation.

On April 26, 1978, in advance of the June voting day, the AC Transit Board of Directors conducted a hearing on the possible effects of Proposition 13. Then-general manager Robert Nisbet reported that the anticipated $60 million in 1978-79 AC Transit revenue would likely be reduced by $39 million as a result, with residually harmful effects from an inability to match and receive federal funds.

Nisbet explained that the implications of the reduction in funding could amount to an 80 percent reduction in bus service, “drastic increases in fares, wholesale curtailment of service, and a major reduction in work forces,” along with “serious consideration . . . to abandonment of all transbay service, all night service and all Saturday and Sunday service” (28). It is hard to know how honest Nisbet was being in his assessment, but the sense of dread seems appropriate. Many years later in an oral history, he was asked, “Did you have an inkling of the gravity of that proposition beforehand?” to which he responded, “Not really, no” (29).

The Amendment

On June 6, 1978, in a ballot referendum, California voters approved Proposition 13, the “Jarvis-Gann tax initiative.” The bill’s effects were far reaching, but the main thrust of the bill was as follows:
A rolling back of property values to their 1976 assessment value, not to be changed unless the property changes owners.

A cap to the levied property tax rates at 1 percent of assessed value at the time ownership changed hands.

Property tax allocation moved from local jurisdictions’ purview to state authority.

A two-thirds voter requirement for any measure designated to increase taxes (30).

The big takeaway for AC Transit (and other special districts) was the loss of ability to levy property tax assessments as necessary; now the amount would be capped and fought over by agencies that had become dependent on it. Since its inception AC Transit had levied property taxes to balance its operating budget and watched that amount steadily rise (Figure 5); gone were those days.

The Aftermath

The amendment’s immediate effect was to slash property taxes by an average of 57 percent throughout the state, and revoke roughly $7 billion of annual revenue for cities, counties, and school districts (31). Reactions were mixed, with some publications sounding an alarm: the Los Angeles Times reported that eight counties or special districts (including AC Transit) stood to lose roughly $48.4 million dollars in federal subsidies for the following fiscal year. California Senate President Pro Tempore James Mills was quoted in the story saying, “You can raise fares, and it doesn’t do any good. The feds look only at the tax subsidy . . . . Transit is likely to be one of the prominent casualties of Jarvis” (32).

We can see in Figure 5 that the doom-and-gloom prediction from the report did come to pass: the FY 1979 property tax contribution to revenue was $7,572,537; the property tax contribution would rise steadily in subsequent years, but it would not reach 1977 levels again until 1988.

Almost immediately after the amendment’s effective date of July 1, a bipartisan state legislature committee began to draft legislation to avoid shutting down schools, cities, counties, and special districts like AC Transit. They agreed to appropriate $4 billion in assistance and $1 billion in loans for the upcoming fiscal year (27).

Citing budget constraints in the wake of Proposition 13, San Leandro cancelled its “Gold Card” initiative that distributed free off-peak ride coupons to the elderly (33). In the face of budgetary free fall, what was AC Transit to do?

2 There were some exceptions to the cap: one such was AC Transit’s bond principal payback assessment; they were still able to assess above the 1 percent cap for that amount.
Life After Proposition 13

“Especially when [Proposition] 13 came along, we had a real struggle and managed to survive by scrounging around and coming up with devious alternatives to keep the thing going.” — Donald Nisbet, AC Transit General Manager in 1978 (29)

After the initial period of panic for public agencies receded, it was time to get to work under the new normal conditions. The reality is that AC Transit would be devoting drastically more time than it ever had figuring out how to make ends meet.

Scrambling for Cash

Part of the answer for AC Transit was obvious: look elsewhere for money. One such place they had to look was the farebox. The district was proud of the fact that it had never raised fares since the very beginning, but with fare revenue amounting to just 27 percent of FY 1978 operating expenses, the time had come (18). At its July 12, 1978 meeting, the board voted to raise adult local fares from 25 to 35 cents and youth local fares from 15 to 25 cents. Express and transbay fares increased between 10 and 40 cents, varying by distance traveled. Admirably, the district did not raise fares for senior citizens or handicapped persons (24). From FY 1978 to FY 1979, AC Transit saw passenger trips jump from 49.5 million to 59.5 million (a 20 percent increase) but fare revenues climb from $13.4 million to $21.4 million (a 60 percent increase). Note that there was an extended strike for the first month of 1978, accounting for the low numbers.

Amendments to AB 1107 and AB 842

The legislature, realizing the hardship that had befallen transit agencies since the passage of Proposition 13, amended AB 1107 twice during the next few years. Previously the 25 percent of money left to MTC’s discretion was only appropriated to BART, MUNI, or AC Transit if that specific provider achieved a 33 percent farebox ratio. The 1979 amendment allowed for an agency-wide farebox ratio of 33 percent in order for any of the three to receive funding. In 1985 another amendment would allow agencies to count increased local contributions as fare revenue increases for qualification purposes.

Even better for transit operators than the aforementioned updates to AB 1107 is AB 842: this act removed the necessity to use AB 1107 money for “service expansion.” As one can imagine, service expansion was not anywhere close to what AC Transit had in mind. AB 842 allocated these funds to continue “vital transit services” (22). The intent of AB 842 was to be a supplement to increasing fares, which AC Transit did as well.

Figure 7 below illustrates the shifting funding sources for AC Transit between 1975 and 1988. Notice of course the waning property tax revenue beginning in 1979, the year after Proposition 13 passed. Also of note is the introduction of AB 1107 for operating revenue in 1979 and gradually increasing throughout the 1980s. Lastly, it’s important to note the stunning increase in total budget from 1975 ($39.5M) to 1988 ($123M), a 211 percent growth in 13 years. Even if a given revenue source is consistently increasing on an absolute basis, it could still shrink relative to overall budget size.
Virtually every year after the passage of Proposition 13, AC Transit was forced to make some significant changes either to staff, route coverage, lines, or some combination thereof. Table 2 below contains a summary of the district’s own euphemistic descriptions, culled from its annual reports.

It should be noted that the cost-of-living moratorium implemented in FY 1979 was later ruled unconstitutional in California Supreme Court, and the district summarily paid out for the missing wages. Additionally, a “schedule refinement” that includes replacing smaller buses with larger buses, presumably with larger headways in between bus arrival times, is worse than it sounds. Larger buses arriving less often lead to an increased average waiting time for passengers, even if the capacity is the same.

Lastly, a 1986 report put out by the Legislative Analyst’s Office offered some possible solutions to the funding gaps that persisted in the wake of Proposition 13. One of the six recommendations was for the Legislature to reallocate AB 1107 funds, possibly increasing MTC’s discretionary portion to 35 percent at the expense of BART. But the report exercises caution, saying that reallocating extra guaranteed funding might reduce AC Transit’s incentives along two lines:

1. To plan for services that are “truly vital” and essential
2. To restructure as necessary routes and services, for efficiency of service (22)

While those fears may be well founded, AC Transit desperately needed money to reverse the damage done, and it would likely prefer it without the patronizing tone.

Conclusion

It hardly seems believable now that AC Transit had almost a 20-year operating period during which it could determine its desired service plan, collect fares, and assess property tax for the difference. Such luxury for a public institution is unheard of, and economically, the incentives do not seem properly aligned. One could scarcely imagine making the argument that public dollars should be spent this way.
However, in the face of the California Legislative Analyst’s Office’s 1986 recommendations, which repeatedly mention efficiency and cost savings: it is important to remember what public transit is, and what it is for. The voters bought out the National City Line and Key System Routes and chose to lend the money to a public agency to create something different and better than what they had lived through. They voted to establish a special district that would serve their needs, not the needs of shareholders and bottom lines.

Consider the following letter, published in AC Transit’s September 1979 Transit-Times newsletter:

Up until recently, I have been pleased with your service on the E Express Line, but lately the morning ride has proven to be a great displeasure, namely because I always have to stand. The buses are smaller, not on time, and there is less usage of the double buses, especially at prime times. Evening isn’t much better, and

### Table 2: Summary of cost-saving actions taken by AC Transit after Proposition 13

| FY 1979     | Instituted a moratorium on cost-of-living wage increases previously negotiated between district and union
|             | Elimination of Line 84
|             | Reduction in service on Lines 12, 38, 46, 87
| FY 1980     | Undertook “intensive study” of suburban service to eliminate inefficiencies
|             | Replaced Dial-A-Ride service in Fremont and Newark with limited-stop fixed-route service
|             | “Schedule refinements” made in Oakland and Berkeley, with larger articulated buses replacing smaller buses on heavily traveled lines (20)
| FY 1981     | “Severe internal economics and productivity improvements carefully designed to minimize impact on the rider” (21)
| FY 1982     | District exchanged depreciation rights on new bus fleet for $700,000 in cash
|             | Implemented “Interdepartmental ‘Task Team,’ . . . given the challenge of trimming existing service to match a reduced operating budget”
|             | Revisions of service, fares, and transfer policy to save money (34)
| FY 1983     | Increased fares, including increasing adult fare to 60 cents and senior and handicapped fares for the first time (35)
yesterday the 5:28 never showed up. To make matters worse, almost all the drivers “pack” the riders in the door. This makes standing very uncomfortable and dangerous. It also makes getting off the buses at stops a misery (36).

The conditions described here are certainly not what AC Transit designs its service for, but the onboard conditions are efficient in terms of fare recovery rate, drivers per passenger miles, and other derived metrics an executive may study. And here we see the inherent dilemma: we cannot achieve a transit service worth having by cutting costs, reducing inefficiencies, and pulling the financial rug out from underneath generous funding sources. The result in that case will be what Jason Henderson calls a “transit détente,” and what I call a half-assed transit system (37).

It is possible that before 1978, AC Transit’s budget had some fat to be trimmed. And California homeowners certainly do deserve to have a predictable property tax payment. But the means with which Jarvis and Gann went about addressing these issues — and brought the voters along with them — were full measures where half measures would have been appropriate. Unfortunately, we are still paying the price for this amendment. And there is no going back.
References


System Route Maps

Figure 8: 1960 System Route Map

Figure 9: 1975 System Route Map
Introduction

Caltrans’ 2012 Household Travel Survey shows that Californians are making more trips by walking, bicycling, and transit than they were in 2000. The survey found the percentage of trips by these modes doubled in ten years and make up nearly 23 percent of all trips in the state (CHTS 2012). That means car trips decreased dramatically, from 86 percent of trips to 75 percent. This includes trips where people are passengers in cars — for drivers only, the decrease is from 60 percent of trips to 49 percent. This confirms a recent U.S. Public Interest Group (PIRG) report about millennials choosing to drive less, living in urban and walkable neighborhoods, and being more interested in active forms of transportation (LA Streets Blog). The Millennial generation (people born between 1983 and 2000) is already the largest generation in the United States and their choices will certainly play an important role in determining future transportation infrastructure needs (PIRG 2013).

Nearly every transit trip begins with walking. Transit trips are inherently multi-modal and are more complex than the origin and destination of the transit portion of an individual’s trip. The trip from an individual’s origin to transit station and then transit station to the final destination are also important components of transit trips, a term now known as “first and last mile.” However, pedestrian facilities are not systematically conducted in transit planning. In some areas, the disconnection between transit and road planning means transit riders are often left to wait at bus stops feeling unsafe and exposed — no sidewalk, curb ramp or bench. Crossing the street to catch the bus may be dangerous. Even where sidewalks exist, other critical factors amenable to walking, such as lighting,
marked crossings, or traffic-calming measures may be unavailable. Careful consideration must be given to the full pedestrian environment linking the entire catchment area of a transit stop to support transit use by all members of the community — young and old, with or without disabilities (Smart Growth America).

In California, local and state transportation agencies have increasingly identified active transportation as a major policy objective. In 2013, the California Department of Transportation (Caltrans) unveiled its Active Transportation Program (ATP), a comprehensive consolidation of federal and state initiatives promoting biking and walking as a means to improve safety, mobility, public health, and reduce greenhouse gas emissions (Caltrans, 2015). Additionally, transit agencies and regional planning organizations have provided commuter benefits to promote ridership and reduce greenhouse gas emissions. An example of this in the San Francisco Bay Area is the Commuter Benefits Pilot Program created by the Metropolitan Transportation Commission and the Bay Area Air Quality Management District.

The aims of this paper are to (1) discuss factors that impact the pedestrian experience to transit, (2) summarize a recent legal challenge that expands the transit agency’s role in the safety of pedestrian access routes to transit stops, and (3) explore two recent policies that have bolstered pedestrian accommodation to transit in California.

Factors Influencing Pedestrian Accessibility

Factors influencing overall pedestrian-friendliness are significantly related to accessibility to transit. There is a great amount of literature that studies both built environment characteristics and subjective qualities to promote pedestrian accessibility. Handy and Niemeier (1997) first explored major factors affecting accessibility such as neighborhood type, travel times, and the presence of business establishments. Krizek (2003) used neighborhood accessibility to study land-use travel and regional behavior. Cervero and Kockelman’s work has become well known for conceptualizing the three Ds that comprise travel demand and pedestrian accessibility: density, design, and diversity (1997). Rodriguez and Joo (2004) studied the impact of local physical environment such as topography, sidewalk availability, residential density, and the presence of walking and cycling paths on mode choice. Results suggested that joint effects of urban environment on travel behavior can be significant. Several objective models for measuring accessibility and walkability have been developed and include walkability indices and walkscore (Frank et al., 2005; Leslie, 2007; Walkscore, 2013). The progression of the literature signifies the growing importance of understanding the range of factors influencing travel choice behavior. This is where the intersection of urban design and transportation can make a significant impact on promoting transit-friendliness.

Riggs (2011) introduced the concept of suitability models which go beyond macro accessibility measures to include more subjective and nuanced design measures of the urban environment such as street width, number of lanes, traffic calming, crossing types, presence of trees, and other elements. Suitability models actively attempt to demonstrate the subjective qualities of a place, and attention is given to the human perception of walking quality, such as perception of safety and crime, path quality, and “walking needs,” which considers feasibility, accessibility, safety, comfort, and pleasure (Alfonzo,
As such, urban designers have developed a multimodal measure of walkability by providing qualitative pedestrian level of service (LOS) factors that combine the aesthetic appeal of walkability and its relationship to land uses and the physical environment. These factors include buffer zones between pedestrians and traffic, presence of lighting, vehicular speeds, and the availability of sidewalks (Lo, 2009; Jaskiewicz, 2001). Other physical infrastructure and environment attributes that influence pedestrian activity include street network connectivity, mixed land use (Saelens et al., 2003), structural street function, aesthetics, tree cover, topography, perceived safety of the environment (Bentley et al., 2010), sidewalk width, streetlight coverage, street crossing quality, and adjacent street traffic speed (Jaskiewicz, 2001).

Properly integrated pedestrian facilities with transit can help expand ridership catchment around transit stations. Increased transit accessibility makes it easier for pedestrians to take advantage of transit to (1) increase their trip length, (2) overcome gaps in the pedestrian network, and (3) overcome difficulties in the physical environment, such as topography. Integrated transit and pedestrian infrastructure may also make transit a more competitive mode to the private car. This can encourage active transportation, helping regions meet bicycle and pedestrian policy goals, improve public health, and reduce greenhouse gas emissions and road congestion (Barth et al., 2009). Because walking needs encompass a wide range of pedestrian amenities, it is important for cities, counties, and transit agencies to share the construction, operation and maintenance to promote these goals.

Transit Agency’s Role in the Safety of Pedestrian Access Routes to Transit Stops

**Bonnano v. Central Contra Costa Transit Authority (CCCTA)**

A recent California Supreme Court case sent a strong message to hundreds of public transit agencies that now they can be held liable for the location of their property. It reaffirms the importance of interagency coordination and planning of the siting and design of bus passenger facilities, which are often a low level priority in comparison to other transit operation concerns.

As summarized in the Federal Highway Administration’s Pedestrian Safety Guide for Transit Agencies:

“In the morning of November 16, 1993, Darlene Bonanno was hit by a car and seriously injured while attempting to cross Pacheco Boulevard—an unsignalized intersection with a painted crosswalk—to get to a CCCTA bus stop. The CCCTA had received numerous complaints about the safety of this bus stop starting in the early 1980s. Among other agencies, Bonanno sued the CCCTA claiming the location of the bus stop constituted a ‘dangerous condition.’ In April 2003, the California Supreme Court affirmed the decision that the CCCTA was partially liable for the accident because:
1. The property was in a dangerous condition at the time of the injury.

2. The injury was proximately caused by the dangerous condition.

3. The dangerous condition created a reasonably foreseeable risk of the kind of injury which was incurred.

4. The public entity had actual and constructive notice of the dangerous condition a sufficient time prior to the injury to have taken measures to protect against the dangerous condition. (Government Code section 835).

The CCCTA unsuccessfully argued that the intersection—controlled by the County—and not the bus stop, was the dangerous condition proximately causing the injury. However, the California Supreme Court relied on established law recognizing 'that hazards present on adjoining property may create a dangerous condition of public property when users of the public property are necessarily exposed to those risks.' (California Supreme Court, Bonanno v. CCCTA, 9). Although the CCCTA did not control the intersection, it did control the bus stop and was aware of the dangerous intersection its patrons were required to cross to reach the stop. Furthermore, CCCTA could have relocated or removed the bus stop without facing an undue burden. Although CCCTA was found to be only one percent liable in the accident, they were ordered to pay the plaintiff $1.6 million.

This ruling suggests that transit agencies should broaden their consideration of safe pedestrian access to include ingress and egress routes to transit facilities across adjacent property. Transit agencies should also work with the agencies that own and operate the roadways in their jurisdiction to avoid dangerous access conditions around transit stops ... . This emphasizes the need for transit agencies to partner with other organizations and assign responsibility for ensuring pedestrian safety and enacting engineering improvements. Ensuring compliance with these laws not only protects the transit agency but can provide the best possible service to pedestrians and transit customers.” (Federal Highway Administration, 2013)

**Case Studies**

The American Public Transportation Association (APTA) defines transit-friendly communities as those that foster transit access without any significant and unavoidable impediments or barriers, and recognizes that all transit riders should be able to access transit facilities and surrounding communities on foot (APTA, 2009). However, transit agencies usually assume responsibility only for their stops, stations, and parking lots, and not for adjacent sidewalks, street dimensions, crossings, and other urban design factors that can affect access to transit stations. Nevertheless, the following California case studies are breaking the mold and making the connections between pedestrian access and transportation planning.

**Case Study: Safe Routes to Transit, San Francisco Bay Area**

Safe Routes to Transit (SR2T) was initiated in 2004 with the adoption of the San Francisco Bay Area’s Regional Measure 2, which established a $1 increase in Bay Area bridge tolls. The intended purpose of this funding was to support various transportation projects within the region in order to reduce
congestion along the seven state-owned toll bridge corridors. The SR2T Program funds enhancements to increase walking and cycling to regional transit stations. SR2T funds were used for the following improvements, among others: secure bicycle storage at transit stations; safety enhancements for pedestrian and bicycle station access to transit stations/ stops; removal of pedestrian/bicycle barriers near transit stations; and system-wide transit enhancements to accommodate bicyclists or pedestrians.

Examples of SR2T projects: City of Concord’s Bicycle and Pedestrian Access to Transit Program, City of San Jose’s Safe Pathways to Diridon Light Rail Station, Richmond Ohlone Greenway Gap Closure (Class I Access to Transit).

The final round of grants was awarded in 2014. However, the SR2T program will compete for future funding as part of the region’s new “One Bay Area Grant” (OBAG) program (Transform).

**Case Study: LA Metro Complete Streets Policy, Los Angeles**

In 2014, Los Angeles Metro adopted a “Complete Streets Policy” that furthers the vision laid out in the organization’s Countywide Sustainability Planning Policy and Implementation Plan. The policy explores specific ways to increase access for all users by making streets more “complete” and promotes local partnerships and incentive programs. The policy is a tool to help guide Metro to better coordinate within various agency functions and departments as well as between partner organizations that have influence or jurisdiction over public streets and other facilities. In addition, it will assure that when Metro grants funding to municipalities in their service area for infrastructure projects, those projects will have to meet Complete Streets standards, including full pedestrian accommodation.

In LA Metro’s Call for Projects, agencies are expected to develop projects that serve all users of the roadway and to promote greater efficiency in how transportation funds are used, for example to:

- Encourage agencies to coordinate complete streets implementation with routine roadway maintenance, street repaving, retrofits, widenings;
- Consider all users during project planning and design to avoid costly retrofits in the future;
- Re-prioritize projects that provide the greatest mobility benefits (LA Metro, 2012).

The growing popularity and gradual adoption of programs such as Safe Routes to School, Safe Routes to Transit, and Complete Streets policies mean political momentum is in the upswing and should be harnessed to ensure land use policies and strategies support the full range of pedestrian accommodation. The safe and efficient movement of pedestrians of all ages and abilities should be an integral part of the planning, design, operation, management and maintenance to create transit-friendly communities.
References


So Many Agencies, So Little Coordination:
By Sara K. Barz

A Brief History of the Evolution of Public Transit Agencies and the Beginnings of a Regional Network in the Bay Area

According to the Metropolitan Transportation Commission, the Bay Area is home to 24 public transit agencies, which is likely the largest concentration of public transit agencies in one region in the United States. Some areas, such as the Los Angeles region, may have multiple small transit agencies like Foothill Transit, but will usually have one dominant agency that carries more than 50 percent of all transit trips, such as LA Metro. Unlike most major metropolitan areas in the United States, not one Bay Area agency carries more than 50 percent of the total region’s transit trips.¹

This unique public transit landscape begs the question, how did this proliferation of public transit agencies begin? What were the policies in place and incentives that established the “Big Seven” transit operators — Bay Area Rapid Transit, SFMTA, Golden Gate Transit, AC Transit, Santa Clara Valley Transportation Authority, SamTrans, and Caltrain — as well as the other 17 smaller operators? And what efforts have local and regional authorities undertaken to merge, combine, or coordinate the many Bay Area transit agencies?

Relying on expert interviews, archival materials, and agency documents, the following narrative describes the key moments and motivations in the evolution of Bay Area public transit institutions. Analyzing the themes that motivated the development of the many different transit agencies in the Bay Area, this paper categorizes the agencies into different waves of transit evolution.
First Wave: The First Public Transit Agency

Bay Area public transit began with the San Francisco Municipal Railway, the first publicly owned local transit agency in the nation. Created as an alternative to private streetcar companies that had abused public faith via the Boss Ruef corruption scandals in the wake of the 1906 earthquake,2 “Muni” ran its first line along Geary Boulevard in 1912. A manifestation of the progressive ethos in favor of the public provision of basic utilities,3 Muni was actually the first public transit operator in the United States. While San Franciscans had voted to create a new municipal agency, most other cities were still served by publicly licensed, but privately operated transit franchises.

However, for the first 30 years of Muni’s operations, the public transit line competed with the publicly licensed, private streetcar network, Market Street Railways4 (“Market Street”). Unlike Muni, Market Street was far more typical of transit systems in the first half of the 20th century, and its undoing was also typical of the era. As many middle-class families left the urban core to live in the suburbs and get around by automobiles, private transit systems began to falter. Unlike Muni, which could be supported with tax and bond revenue, Market Street found it could not compete on passenger revenue alone and became “municipalized” and absorbed into Muni.5 The remnants of the merger still linger in that the original Muni lines are lettered, e.g. M-Ocean View, and the original Market Street lines are numbered, e.g. 14-Mission.6

Second Wave: Municipalization of Agencies

Unlike the creation of Muni, most of the region’s older public transit operators were created when private streetcars or bus lines were taken over by local agencies after World War II. For instance, after the state legislature passed legislation enabling special transit districts in 1955,7 the voters of Alameda and Contra Costa counties approved the Alameda-Contra Costa Transit District (AC Transit) in 1956 to raise funds to take over the failing Key System in the East Bay.

The postwar period of transit municipalization coincided with the rise of the automobile and automobile congestion. Civic leaders and planners dreamed up a new public rapid-transit system that could counter increases in vehicular traffic on the region’s growing freeway network. They hoped for a unified regional metro rail system that would sweep to the outer reaches of the Bay Area, from Santa Rosa and Fairfield to Brentwood and from Livermore to Los Gatos. However, only voters in San Francisco, Alameda and Contra Costa counties chose to contribute to the program with a half-cent sales tax. In 1972, a new transit district was born: the Bay Area Rapid Transit (BART) district began service across the bay, reaching Daly City at one end and Concord and Fremont at the others.8

Third Wave: Return to Source Transit Funding

In 1971, just before BART service began, the state legislature passed a key piece of transit legislation. The California Transportation Development Act (TDA) authorized a 0.25 percent sales tax for transit that empowered counties to establish local transit operations. Though many jurisdictions had the opportunity to buy into existing transit operations — for example, the city of Newark bought into AC Transit service after receiving TDA funds — most chose to start their own operations because of high labor costs at existing transit agencies.9 Thus, the
state provided needed funds for transit service, but it also enabled the creation of independent operators largely limited by city or county boundaries.\textsuperscript{10}

The impact of TDA on public agency formation was significant. From 1912 until 1970, public transit agencies began operations at a rate of fewer than than one per decade; after 1970 the average rate increased to four agencies per decade.\textsuperscript{11} In the 1970s alone, 13 Bay Area public agencies opened for service.

**Fourth Wave: Transit Services Without Districts**

From the early 1960s to present, several regional operators, usually in the form of joint powers agreements or pre-existing districts, were created to fill gaps in the regional transit network. The Golden Gate Transit District, formed in 1928 to build the Golden Gate Bridge, was given the responsibility for regional bus and ferry transit service in 1969. Caltrain began when the Peninsula Joint Powers Board rail service took over operation of the old Southern Pacific line from Caltrans in 1992.\textsuperscript{12} Capitol Corridor\textsuperscript{13} (governed by a joint powers authority composed of several agencies) and the Altamont Commuter Express\textsuperscript{14} (governed by the San Joaquin Regional Rail Commission Board) provide intra-regional rail service in the East Bay. The Dumbarton Express bus, which provides service across the Dumbarton Bridge, is funded by bridge tolls and governed by the Dumbarton Bridge Regional Operations Consortium.\textsuperscript{15}

**Future of Bay Area Public Transit Agencies**

In the Bay Area, each transit operator has a unique governing board, funding mix, and local constituency that it serves (see Table 1 for an institutional overview of the Big Seven Agencies). Furthermore, Congestion Management Agencies (CMAs), created in the early 1990s to distribute gas taxes,\textsuperscript{16} have bolstered and protected many of the local transit agencies. Many CMAs increasingly fund transit and are becoming more involved with transit service planning.

In the Bay Area, a new transit service usually means creating a new transit operator rather than augmenting an existing transit operator. For instance, a new heavy rail line from Sonoma to Marin counties, the Sonoma-Marin Area Rapid Transit (SMART) line,\textsuperscript{17} will soon begin operations under the management of a new independent transit agency.

The Bay Area is also seeing a growing trend of city- or neighborhood-initiated transit, such as the B Shuttle in Oakland, the Emery-Go-Round in Emeryville\textsuperscript{18} and the Palo Alto Shuttle Service — all of which introduce new brands, funding streams, and governance approaches.

**Regional Transit Coordination: Attempts and Aspirations**

While the number of Bay Area transit agencies may seem high to American ears, many metropolitan regions in other parts of the world have similar numbers of transit operators. Zurich, for instance, is home to 42 public transit agencies coordinated by a regional transport alliance.\textsuperscript{19} Thus the Bay Area proliferation of transit agencies, while unique by American standards, is not an outlier by world transit system standards. However, a key feature of Zurich’s transit system is the presence of the regional agency, the Züricher Verkehrsverbund,\textsuperscript{20} which coordinates schedules and fares of operators to create a seamless travel experience when using the public transit system.
Table 1. Big Seven Bay Area Transit Agencies

<table>
<thead>
<tr>
<th>Starting Year</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal transit agency</td>
<td>Transit district created by the state legislature</td>
<td>Transit district created by the state legislature</td>
<td>Transit district created by the state legislature</td>
<td>Bridge, highway and transit district created by the state legislature</td>
<td>Joint powers authority comprised of City and County of San Francisco, SamTrans and Santa Clara Valley Transportation Authority.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Governing Body</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-member SFMTA board</td>
<td>7-member elected board of directors</td>
<td>9-member elected board of directors</td>
<td>12-member board of directors</td>
<td>19-member board of directors</td>
<td>9-member board of directors</td>
<td>3 representatives from each of the JPB member agencies</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board Selection</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointed by the mayor of San Francisco</td>
<td>5 represent wards, 2 elected at large</td>
<td>9 election districts within the 3-county district</td>
<td>10 members and four alts from city councils in service area, 2 members and one alt. from Santa Clara County Board of Supervisors</td>
<td>Appointed by county boards of supervisors</td>
<td>5 elected officials appointed by the cities and County of San Mateo, 3 citizen appointees, 1 appointed transportation expert</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Area (mile²)</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.6</td>
<td>364</td>
<td>93</td>
<td>326</td>
<td>160</td>
<td>448</td>
<td>425</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Area (population)</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>805,235</td>
<td>1,415,129</td>
<td>833,762</td>
<td>1,816,486</td>
<td>869,000</td>
<td>727,209</td>
<td>3,349,413</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ridership per Capita</th>
<th>Muni</th>
<th>AC Transit</th>
<th>BART</th>
<th>VTA</th>
<th>Golden Gate</th>
<th>Samtrans</th>
<th>Caltrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>273</td>
<td>41</td>
<td>130</td>
<td>n/a</td>
<td>10</td>
<td>20</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Source: MTC’s 2012-13 Statistical Summary of Bay Area Transit Operators.
With the Bay Area landscape littered with transit agencies and the likelihood that proliferation of new agencies will continue, what attempts have been made to coordinate or combine agencies?

After TDA passed, the Metropolitan Transportation Commission (MTC) became the funding agency that distributed the sales tax revenue to the Bay Area transit operators. Soon after taking over this role, the MTC started lobbying for regional transit system integration. For instance, after AB 1077 made the special sales tax district that primarily funds BART (and, to a lesser extent, SFMTA and AC Transit) permanent in 1977, MTC established the Transit Operator Coordinating Council (TOCC) to better integrate transit service among the three large operators. But, because of weak participation by the operators in this group, the TOCC did not produce the intended results. According to expert interviews, the major Bay Area transit operators formed the Regional Transit Alliance, which would meet purposefully at the same times as the TOCC so the high-level operator staff could not attend TOCC.

The last 20 years have brought a renewed interest in integrating the region’s public transit. In 1996, the state legislature passed SB 1474, which made MTC the state-authorized transit coordinator in the Bay Area. The enabling legislation required MTC to “adopt rules and regulations to promote the coordination of fares and schedules for all public transit systems within its jurisdiction and to require every system to enter into a joint fare revenue-sharing agreement with connecting systems.”

This role grew significantly with Regional Measure 2 in 2004, which resulted in a Transit Connectivity Study and Integrated Fare Study. While the fare study did not lead to integrated fares, the connectivity study led to MTC’s current Regional Transit Coordination Implementation Plan (Resolution 3866, adopted in 2011). This coordination plan called for enhancements to the region’s 511 transportation information service, which have largely been implemented. It has propelled the development of the Clipper card, which nearly every transit agency in the region accepts or will soon accept. Resolution 3866 required operators to phase out using paper for their monthly passes and similar fare products and encourage commuters to adopt the Clipper system instead. Important transfer stations have also seen improvements in signage and wayfinding as a result of the Regional Transit Hub Signage Program. And the coordination program includes standards for providing paratransit services across county lines.

In the 2000s, MTC also invested in developing a regional transit marketing program that developed shared branding for 511 and TransLink (the precursor to the Clipper card), but the program ended after the designated funding stream ran out; some of the branding elements remain in use in the 511 logo.

In 2012, the MTC completed a critical study of regional transit, the Transit Sustainability Project (TSP). The study found that, on the whole, the region's operators incur some of the highest costs-per-rider in the country. Additionally, most operators had declining productivity, with costs increasing faster than the amount of service delivered. The TSP ultimately recommended only small regulatory changes, including incentives to try to get operators to work more closely and efficiently, but avoided major governance reform recommendations.

Compared to many other places in the United States, the state government plays a very
small role in the region’s transit operations. In the absence of state-led consolidation or coordination, the MTC and the region’s leaders have attempted to address some of the major fragmentation issues that have been raised over the years. However, many of the coordination goals of SB 1474 have yet to be achieved.

**What’s Next for the Bay Area Transit System?**

Expert interviews indicate that there’s a revived interest in reforming the Bay Area’s transit network to serve the needs of a shifting demographics. The rise of the Silicon Valley commuter shuttles and tremendous growth of ridership on regional rail services like BART and Caltrain 27 with the lack of a complementary increase in transit service from public agencies have moved Bay Area leaders to call for large, long-term public investments, like the second transbay tube and institutional efficiency measures, like the merger of Caltrain with BART. 28 However, without a strong coordinating authority, experts conclude that the successful adoption of any regional policies will be thwarted by the dispersion of power to 24 different boards and agency staffs spread out across the region. The very proliferation of public transit agencies may be one of the most significant obstacles in developing a regional, streamlined, and seamless public transit network.
End Notes


6. Ibid.


9. Based on stakeholder interviews.


20. Ibid.

21. Based on stakeholder interviews.

22. Ibid.

23. MTC, Interoperator Transit Coordination Implementation Plan to implement SB 1474 in 1998 (Resolution 3055). These goals were pursued through various committees of a Partnership Transit Coordinating Committee.


28. Ibid.
In recent years there have been many headline-grabbing transit strikes in California. Negotiations between the transit operator and labor unions representing the workers break down as transit agencies point to labor costs running out of hand and labor unions strive for a middle-class wage for their members. In the midst of these public spats, it is hard to find out what are the real trends in wages. In this paper, I will be first examining the national trend in transit wages and then looking at the trend of four major agencies in California.

Nationally, real wages have stagnated since the late 1970s. Figure 1 shows the average transit wage and benefits compared with the median wage for all sectors in the United States.

Contrasted with the stable overall wage, transit wages have decreased somewhat during this time period. The large reduction in real transit wages during the late 1970s was a reflection of the high inflation during that time period, as nominal transit wages actually increased slightly during that time period.
One important trend that can be seen from this data is the increase in the cost of benefits. Benefits, which include health insurance premiums, pension contributions, paid absence, and employment insurance, have risen significantly faster relative to the basic salary and wages.

Figure 2 shows that benefits have changed much faster than wages. The decrease and stabilization of benefits in the 1990s is largely due to the very low growth in health care spending. That period was marked by the proliferation of for-profit health maintenance organizations (HMOs), which more aggressively controlled costs. But health care costs rebounded in the early 2000s and benefits increased dramatically (Roehrig, 2011).

For the Californian transit agencies, I chose to examine the Alameda-Contra Costa Transit District (AC Transit), Bay Area Rapid Transit (BART), San Francisco Municipal Transportation Agency (Muni), and Los Angeles County Metropolitan Transportation Authority (LACMTA). The first three are major transit agencies in the Bay Area and the last one is the major transit provider for Los Angeles. Figures 3 and 4 show the change in salaries and benefits during this period for these four agencies.

Figure 2: Normalized Wages and Benefits (1975 rate = 100)

Sources: US median wage from BLS inflation-adjusted median earnings. Transit wage and benefit from APTA 2014 Fact Book.

Figure 3: Hourly Wages in constant 2012 dollars

Sources: Federal Transit Administration National Transit Database (NTD) Annual Database Transit Operating Expenses and Employee Work Hours and Employee Counts tables.
Figures 3 and 4 show that BART has the highest hourly wages among the four transit agencies. This is mainly due to the fact that train operators are usually better compensated than bus drivers. BART is an all rail transit agency, whereas Muni and LACMTA are mixed rail and bus operators, and AC Transit offers an all bus service. Salary and benefits dropped for BART in 2013, probably as a result of the labor negotiation and strike. The graphs also show that LACMTA has the lowest wages of the agencies. Although it paid similar wages and benefits in the late 1990s, wages and benefits dropped in 2000, when there was a monthlong transit strike that ended in an agreement that curbed labor costs (Rail News, 2000). Costs have stayed low since then and LACMTA never caught up to the Bay Area agencies. Excluding benefits, wage rates for transit workers are quite low, especially for LACMTA where the basic pay is only about $13 per hour. But including health care and pension, the rate is bumped up to about $24 per hour. Since workers only get the base pay as cash that they can spend, their salaries make living in high-cost California difficult, and underscores their union’s demands for higher wages.

Direct comparison between the agency data and national transit data is difficult because of the different nature of the data. The nationwide American Public Transportation Association (APTA) yearly salary is calculated from yearly expenditures of transit agencies on labor divided by the total number of employees, whereas the agency-specific National Transit Database (NTD) data is calculated from yearly expenditures of the transit agencies on labor divided by the total number of hours worked. Due to the lack of information about the number of hours worked in the APTA database, the hourly wage cannot be calculated, and direct comparison between the two sets of data will result in some biases. Therefore it cannot be determined from the current data whether the four transit agencies’ costs are above or below the national average. However, the rate of change of costs in these databases can be more easily compared.
Figures 5 and 6 show the change in hourly salary rate and the change in hourly benefits rate. LACMTA stands out in being able to keep both costs low. Salaries at the Bay Area agencies have risen faster than the national average, while benefits increases are pretty much in line with increases nationally. Nationwide, the recession has kept transit salaries low, but the Bay Area seems to have been unaffected by the downturn.
Figures 7 and 8 show the share of the transit agency’s total operating budget that is devoted to salaries and benefits. The salary’s share has decreased pretty consistently in the last 15 years, mainly due to the increase in benefits. The salary plus benefits share has held somewhat constant, even against the backdrop of increases in fuel prices. The most surprising fact is that labor costs account for almost 90 percent of BART’s operating expenses.

Figure 7: Salary as Share of Total Agency Expenditure

Figure 8: Salary plus Benefits as Share of Total Agency Expenditure
Figure 9 looks at the impact of the increase in fuel prices on the agencies. Utilities costs are included since BART trains, Muni streetcars, and LACMTA streetcars and subway trains use electricity. Excluding utility costs would reduce BART’s numbers to almost zero percent.

During this period, fuel costs have increased. AC Transits saw its fuel and utility costs increase by 110 percent even after adjusting for inflation. However, since other costs are also rising, and since fuel’s share at the beginning of the period is so low, the dramatic increase in fuel costs had little impact on the overall expenditures. The agency’s fuel cost share, at roughly 6 percent, is still dwarfed by its labor costs.

Although labor costs dwarf all other operating expenses, it is not as dominant as presented in the graphs above since capital costs are not taken into account. Due to the nature of transit funding in the United States, capital costs are more likely to be covered by the federal government, while the agency and the local government need to gather enough funds to operate transit networks day to day. Labor costs thus play a bigger role than if capital costs were more closely considered in the calculus of agency budgeting.
This paper showed some of the reasons why negotiations between transit agencies and labor unions often turn sour. For the workers, their take-home pay would only allow them to barely get by in high-cost communities like the Bay Area. For the transit agencies, having labor taking up about 80 percent of the operating expenses forces the managers to be cautious about any demands in pay increase. All the while benefits, especially health care, continue to eat up larger shares of costs for both parties. Unfortunately, two solutions that can ease this situation, controlling health care costs and better integration of capital and operating costs, are largely outside of the control of transit agencies and unions. And it is highly unlikely that Congress will tackle these issues. Agencies and unions have to walk a fine line to keep their finances under control and their members happy. Unfortunately, the transit riding public, who must bear the consequences of strikes and fare increases, have very little influence in this matter.

References


Bus rapid transit (BRT) has been widely discussed by various transit agencies as the solution to the notoriously slow and unreliable local bus services that operate on surface streets. BRT is able to provide the efficient and reliable service similar to that of rail transit but at much lower capital costs; BRT only involves retrofitting existing arterials to provide dedicated bus facilities instead of investing in the construction of new rail tracks, and has recently been regarded as the better alternative to light rail services. California has planned BRT projects in various metropolitan areas starting from the 1990s; despite the short history, experiences among different cities have been mixed: some are successful while others are struggling to begin construction of the BRT facility. This paper will discuss the experiences of three transit agencies: the Los Angeles County Metropolitan Transportation Authority (Metro) successfully brought BRT to reality, and the service is performing better than the agency’s initial expectation; the San Francisco Municipal Transportation Agency (SFMTA) has been struggling to break the ground for BRT construction after the long planning process that began in the 1990s; and the Santa Clara Valley Transportation Authority (VTA) has been struggling to bring BRT to reality after building the extremely costly and underperforming light rail system.
Case 1: Los Angeles Metro Orange Line

As shown in Figure 1, the Los Angeles County Metro operates urban rail services in various areas of the county, and the red line was one of the earliest lines to operate. Opened in 1993, the red line spanned from Union Station to North Hollywood, serving downtown Los Angeles, Hollywood, and Universal Studios, as shown in Figure 1 (1). The Los Angeles Metro Rail did not provide service north of the North Hollywood station at the time but the extended service was already on the transit agency’s agenda. The Los Angeles County Metropolitan Transportation Authority acquired the right of way of the Southern Pacific Railroad in Burbank in 1991 (2). The railroad runs parallel to the Ventura Freeway (U.S. 101), through the communities of San Fernando Valley. This railroad operated passenger service between North Hollywood and Van Nuys from 1904 to 1920 (2). The right of way was then used by the Pacific Electric Red Car service from 1904 to 1920, also serving areas between North Hollywood and Van Nuys (2). Since the newly acquired right of way was previously used to provide rail service and there was already rail service from downtown Los Angeles to North Hollywood, constructing rail line was initially the obvious choice (3). However, the political climate was not supporting the proposal of constructing a subway extension of the Metro Red Line mainly because funding from the federal government would be extremely difficult to secure (4). Furthermore, the decline in ridership as well as operating revenue had forced the transit agency to delay its plan for the Metro Gold Line, the eastside subway extension from Union Station to Pasadena. As a result, the subway extension was out of the project alternatives and the agency initially proposed a light rail service from the Metro Red Line’s North Hollywood Station instead. Despite the lack of funding, at the time, Mayor Richard Riordan supported the construction of an open trench instead of the traditional tunnel bore to accommodate the heavy rail cars; however, residents of the surrounding neighborhoods strongly opposed the proposal and demanded that any rail service built should not be above ground. The process of searching for other alternatives continued until in 1998 Zev Yaroslavsky, the Los Angeles County supervisor and Metro board member, observed the success of bus rapid transit in Brazil and proposed the train with rubber tires as the more affordable and feasible alternative to extending the existing Metro Red Line rail service (5, 6). Construction of the Orange Line bus rapid transit began in September 2002 and the BRT service began operation on October 29, 2005 (1). The facility consists of a 14-mile stretch and two-lane dedicated busway with 34 cross streets and five mid-block pedestrian crossings (7). Transit signal priority was deployed at every

Figure 1. Los Angeles Metro Rail and BRT system map
Source: Los Angeles Metro

As shown in Figure 1, the Los Angeles County Metro operates urban rail services in various areas of the county, and the red line was one of the earliest lines to operate. Opened in 1993, the red line spanned from Union Station to North Hollywood, serving downtown Los Angeles, Hollywood, and Universal Studios, as shown in Figure 1 (1). The Los Angeles Metro Rail did not provide service north of the North Hollywood station at the time but the extended service was already on the transit agency’s agenda. The Los Angeles County Metropolitan Transportation Authority acquired the right of way of the Southern Pacific Railroad in Burbank in 1991 (2). The railroad runs parallel to the Ventura Freeway (U.S. 101), through the communities of San Fernando Valley. This railroad operated passenger service between North Hollywood and Van Nuys from 1904 to 1920 (2). The right of way was then used by the Pacific Electric Red Car service from 1904 to 1920, also serving areas between North Hollywood and Van Nuys (2). Since the newly acquired right of way was previously used to provide rail service and there was already rail service from downtown Los Angeles to North Hollywood, constructing rail line was initially the obvious choice (3). However, the political climate was not supporting the proposal of constructing a subway extension of the Metro Red Line mainly because funding from the federal government would be extremely difficult to secure (4). Furthermore, the decline in ridership as well as operating revenue had forced the transit agency to delay its plan for the Metro Gold Line, the eastside subway extension from Union Station to Pasadena. As a result, the subway extension was out of the project alternatives and the agency initially proposed a light rail service from the Metro Red Line’s North Hollywood Station instead. Despite the lack of funding, at the time, Mayor Richard Riordan supported the construction of an open trench instead of the traditional tunnel bore to accommodate the heavy rail cars; however, residents of the surrounding neighborhoods strongly opposed the proposal and demanded that any rail service built should not be above ground. The process of searching for other alternatives continued until in 1998 Zev Yaroslavsky, the Los Angeles County supervisor and Metro board member, observed the success of bus rapid transit in Brazil and proposed the train with rubber tires as the more affordable and feasible alternative to extending the existing Metro Red Line rail service (5, 6). Construction of the Orange Line bus rapid transit began in September 2002 and the BRT service began operation on October 29, 2005 (1). The facility consists of a 14-mile stretch and two-lane dedicated busway with 34 cross streets and five mid-block pedestrian crossings (7). Transit signal priority was deployed at every
intersection to reduce transit delay and travel time. Fourteen stations spaced roughly a mile apart were constructed along the Metro Orange Line, and the stations are primarily located in residential areas, activities centers, and near major arterials (7). Six stations have park-and-ride lots and provide a total of 3,800 parking spaces (8). Nevertheless, planners projected that 80 percent of the Metro Orange Line riders will access the stations by modes other than single-occupancy vehicles (9). The project utilized solely the dedicated right-of-way previously belonged to the railroad, thus no removal of general purpose lanes or on-street parking on the arterial, which meant traffic capacity of the major surface streets was not significantly impacted (10). As a result, the dedicated facility and its isolation from general purpose lanes helped the Los Angeles Metropolitan Transportation Authority avoid the potential public outrage typically associated with removing general purpose lanes. Nevertheless, the only serious opposition came from the Citizens Organized for Smart Transit (COST), which lobbied for additional rapid transit lines on the existing arterials instead of operating a bus rapid transit line. The organization filed a lawsuit against the Los Angeles Metro for overestimating the potential travel time savings, and the organization claimed that introducing a few rapid bus lines would achieve the same benefit as operating a BRT line (11). The construction of the Metro Orange Line was upheld for one month and the Los Angeles Metro was required to evaluate and compare the rapid bus lines and the Metro Orange Line (11). The overall findings ruled in favor of the Metro Orange Line due to Metro Orange Line’s lower and more consistent travel times, potential to attract more riders, cost-effectiveness, and adherence to the local area’s support for transit oriented development (TOD) (12).

Throughout the planning process, the Los Angeles Metro projected 5,000 to 7,000 average weekday boardings during the first year and up to 22,000 weekday boardings by 2020 (13). However, the ridership reached 21,828 just seven months after the Metro Orange Line opened, meeting the 2020 target much earlier than anticipated (14). In comparison, the Metro Gold Line, a light rail service from Los Angeles Union Station to Pasadena, had not been very fortunate; ridership was projected at 30,000 weekday boardings and would double by 2023, but statistics from the first three years of operation since 2003 show that the actual ridership not only failed to reach the projected level, it had been steadily decreasing over time (15, 16). As shown in Table 1, the Metro Orange Line has outperformed its light rail counterpart (17).

**Table 1. Weekday Boarding of Orange and Gold Line**

<table>
<thead>
<tr>
<th>Ridership Period</th>
<th>Orange Line</th>
<th>Gold Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 2005</td>
<td>16,360</td>
<td>16,910</td>
</tr>
<tr>
<td>Dec. 2005</td>
<td>15,492</td>
<td>14,417</td>
</tr>
<tr>
<td>Jan. 2006</td>
<td>16,100</td>
<td>16,318</td>
</tr>
<tr>
<td>Feb. 2006</td>
<td>17,636</td>
<td>15,325</td>
</tr>
<tr>
<td>March 2006</td>
<td>18,242</td>
<td>15,769</td>
</tr>
<tr>
<td>April 2006</td>
<td>18,700</td>
<td>15,587</td>
</tr>
<tr>
<td>May 2006</td>
<td>21,828</td>
<td>18,078</td>
</tr>
<tr>
<td>June 2006</td>
<td>20,844</td>
<td>18,771</td>
</tr>
<tr>
<td>July 2006</td>
<td>20,760</td>
<td>20,329</td>
</tr>
<tr>
<td>Aug. 2006</td>
<td>19,531</td>
<td>18,874</td>
</tr>
<tr>
<td>Sept. 2006</td>
<td>21,005</td>
<td>20,972</td>
</tr>
<tr>
<td>Oct. 2006</td>
<td>20,217</td>
<td>18,035</td>
</tr>
<tr>
<td>Nov. 2006</td>
<td>20,659</td>
<td>17,768</td>
</tr>
<tr>
<td>Dec. 2006</td>
<td>19,004</td>
<td>17,956</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>19,048</td>
<td>17,638</td>
</tr>
</tbody>
</table>

*Source: Metro and the Transit Coalition*
Overall, the Metro Orange Line accumulated 6 million passenger boardings during its first year of operation whereas the Metro Gold Line only accumulated 5.4 million boardings while costing twice as much to construct, and lastly, the Metro Orange Line also outperformed its rapid bus service counterpart; the Metro Rapid’s Ventura and Wilshire-Whittier lines only average fewer than 10,000 daily weekday boardings (18, 19). Based on the ridership statistics, bus rapid transit has proven to be successful when compared to its alternatives such as rail and rapid bus service.

Travel patterns on the Orange Line have shown that this new BRT service is not just intended for commuting. The survey conducted in January 2006 by the Los Angeles Metro indicated that during the morning peak, 86 percent of the eastbound passengers and 91 percent of the westbound passengers begin their trip from home but only 65 percent of the eastbound passengers and 73 percent of the westbound passengers indicate that their final destination is work (20). Furthermore, during the evening peak, only 42 percent of the eastbound passengers and 41 percent of the westbound passengers begin their trips from work, and only 44 percent of the eastbound passenger and 36 percent of the westbound passengers indicate that their final destination is home (20). Overall, only 41 percent of the trips were made between home and work, while other trips were made for purposes such as shopping and medical appointments, thus the Metro Orange Line had not been used to serve the typical commuting trips associated with suburban rail services (20). The survey also showed that 79 percent of the BRT riders accessed the station by taking public transit, walking, or bicycling while only 13 percent of the riders drove alone, thus very similar to what the planners of the BRT line originally projected (20). The survey also showed that the Metro Orange Line fulfilled its original intention of providing an extension of the existing Metro Red Line that ends at North Hollywood; 52 percent of the riders on the Metro Orange Line transferred from the Metro Red Line at North Hollywood and 59 percent of the riders disembarking at North Hollywood station intend to transfer onto the Metro Red Line (20).

In addition to a faster and more reliable service for transit riders traveling beyond North Hollywood station, the Metro Orange Line provided an alternative to the increasingly congested Ventura Freeway (U.S. 101) in the San Fernando Valley. In December 2005, the analysis performed by the California Center for Innovative Transportation (CCIT) found that during the morning peak, southbound traffic flow increased by 7 percent as a result of a less congested freeway since the opening of the Metro Orange Line, and congestion had begun 11 minutes later than before (21). During the evening peak, northbound traffic flow had increased by 6 percent for the same reason (21). Overall, the total time spent in congestion had reduced by 14 percent (21). Although there is no direct evidence that the new BRT line had reduced congestion, the survey showed that 18 percent of the riders previously drove and 79 percent of those who drove had traveled on the Ventura Freeway (21).

As projected, the new BRT service also attracted many new riders to Los Angeles Metro; 17 percent of the riders on the Metro Orange Line were new to the Los Angeles Metro and 14 percent of the riders had been riding for less than one year (20). In comparison, only 10.7 percent of the Ventura and Wilshire-Whittier rapid bus service riders were new despite the increase in ridership (20).

In terms of travel time reduction, two-thirds of the survey respondents who previously drove experienced reduction in travel time by riding the Metro Orange Line (20). Overall, the survey results
showed that 85 percent of the riders have experienced reduction in travel time compared to their previous modes of transportation (20). Despite the observed reduction in travel time and mode shift, the actual end-to-end travel time of Metro Orange Line had been roughly 10 minutes longer than what the planners have anticipated, and not much shorter than the Ventura rapid bus line that runs parallel to the Metro Orange Line; nevertheless, the BRT service has its dedicated right of the way, off-board fare collection, and multiple doors for boarding, thus the travel times are much more consistent than buses operating on surface streets.

Beyond the ridership benefits and congestion relief, the Metro Orange Line cost approximately $348 million, or $25 million per mile to build while its light rail counterpart, the Metro Gold Line, cost more than twice as much to build, at $62.7 million per mile (7, 22). In addition, operating cost data from 2007 shows that at $0.54 per passenger mile, Metro Orange Line is much less expensive than its light rail counterpart that costs $1.08 in operating expenses per passenger mile and traditional bus services that cost $0.63 in operating expenses per passenger mile (7, 22).

Overall, the example of Los Angeles Metro BRT shows that the BRT alternative was identified and chosen early in the planning stage, and with the right-of-way from an abandoned railroad, the Los Angeles Metro was able to avoid the controversy over whether to remove general purpose lanes and parking to reserve lanes for buses. Consequently, the BRT service was successfully deployed and efficiently served the demand in the region. As shown in Figure 1, Metro Orange Line has recently expanded to Chatsworth following the success of the initial segment.

**Case 2: SFMTA Geary and Van Ness BRT**

The city and county of San Francisco have adopted the Transit First Policy since 1974 in the effort of providing efficient public transportation by increasing the number of dedicated bus lanes and improving traffic signal operations on transit corridors. Geary Boulevard and Van Ness Avenue are two of the most important corridors in San Francisco, thus proposals for improvement in transit operations along these major corridors have been drafted and heavily discussed (23).

Geary corridor shown in Figure 2 is one of the most heavily traveled transit corridors in San Francisco, serving 15.5 million trips annually; it is an important link between the commercial downtown area and the Richmond District, one of the largest residential neighborhoods in San Francisco. Geary corridor was identified in the Proposition B sales tax
expenditure plan in 1989 (23). In 1995, the transit agency Muni started the study of the corridor with 31 different options, then evaluated seven of them, and eventually narrowed down to four alternatives: transportation system management, subway/surface light rail, subway/surface electric trolley bus, and all surface light rail (24). The evaluation considered many aspects such as capital and operating costs, as well as land use impacts, and finally reached the conclusion that light rail with median right-of-way would be the best option (24). On-street parking on Geary Boulevard would be retained under this approach, thus community was generally supportive of the project (23). However, Muni was governed by the Public Transportation Commission at the time, which elected not to move forward with this recommendation (23). In 2002, as part of the Short Range Transit Plan (SRTP) Amendment process, BRT was brought up as an alternative and it would cost $126 million in capital expenditure and entail an annual operating cost of $15.7 million (25). With no objections from the community, the project could be completed in five to seven years (25). And during this time period, BRT became the preferred solution to the travel time and reliability issues of major transit corridors, and it is believed to be the quickest and most cost effective alternative that will provide the desired benefit. This preference for BRT was later expressed in the 2004 Countywide Transportation Plan (CWTP) (26), but at this point, the Metro Orange Line in Los Angeles was about to be unveiled to the region’s transit riders. Upon completion of the project, the BRT service would operate in the dedicated median bus lanes. However, in reality, Muni only completed a short-term and low-cost project for this corridor by 2005; in conjunction with repaving Geary and O’Farrell streets in downtown San Francisco, a general purpose lane was removed to provide dedicated bus lanes to achieve higher speed and better reliability (23). Comparatively, full BRT service already began in Los Angeles. Nevertheless, the proposed BRT project on Geary Boulevard west of downtown San Francisco was planned and projected to commence service in the 2010-11 fiscal year. Although the feasibility study was completed in 2007 and construction would commence shortly after, the expected project completion date has been pushed to 2019 as a result of the complicated environmental impact analysis; the main issues experienced throughout the analysis were the anticipated traffic delays on Geary and diversion of traffic onto the already congested parallel streets. For example, auto travel speed would decrease by 12 percent and auto travel time would increase by 14 percent as a result of removing a general-purpose lane from each direction of Geary Boulevard (27). The study also expected diversions of 100 and 130 vehicles per hour onto California Street and Fulton Street, respectively, and these streets have lower capacity than Geary Boulevard and are already congested during peak hours (27). Furthermore, the BRT service could entail removing 17 percent of the on-street parking spaces if dedicated bus lanes were constructed in the median while keeping local buses mixed with general traffic (27).
Once the Geary corridor became the target for future BRT projects, the relatively auto-oriented Van Ness corridor shown in Figure 3 and Figure 4 has also been considered, starting from 2003. Although a federal highway, Van Ness Avenue serves as a major link between the commercial district in downtown and the cultural and entertainment centers around Fisherman’s Wharf. The two major bus lines, 47 and 49, carry 42,000 passengers daily but have been known for their notoriously long travel time and unreliable service (23). The joint study conducted by the Muni and Caltrans concluded that mixing the flow of general traffic and transit vehicles has led to long travel times and unreliable service, thus separation of the two classes of vehicles is necessary for the efficiency of the corridor. The study also identified that level boarding, off-board payment, and reduced number of stops are issues (28). Two alternatives were developed; the center option will place dedicated bus lanes, stations, and landscaping in lieu of existing median lanes on Van Ness Avenue, while the side option will restrict right lanes in either direction to buses only, although the right lane will still be open to cars turning right and making parking maneuvers (28). Similar to the Geary BRT project, the original plan called for launching the BRT service in 2010; however, this date has been pushed to 2018 for the same reason. Environmental impact statements have prolonged the analysis of the project as well as led to more iterations of design change, and these changes also come from the same pressure to mitigate the negative consequences on private automobiles and on-street parking. The Van Ness BRT project is expected to reduce the level of service (LOS) from D to E and F on Van Ness Avenue and many parallel streets such as Gough Street, Franklin Street, and Hayes Street, mainly due to the removal of a general purpose lane in direction of Van Ness Avenue and the expected diversion of traffic from Van Ness as a result of its reduced capacity (28). Currently, the average speeds on these streets are already below 10 miles per hour during peak hours (28). Additionally, depending on the design chosen, 7 percent to 15 percent of the on-street parking spaces would be removed as a result of the BRT project (28).

Both BRT projects are intended to improve the otherwise notoriously slow and unreliable Muni bus service but at the expense of more congestion for auto users and less on-street parking. Public outrage has emerged since the planning process began; many residents and business owners complain about the possible increase in congestion and decrease in parking availability. For example, Carole Holt, owner of Russian Hill Upholstery, expressed her concern that the reduced number of lanes on Van Ness Avenue will make her store less accessible to
the residents of Marin County, at a citizens’ advisory meeting on September 4, 2014 (29). Similarly, a Polk Street activist named Kelly Gerber strongly opposed the loss of parking due to its negative impact on the local businesses (29). Thus, the strong opposition and skepticism from the public, combined with the long delay in planning, has made BRT construction difficult to commence. Based on the slow planning process and the public skepticism, the SFMTA may have to make compromises with the BRT design and unveil the new service at a much later time.

Case 3: VTA Alum Rock, El Camino, and Stevens Creek BRT

The Valley Transportation Authority (VTA) provides transit services to the city of San Jose and its surrounding cities in Silicon Valley such as Mountain View and Sunnyvale. The population of this region has grown to 1.8 million recently and is the heart of the nation’s high tech industry. However, like most West Coast cities built during the rise of auto-mobility, San Jose and its surrounding cities are very auto-oriented, provide abundant parking supplies, and neglect walkability and pedestrian safety when building their transportation infrastructure. As a result, auto ownership is nearly ubiquitous, with only 5 percent carless households, much less than in nearby cities such as San Francisco and Oakland, with 30 percent and 17 percent carless households, respectively (30). Furthermore, transit mode share in the region is only 3.5 percent. Despite the low mode share, there are a few corridors that are feasible for transit investment; for example, the El Camino Real corridor from Palo Alto to downtown San Jose.

Ironically, capital projects intended to improve transit service did not commence in the areas with high transit demand. At the time, VTA supported higher coverage of Silicon Valley and making sure that every city and neighborhood is served by transit, but the agency neglected the cost-effectiveness of new service such as the light rail, and argued that new transit service would eventually draw more housing development and employment opportunities, thus generating demand. The light rail lines were planned in 1982 and the first line running along First Street to downtown San Jose was completed in 1987 (31). The light rail service covered the areas that were remote and desolate at the time and, surprisingly, planners expected the new light rail lines through the onion fields to bring more housing and employment overtime (31). Service was then extended to South San Jose and the Almaden Valley in 1991, followed by an extension to Mountain View and East San Jose in 1999 and 2004, respectively (32). The current system is shown in Figure 5.

Although housing development and employment opportunities rapidly grew during the tech boom, the auto-oriented transportation policy of the region did not facilitate the intended goal of increasing light rail ridership around these new developments. Instead, minimum parking requirements ensured abundant parking in housing complexes and shopping centers near the light rail; parking is often oversupplied and thus provided little incentive to use public transit (33). The entire VTA light rail system cost $2 billion to build and $66 million per year to operate (34). As shown in Figure 6, the ridership of the light rail system falls short of comparable services in cities such as Salt Lake City and Sacramento, and at 14 percent fare recovery rate, the VTA light rail has been one of the worst performing systems in the nation (32).

Only in the last decade, VTA has shifted its focus from its maximizing coverage objective to the market-based transit network. The agency has shifted its focus away from the unsuccessful light rail
project to bus rapid transit (BRT) services on the major arterial corridors throughout its network. In 2005, based on the current demand and land use pattern, VTA studied the potential transit market and identified six feasible corridors (shown in Figure 7) for BRT service in the Valley Transportation Plan 2030 (35). The plan called for an $8.53 billion package in order to bring these to operation (35).

Figure 5. VTA light rail system map
Source: Santa Clara Valley Transportation Authority (VTA)

Figure 6. Comparison VTA light rail with other systems (32).
VTA designates two tiers of BRT service on the basis of perceived capital cost and infrastructure investment. BRT 1 operates in mixed-flow traffic and is similar to rapid bus services in many other large cities, while BRT 2 operates in dedicated facilities with off-board payment just like light rail services (36). Initially, BRT 1 was introduced on one of the most heavily traveled corridors. VTA branded it as the Rapid 522 service that travels the same route as the local line 22. Although in mixed-flow traffic on El Camino Real and Alum Rock Avenue, VTA distinguished the service with low-flow vehicles operating on headway-based schedule, with transit signal priority and stop-spacing of one mile instead of 0.25 mile for local service (36).

After the introduction of BRT 1, the next tier of BRT service began receiving attention from the public. The Alum Rock Avenue corridor, part of the Rapid S22 service east of downtown San Jose will be upgraded to BRT 2 by the end of 2015 after securing $90 million from the state’s Proposition 1B and $24 million from 2000 Measure A Transit Improvement Project (37). However, the fear of public outrage against removing general purpose lanes and on-street parking resulted in only 1.5 mile of dedicated right-of-way for the Alum Rock BRT project while most of the BRT line will only feature enhanced stations and pedestrian-friendly facilities (37). Thus, this will be a merely marginal improvement of the existing facility.

The 2000 Measure A Transit Improvement Project will also fund the upgrade of the El Camino Real portion, and the upgrade will allow VTA to offer the BRT 2 service along the heavily traveled corridor (38). Planning of this corridor began in 2010 and service is expected to commence by 2018 (38). Similar to the Alum Rock corridor, VTA plans to remove a general purpose traffic lane in each direction in order to provide dedicated bus lanes for the BRT service. Despite the secured funding, VTA still had to face the challenges from the public regarding removing lanes to make room for buses, and to further complicate...
the situation, the BRT service will cross multiple fragmented jurisdictions including the cities of Palo Alto, Mountain View, Sunnyvale, and Santa Clara. In fact, the city of Santa Clara opposed removing traffic lanes and placing dedicated buses on El Camino, which meant that the 2.7-mile stretch of El Camino Real from Lawrence Expressway to Lafayette would have to seek the mixed flow design option just like the Alum Rock corridor, even though the city of San Jose located south of the arterial supported dedicated bus lanes (39). More than two years later, the city of Palo Alto voiced its opposition against placing dedicated bus lanes on El Camino Real; the city argued that without the dedicated bus lanes, the congested El Camino Real will require 94 seconds of waiting and 117 seconds of waiting at the major intersection with Page Mill Road by 2040, respectively, and the dedicated bus lanes will worsen the condition by adding 15 and 27 seconds to the morning and evening peak period waiting times, respectively (40). The city of Palo Alto also voiced its concern regarding the loss of 256 parking spaces as a result of the dedicated bus lane, versus only seven for the mixed flow design (40). Concerns typically arise from businesses along the corridor that value the ease of access for their customers. Lastly, in Sunnyvale, the city council voted against the dedicated bus lanes because the mixed flow design will not only be cheaper, it will also mitigate the impact of congestion imposed on auto users (41). The auto dealership owners in Sunnyvale also expressed their concern about the dedicated bus lane hurting their business; furthermore, the city of Sunnyvale claimed that autonomous vehicles in the future will be smarter than the current traffic control thus relieve congestion and reduce bus delay, and the idea of a dedicated bus lane is very “20th century” in the 21st century (41). Unfortunately, San Jose and Mountain View are currently the only jurisdictions in favor of dedicated bus lanes along the El Camino Real after five years of planning and negotiation.

The last corridor that has secured funding from the 2000 Proposition A Transit Improvement Project is the Steven Creek Boulevard corridor connecting De Anza College in Cupertino corridor and downtown San Jose. This corridor currently operates the local line 23 and the 323 limited-stop service that connect many popular destinations in downtown as well as the Valley Fair Mall in Santa Clara, and the BRT project has been viewed as the alternative to the increasingly congested auto-oriented Steven Creek Boulevard. The planning process has begun in late 2014 and is expected to complete in 2018; however, the frustrations and obstacles involved with these types of projects may severely delay the project or jeopardize the ability to implement VTA’s intended plan.

To sum up: due to construction of an underperforming light rail system and auto-oriented land use patterns, the public has become skeptical of the benefits of BRT; combining this with corridors that cover multiple jurisdictions insures that bringing BRT to reality will continue to be a struggle.

**Conclusion**

Bus Rapid Transit (BRT) has received the attention of transit agencies in the recent two decades. The examples in California demonstrate the difficulty and limitations of these BRT projects. Recent history of such projects in Los Angeles, San Francisco, and San Jose reveals a harsh and unpromising reality: any BRT project that may impede the right-of-way of auto users will struggle to prove its appeal. While Los Angeles was able to avoid the trouble by locating its Metro Orange Line BRT on an abandoned railroad right-of-way, the examples in the Bay Area have undergone the struggle of acquiring dedicated bus lanes. As negotiations and compromises continue, BRT projects in the Bay Area may become the
so-called mixed flow facility with marginal improvement of the existing condition.
References


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The Rise of Jitneys

The jitney era (1914-18) was a short-lived, but dramatic, period in U.S. transportation history. Within months of the first recorded jitney operator, tens of thousands of private jitney operators sprung into existence, and shortly thereafter, street rail companies started lobbying against them. By 1918, most jitneys were regulated out of existence.

The first jitney operator, L. P. Draper, picked up passengers in his Model T in Los Angeles and charged each passenger a nickel, equivalent to the fare of the Los Angeles Railways (LARY) streetcar. Draper established legality of his jitney operation with his chauffer’s license (Eckert & Hilton, 1972). Soon thereafter, chauffer license applications inundated police departments. Operating jitneys attracted the multitude of unemployed and underemployed men who had lost their jobs during the global depression that hit after the advent of World War I. The jitneys provided operators with flexibility — jitneymen could work just a few hours a day while devoting the rest of their day at other more profitable part-time work, or looking for better employment prospects. Due to the flexibility of jitney driving, there were high levels of entry and exit in this market, but during the early half of 1915, the volume of jitneymen grew.
The initial jitney craze did not threaten the intraurban railway companies (streetcar companies) because they perceived the jitneys as unprofitable, and ultimately unsustainable (Mahesh, 2015). In July 1915, F. W. Doolittle, the director of Bureau of Fare Research with the American Electric Railways Association wrote, “It appears quite certain, however, that at the present rate of fare the jitney bus experiment is doomed to failure” (Doolittle, 1915). The automobiles available at the time were not designed for frequent acceleration and deceleration, which resulted in higher rates of wear and tear on vehicles. Additionally, the added weight of passengers increased fuel costs and accelerated the deterioration of the automobile (Ecker & Hilton, 1972). Considering these implicit costs, it was questionable whether operating a jitney could provide a living wage. However, the railway companies soon realized that they underestimated the unemployed man’s will to work, especially if that work was flexible.

Travel on jitneys was characterized with shorter trip lengths, higher speeds (almost double that of the average streetcar speed), flexibility in destination, and flexibility in price (some jitney prices were driven by demand or supply). Once railway companies realized that the conditions of the economy could prolong the jitney trend, they began to see the jitneys as a dangerous competitor to their businesses. People were attracted to the jitney’s high speeds and flexibility, and the jitneys provided them at a level that streetcars could not.

**The Fall of Jitneys**

By spring of 2015, the railway companies saw jitney transportation as a serious threat and sought protection from their municipal governments. Municipalities were unanimously on the side of the railway companies (Eckert & Hilton, 1972). The high capital costs and barriers to entry made railways a monopolistic industry and since the railway companies functioned as natural monopolies, they were regulated by municipal governments and could not charge fares greater than a nickel. Importantly, most regulatory policies also required that railways pay city taxes and/or directly pay for public goods, like street improvements or installing streetlights. If streetcars were losing revenues to the jitneys, the cities too would lose in revenue and infrastructure support and, in fact, many cities experienced that (Eckert & Hilton, 1972). Because of this relationship, municipalities were incentivized to support the railways’ campaign against the jitneys.

Another theory as to why local governments supported the railway companies is that the governments were adhering to the 1893 Supreme Court case, *Smyth v. Ames*, wherein by regulating railway fares, governments were implicitly responsible for protecting the valuation of the regulated body. In the jitney versus railway case, governments responded with regulating the competition out of existence. Whether this was an appropriate reading of *Smyth v. Ames* is debated (Ecker & Hilton, 1972; Mahesh 2014).

While railways secured the interest of local governments, the jitneys lacked political power. There were several known attempts for jitneymen to organize and protest. However, since the new industry was marked with high entry and exit and since most jitney operators were part-time, the organizations lacked critical mass and all attempts fell flat. Indeed, some jitneymen, who held part-time work elsewhere, had stronger loyalties with the unions at said job. Since many unions supported the railways workers union, these jitney operators implicitly supported the railways instead of their own operations (Eckert & Hilton, 1972). Furthermore, merchants and local
businesses were pro-railways since they benefited from the agglomeration of shops in the main street/town center land use pattern that sprung up about the streetcar lines.

Though the general attitude toward railways in the early 20th century was that of suspicion, the jitneys developed a reputation of recklessness, with little regard for passenger safety. These claims are not entirely untrue. The jitneys had higher accident rates than streetcars, and the horror of automobile accidents provided a more visceral image than the image of businessmen running a monopoly. The general public was concerned about the safety of jitneys.

Municipalities chose from an array of different regulatory policies to enforce on the jitneys. The anti-jitney legislation was a combination of the following most common regulations:

1. Franchises: some jitney operators were required to acquire franchises, which often required taxes. Sometimes each individual franchise was subject to popular vote!

2. License fees: these fees were motivated by the wear and tear on public roads due to the jitneys.

3. Liability bonds: these bonds ranged from $1,000 to $11,000 per vehicle and were set so high because of the high accident rate.

4. Setting minimum hours of operations: the minimum hours for any given shift ranged from 6 to 12 hours, some cities that were adamant in squelching the industry even set the minimum to 16 hours; Many jitneymen drove for only a few hours a day before or after their primary jobs and could not accommodate to longer hours.

5. Some municipalities required the exact routes, terminal points, and schedules of jitneys in an application for a franchise or license.

6. In order to appease the streetcar operators, some cities prohibited jitneys from driving on the same roads that streetcars were on.

7. A set of safety regulations was set in place. Many cities set speed limits, a maximum number of passengers allowed on a jitney vehicle at any given time, vehicle inspections, and driver safety tests. Sometimes these tests were written exams, and illiterate jitney men could no longer operate their businesses.

8. Some cities required that municipal workers receive free jitney rides.

Just implementing one of these regulations could effectively force out a part-time jitney operator. Most cities implemented a combination of regulations, which wiped out the part-time jitney operators, and severely dampened the burgeoning industry. By 1918 the jitneys were largely regulated out of existence (Eckert & Hilton, 1972).

**Jitney Regulations in San Francisco**

During the jitney era, most railways were owned by private companies. These companies were the ones that fought vehemently against the jitneys. San Francisco, however, had a different starting point on the railway versus jitney fight. San Francisco municipalized the rail system by 1912, when United Railroads of San Francisco’s franchise expired,
propelled, in part, by a popular reform movement that swept the city in the early 20th century against the corruption and collusion among corporate interests (LaBounty, 2002). This may be a contributing factor to why San Francisco’s jitney regulations did not encompass the most stringent set of rules, though the requirement for a jitney license in San Francisco was not atypical:

File application showing name and type of car, the horsepower, factory and state license number, the seating capacity, and the name of the owner and chauffeurs, with state chauffeurs’ license numbers. Drivers must have had thirty days experience in San Francisco, must be physically qualified to drive safely, and must pass an oral exam on traffic law.

San Francisco charged the lowest licensing fees. Licensing fees, which were often a function of seating capacity, ranged from $10 to $150 annually; many started at $75 for jitneys that seated no more than five passengers. Not only did San Francisco have the most affordable fee structure, but the city also did not regulate on whether jitneys needed to predetermine their route and fare structure when applying for licenses, while many other cities opted to do so. Furthermore, schedules were not controlled (there were no minimum hours of operations) and routes were minimally regulated (jitneys were banned from using streetcar routes) (Bostwick, 1915).

In most parts of the country, jitneys died out completely. However, in San Francisco, jitneys continued to serve a minority of the commuting population up until the 1970s, and one jitney operator (family-owned) still survives today.

**Jitneys in San Francisco, After Regulation**

The San Franciscan jitneys did not decline monotonically. Initially, the first local legislation against jitneys negatively impacted the San Francisco jitney industry, but did not force it out completely since it was relatively lax. In fact, in 1917, the city lifted its ban restricting jitneys from operating on street-car routes due to a street-car workers’ strike that “threatened to cripple the city” (Cervero, Kirk, & Reed, 1995). By 1918, there were once again thousands of jitneys on the roads. However, in the years following, San Francisco continued to increase insurance rates and other regulations on operations and the fleet of jitneys dwindled but, again, did not disappear completely.

In the 1950s the last vestiges of the early 20th century jitneys were embodied in the “Mission” jitneys that ran along Mission Street between the Ferry building eastward to downtown San Francisco and southbound to the San Mateo county line. During this era, prior to BART, the jitneys served as last-mile service between the CalTrain stations and downtown San Francisco (Cutler, 2015). These suburban commuters were mostly white-collar, middle- to high-income individuals. In the 1970s, when BART opened and car ownership became more common, the volume of jitneys declined and the clientele shifted to predominantly ethnic minorities with blue- and pink-collar occupations (Cervero, Kirk, & Reed, 1995).

The fleet of San Francisco jitneys dwindled even further when Proposition K passed, which stipulated that jitney permits could not be transferred or sold from operator to operator (Cervero, Kirk, & Reed, 1995).
The enduring nature of the San Francisco jitneys, despite the many rounds of regulatory action, indicates that there was persistent demand for the jitneys. This demand suggests that there were gaps in public transit wherein demand for transportation existed but transit service was insufficient, non-existing, or poor. Post-1950s, the jitneys in San Francisco served these transit gaps and, instead of competing with public transit at the time (CalTrain), actually complemented transit by providing service between the station and passengers' downtown destinations.

Unfortunately for jitney operators elsewhere, streetcar owners in 1915 saw jitneys as a direct threat to their existence because it was their first experience with competition. The railways were a monopolistic industry but also, due to the technological landscape at the time, had a near monopoly on urban transportation trips by serving 90 percent of trips within urban areas. The San Francisco example begs the question whether jitneys and streetcars could have coexisted peacefully had regulations on both rail and jitneys been designed differently.

Legacy of Jitney Regulation

The regulations on jitneys set a precedent for regulation on taxicab services, which, like jitney regulation, varies city by city. Taxicab regulations are complicated and target much of the same topics that jitney regulation targets: vehicle and driver fitness, insurance and indemnity, market entry and exit, pricing, and allowable services (Cervero, Kirk, & Reed, 1995).

Rules on entry and exit are among the most discussed for taxicab regulations. Taxicab medallions (licenses to operate a cab) are capped in New York City, as in Oakland and San Francisco, and have become so valuable in New York that the price peaked to over a million dollars in 2013. The price has fallen since then to just over $800,000 (Barro, 2014).

Regulation on taxicabs is much contested. The concept of medallions dates back to the early 20th century when safety was the top concern for the taxicab industry, which was rife with reckless driving and inappropriate treatment of passengers due to lack of driver accountability (Badger, 2014). However, a medallion system is a regulation on entry and exit. This sort of regulation is economic, and is typically designed to address market inefficiencies, most commonly due to the problem of natural monopolies. A social regulation compensates society for market externalities that result from asymmetry of information, such as safety and liability for accidents (Mahesh, 2014). Since taxicab policies have been designed to target the safety of such services, are economic regulations, like barriers to entry, appropriate? Is medallion policy in taxicabs a product of jitney regulation that is only historically relevant but no longer practically relevant? These questions are especially relevant now that taxicabs are losing their monopoly status with new ridesharing companies making waves in urban transportation.

Jitneys and Ridesharing

The newest component of passenger transportation that is making most headlines is app-based ridesharing, like Lyft, Uber, and Sidecar. Many similarities between early 20th century jitneys and app-based ridesharing can be made. Both types of services utilize new technology and both have been described as innovative and entrepreneurial. Both services have been met with waves of popular support. Relatedly, both services provided flexible service: fares are dependent on how far one travels and destinations are agreed upon by the driver and passenger. Another key similarity is that today’s ride-
share drivers can drive during whichever part of the day and for however long they choose. The flexibility is akin to that of the early jitney drivers. Many Uber, Lyft, or Sidecar drivers hold other full- or part-time jobs, and provide ridesharing services when time permits.

Like the jitneys, today’s app-based ridesharing faces criticism from established regimes, predominantly from the taxicab industry who see it as unfair that the rideshare companies do not face the same regulations as taxicabs and are disrupting the preexisting industry with stiff competition.

However, unlike the jitneys, app-based ridesharing companies have significant political power because of their wealth and support from powerful investors. They have injected plenty of cash into lobbying efforts to gain the support of both consumers and regulators (Novak, 2014) and have avoided the imposition of taxicab regulations by arguing that they provide a technology service as opposed to a transportation service.

**Ridesharing in Bay Area**

Very little research has been done on ridesharing in the Bay Area, but available studies suggest that the ridesharing phenomenon is more complementary than competitive to public transit, similar to the jitneys of mid-century San Francisco. In fact, ridesharing is competitive, quite obviously, to hailing a taxicab, but is also competitive to driving one’s own vehicle. Ten percent of car-owning respondents in an intercept survey (Rayle, Shaheen, Chan, Dai, & Cervero, 2014) would have driven their own vehicle if app-based ridesharing were not available.

**Effects of Ridesharing on Bay Area Urban Transportation**

Today’s transportation landscape looks far different from the transportation landscape of the early 20th century. The predominant mode, for decades now, is driving one’s own vehicle, whereas a century ago, 90 percent of passenger transport was done via streetcar. Since the mid-20th century, public transportation has had to compete with household automobiles and has arguably been losing this battle in a consistent fashion.

Ridesharing is the first innovation in transportation that threatens to disrupt the status quo of driving one’s own vehicle. By carefully treading through the regulatory policies moving forward, ridesharing can become a viable complement to public transit — even more so with policies geared toward improvements in public transit and higher priced parking (as parking is underpriced now).

Though beyond the scope of this paper, it is worth mentioning that the taxicabs’ grievances about the unfairness of the lack of regulation placed on new ridesharing companies is worth approaching with thoughtfulness. There are many reasons to regulate the app-based ridesharing companies to ensure safety, ensure accessibility to all people (handicap access, for example), and place accountability for discriminatory practices. However, barring entry to the industry (e.g., medallions, economic regulation) should not be a policy implemented for the new app-based companies just because it has been done in the past. Instead, we should reconsider whether current taxicab regulations are appropriate and consider redesigns of these policies.
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For decades, millions of people around the globe have regarded California as a Garden of Eden with blacktop, a glamorous state built of, by, and for the automobile. As with many legends, there is just enough fact to this one to perpetuate it. The kernel of truth, according to the California DMV’s 2014 registration statistics and the U.S. Census Bureau’s 2014 California population estimate, is that there are about nine private and commercial motor vehicles, including personal autos, buses, motorcycles, recreation vehicles, taxi cabs and trucks, registered for use on the state’s public thoroughfares (33.6 million) for every 10 residents of the state (38.8 million). The story told by history, however, is a quite different one: for most of the 165 years since California’s admission to the Union, every major city roadway in the state was home to at least one rail-based method of public transit. The most influential of these, by far, was the electric streetcar.

Initially, cable cars held firm as the dominant means of interurban transportation in the Bay Area. As the 19th century gave way to the 20th and San Francisco and Oakland gave way to the San Andreas fault beneath, “King Cable Car” was dethroned and replaced by the streetcar, a faster, more modern, less expensive and more reliable mode of city-to-city rail transit also known as the “tram” or “trolley.” The American streetcar championed city transit throughout the nation in spite of the introduction and widespread adoption of Henry Ford’s mass-produced automobile, the 1929 stock market crash, the Great Depression, and two devastating World Wars. For over half a century, in fact, the urban transportation scene in the United States was dominated by the electric streetcar, which remains, when both its surviving classical and more contemporary incarnations are taken into account, one of the leading methods of public transit in the world.
Today, public transportation in the United States is most commonly a city- or regionally-owned-and-controlled venture. In the age of the American streetcar, this was not the case generally. The privately owned public transportation model was driven throughout the 19th century by the same individuals, ideas, and social forces embodied by the U.S. railroad industry, a political and socio-economic powerhouse remembered as much for its corruption, greed, and its creation of the modern business magnate as for its shrinking of the continental distance from sea to sea.

The streetcar systems of America’s greatest cities were established as non-publicly owned, for-profit ventures, often with three or four separate businesses competing over the same route. In contrast, competition in both of California’s largest metropolitan complexes — Los Angeles/Long Beach and San Francisco/Oakland — was brought to an end by consolidation, enabling a few large companies to assume control over more or less separate zones within the enormous interconnected transit systems that came to characterize each region.

During the height of the classical period of light rail transit in the United States, Los Angeles was dominated by two private entities: the “Red Cars” of the Pacific-Electric Company and the “Yellow Cars” of the Los Angeles Railway Company, whose service areas overlapped only to a very limited extent. At this time, San Francisco was torn between two directly competitive systems: the privately owned Market Street Railway Company and the San Francisco Municipal Transit Agency, the nation’s first publicly owned entity of its kind.

During peak rush hour traffic in the late 1920s and early 1930s the triple-looped turnaround at the San Francisco Ferry Building, terminus for the “Big Four” lines of Market Street track owned by the Market Street Railway and the SFMTA, saw 800 full-capacity streetcars emptied and filled in just 90 minutes — the busiest transit intersection in the United States and second busiest in the world, behind only London’s Charing Cross Station. This intra-urban rivalry ended when voters gave the SFMTA permission to acquire the Market Street Railway’s assets and operations in 1944.
Less than six miles across the water, the Golden Age of American interurban transit of the 1920s and 1930s unfolded quite differently. Competition between smaller transit lines did exist there during the 19th century, but by the birth of the Golden Age only one company remained to provide service to the cities and bedroom communities of the East Bay: the Key System. Begun as a small streetcar, commuter rail, and ferry company by mining entrepreneur Francis Marion “Borax” Smith, Key System eventually developed into one of the most efficiently organized, technologically advanced, and widely used transit companies in the nation. At its height, Key System achieved a level of service integration comparable to its southern affiliate, Pacific-Electric.

Key’s initial ensemble of streetcars and “trans-bay” ferries linking the San Francisco Ferry Building and the Key Route Pier in Oakland were supplanted in 1939 by streetcars that crossed the bay on the south side of the San Francisco-Oakland Bay Bridge’s lower deck, linking Key’s Pier to the then-brand-new Trans-Bay Terminal in downtown San Francisco. Key’s rapidly built Shipyard Railway transported workers between Emeryville and Kaiser’s four massive defense shipyards in Richmond throughout World War II.

In 1946 control of Key was acquired by National City Lines, a holding company capitalized by auto, truck, gas, and tire interests in the late 1930s for the purpose of co-opting electric transit systems throughout the United States. Under NCL’s influence, streetcar and commuter train operations were scrapped in favor of bus service, and Key’s remains were sold to Alameda County Transit in 1960. A few years later, the Los Angeles Railway Company and Pacific Electric succumbed to similar fates in Southern California.

The Key System’s impact upon small communities such as Berkeley, Claremont, and Richmond was particularly significant. After the Great Earthquake of 1906, the growth of the East Bay suburbs paralleled that of Key System and its early competitors. Today it’s evident that the University of California played a major role in driving development of the city of Berkeley — the university’s 1,232-acre campus is the city’s most prominent feature, so much so that the terms “University of California at Berkeley” and “Berkeley” have long been synonymous.
Despite their central effect upon Berkeley’s evolution, the steam engines, streetcars, and cable cars that were once abundant on its thoroughfares are long gone today. No one would expect a typical contemporary resident of the city, let alone a student, to recall the days of Berkeley’s streetcars, but traces of their presence can be found without difficulty. An examination of two major intersections in particular will illuminate this aspect of Berkeley’s transportation history.

The first of these intersections, Shattuck Avenue and Center Street, lies at the heart of downtown Berkeley, a block west of the university campus boundary at Oxford Street. At the intersection of Shattuck and Center, Shattuck divides into two branches that continue north for a block, where they terminate at University Avenue. The island produced from this division is bisected by Addison Street, forming two island lots: a rectangular parcel facing University Avenue known as Shattuck Square, and a wedge-shaped parcel facing the undivided portion of Shattuck known as Berkeley Square.

Originally, there was no roadway/railway where Shattuck Avenue stands today. Only two streets were originally listed for the northern area of the map: an unlabeled eastern branch of Broadway, now occupied by Telegraph Avenue; and the County Road, now occupied by the Eastshore Highway. The 1856 map did, however, create the initial plot designations for land in what would become Berkeley, and the lots that the private College of California ultimately purchased in 1866 prior to their merger with the California College of Agriculture, Mining, and Mechanical Arts to form the University of California in 1868. Shattuck Avenue, in fact, came into existence as the result of an unusual agreement between two squatters and a robber baron.

The squatters, Francis Kittredge Shattuck and James Loring Barker, persuaded industrialist Leland Stanford, who was already planning to lay down track somewhere near what would become Berkeley, to adjust the planned route slightly so the railway would run between their adjacent “properties.” Soon afterward, Stanford completed the “Shattuck Road” railway, locating its northern terminus at what is now Center Street, and its southern terminus at a connection to Southern Pacific’s existing tracks in Oakland.
In 1876, roughly a decade after the Shattuck Railway was built, the Central Pacific Railroad Company asked Shattuck and Barker to donate a portion of their land to accommodate construction of a railroad station. They happily obliged, providing 20 acres in total plus $20,000\(^1\) for construction of a passenger/freight railway station directly in front of their properties. Shortly afterward, Central Pacific widened Shattuck Road to become the Shattuck Avenue known today, creating the two island lots to house its downtown Berkeley station. Two successive wooden depots, the second slightly larger than the first, were located there for more than 20 years until Central Pacific finally announced plans, in 1899, to construct a more permanent facility on the site. Although the 1906 earthquake and complications stemming from Central Pacific’s acquisition by Southern Pacific delayed its completion until 1908, the Berkeley Station, alternately known as Stanford Place, ultimately served as the city’s transit hub for only three decades before its demolition.

The 158-foot-long brick and terra cotta station was crowned by a red tile roof with a copper cresting and cornice; inside, its 23-foot-high waiting room featured a mosaic tile floor, white enameled wainscoting, massive oak ceiling beams, and a grand fireplace. Although its architect of record was Daniel J. Patterson, the station was so beautiful that many historians believe it was actually the work of John Galen Howard, a reasonable conclusion given that blueprints of the station were found with Howard’s office papers.

By 1903, Southern Pacific Railroad Company had absorbed Central Pacific, and Key System had extended its interurban streetcar system north into Berkeley by way of Shattuck Avenue. Southern Pacific, operating Central Pacific’s assets in Berkeley, began competing directly with Key System, which nevertheless continued to flourish due to two advantages unforeseen by the railroad: Berkeley’s modern districts were then taking shape, and demand for its steam engine service on Shattuck Avenue was rapidly diminishing; further, compared to the relatively quiet, people-friendly Key System cars, Southern Pacific’s steam engines were loud, noisy, and generally less convenient to use.

Seeing the future writ large before it, Southern Pacific informed Berkeley’s City Council of its intention to replace its outmoded steam engines

\(^1\) Equivalent in 2014 dollars: $438,206.00
with a fleet of brand new electric streetcars, featuring the latest innovations in convenience and comfort. The showy, bright red livery of the Southern Pacific streetcars quickly became associated exclusively with Berkeley, until Southern Pacific decided to experiment with the development of an interurban electric streetcar system in Southern California.

The introduction of electric streetcar service proved to be one of Southern Pacific’s only truly successful initiatives in Berkeley, but even it was relatively short-lived. Construction of the downtown station had allowed the railroad to reroute its mainline passenger train service through the downtown area, but the unpopularity of that decision in the community led to construction of a large new station in West Berkeley that supplanted Berkeley Station as a mainline stop. Construction of the San Francisco-Oakland Bay Bridge rail line, which allowed the railroad’s electric commuter system to bypass its connection to the mainline at 16th Street, enabled Southern Pacific to convince the Railroad Commission that the large downtown station was no longer needed. Although it still owned a share of the Shattuck Avenue track and its small fleet of Red Cars, Southern Pacific surrendered its remaining Berkeley rails and rolling stock to Key on the conditions that the railroad receive a share of its revenue and be permitted to keep a ticket office in Berkeley Square. The Southern Pacific ticket office occupied space in the department store built on the site of Berkeley Station following its demolition.

Thus, Key became sole operator of rail service on Shattuck Avenue, which proved a rather hollow victory, as the 90-year history of surface rail service at Shattuck and Center did not survive the postwar changes in public preferences, technology and the agenda of National City Lines. Thankfully, rail service returned to downtown Berkeley less than fifteen years after disappearing from the city, with the opening of the Bay Area Rapid Transit Downtown Berkeley station directly beneath the site of the original downtown Berkeley Station. Recently, plans were unveiled for the replacement of the now-over-40-year-old BART station’s Brutalist-style surface entrance with a more attractive contemporary installation. Thus, some semblance of Berkeley’s steel wheel legacy lives on today, and hopefully, will continue to do so for another 90 years.

A second intersection that can be characterized as a microcosm of Berkeley’s rail-based transportation history is one with which every Cal student is familiar: Bancroft Way and Telegraph Avenue. Despite its function as the southern boundary at which Berkeley’s city grid continues after its interruption at the northern boundary, Telegraph and Bancroft does not actually border the campus proper. For nearly all of the first century of the campus and city’s existences, in fact, Telegraph and Bancroft was located, like Shattuck and Center, not one but two blocks from the boundary separating the state of California’s property from that of the city.
While the evolution of the campus is a fascinating and complex subject that reflects changing attitudes, populations, and economies, it is the equally fascinating and complex story of the evolution of the campus border that is crucial to an understanding of the history of Berkeley light rail. Although they are physically contiguous, the campus proper and its border have each developed in its own unique way, often with direct and indirect consequences that are more difficult to classify than merely “good” or “bad.”

In 1865, the College of California hired nationally renowned landscape architect Frederick Law Olmsted to draft a master plan for the land the college hoped to purchase in the hills north of Oakland. The result was the first design created for the Berkeley campus, encompassing only a small portion of today’s university campus. Many of the specifics of Olmsted’s plan were never carried out, since most paving in the area did not occur until after the century turned. Olmsted’s plan was highly influential nevertheless: it served as a guide to many of the entrants to the 1899 International Competition for the Phoebe Hearst Architectural Plan of the University of California.

Some of the surviving elements of Olmsted’s plan included the campus’ east-west orientation toward the Golden Gate; Piedmont Avenue; the flat central area surrounding the Campanile; and the use of Strawberry Creek as the southern boundary of campus, a decision that John Galen Howard affirmed in a bold architectural statement anointing Sather Gate, completed in 1910, as the campus’ formal entrance. These key principles steered campus development for roughly 60 years, until the university employed eminent domain to take ownership of developed property in the city of Berkeley for the first time — the four lots bordered by Fulton, Allston, Bancroft and Union — to build Harmon Gym, Edwards Track, Evans Field, Hellman Tennis Court and the Facilities Plant, a complex designed by George W. Kelham, who succeeded John Galen Howard as campus architect upon Galen Howard’s retirement from the position in 1924.

As a result of this expansion, a peninsula of city land three blocks in size jutted into university property. In 1939, the University acquired and

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2 Thirty years for the Hillegass Tract, where Hearst Gym, Kroeber, Hertz, Morrison, and Wurster stand today, purchased in the early 1900s as the intended site of the campus stadia.

3 Union Street is the vertically oriented street immediately to the right of Telegraph in Figure 8. Fulton Street is the vertical street on the far right side of the map.
razed the entire block between Barrows Lane and Telegraph, with the exception of a single 1924 building designed by John Galen Howard, which faced Bancroft. Construction of Sproul Hall, the campus’ new administration building, began later that year and was finally completed in 1941, freeing up California Hall’s classroom and office space for use of the law school, which had overgrown its Boalt Hall (now Durant Hall) origins. The loss of one block may have very well been insignificant by itself, but when the university stopped permitting cars through Sather Gate and announced their plans to begin construction directly off campus, the owners of homes located on the northernmost block of Dana Street understood that the era of living alongside Strawberry Creek was coming to an end. Not wanting to remain an odd outcropping of homes in what was becoming a commercial area, these residents sold their land to the university, which had already purchased the corner of Union and Bancroft to house the UC Extension offices. The other two-thirds of the block were cleared as a site for temporary barrack-offices, Union Field and, eventually, the 1954 Alumni House, leaving the First Unitarian Church of Berkeley’s three buildings as the only non-university facilities on Dana Street facing Harmon Gymnasium.

Exactly two decades later, in 1961, the university triggered the demise of numerous small businesses situated just outside Sather Gate, family-owned enterprises that had been warmly embraced by the student community for a half-century, by purchasing the block across from Sproul Hall for construction of what is now the MLK Student Union and the Cesar Chavez Student Center, to take the place of John Galen Howard’s 1923 Stephens Memorial Union. In 1965, the 1929 apartment-turned-UC Extension building along the east side of the Unitarian Church was demolished to construct the second incarnation of Eshleman Hall in lower Sproul Plaza. Three years following Eshleman’s construction, Zellerbach Hall rose in place of Union Field and two of the Unitarian Church’s buildings; demolition of the third church building was delayed when the congregation refused to abandon their historic 19th-century Schweinfurth/Maybeck chapel. Fortunately, the federal government refused to abandon it as well, placing the structure on its National Register of Historic Places. It survives as the UC Dance Studio.

The story of rail transit on Telegraph as it meets Bancroft is quite straightforward compared to the various changes to the surrounding cityscape, but this can only be expected from such a straightforward street: Telegraph was the first artery leading into Berkeley, when it was part of the Northern Oakland Township. Telegraph’s origins in old downtown Oakland can be traced to 1859, when the Sacramento-based Alta Telegraph Company extended their Benicia–Martinez line across the Carquinez Strait to provide service to both Contra Costa and Alameda counties.

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4 Decades later, the Howard Building was razed for “campus landscaping improvements.”

5 Many of the first residences in Berkeley were mansions built south of Strawberry Creek; by the turn of the century, the area now called “Southside” was one of the wealthiest neighborhoods in the East Bay.

6 Stephens was damaged irreversibly when gutted and converted into office space still used there today.

7 The first incarnation of Eshleman was built in 1931 (Moses Hall). The second incarnation is referred to above, and the third is currently under construction.

8 First Unitarian Church of Berkeley, 1898. NRHP #81000143
While no single road was routed alongside the line, several existing dirt roads happened to run parallel to the newly installed telegraph line, prompting city and county officials to unify them through name and pavement, giving birth to the identity of “Telegraph Road.” The roads comprising the original components of Telegraph were named “Peralta,” “Harwood,” and “Fish Ranch,” which ran from Oakland to Temescal, from Temescal to Claremont, and from Claremont to the Berkeley Hills respectively.

In the early- to mid-1860s, as the board of directors for the College of California (and later the Regents of the University of California) sought sources of funding to support their fledgling institution, the decision was made to lay out a residential subdivision south of the university campus. This subdivision was to end at the northern edge of the city of Oakland, placing the university in a rather precarious position since land in the residential zone overlapped the very edge of Oakland. University officials began laying out and labeling streets alphabetically from east to west, belatedly realizing that while Berkeley’s city grid was aligned completely differently than Oakland’s, Choate Street, the third street in from the development’s eastern boundary, could be connected neatly to Telegraph Road in Oakland. Representatives of the two parties met, and Oakland agreed to connect the two roads with a small new path called “Humboldt Street,” completing the basic route of today’s Telegraph Avenue.

In 1869, Oakland constructed Telegraph’s first horse railway as far as 36th Street. A year later, the line was extended to Temescal and finally, through Humboldt and down Choate in 1873, the same year that South Hall was completed on campus. South Hall’s construction materials were delivered to the campus aboard the Telegraph horse railway.

In the late 1870s, a small business district started to grow at the end of Choate Street just south of Strawberry Creek, the very same business district the university demolished to pursue its southern expansion. As industrial activity in Oakland expanded in the 1880s, the horse railway on Telegraph was replaced with a steam engine line. In the late 1890s, Borax Smith ran his first electric streetcar line down Telegraph Road, and by 1903, its unprecedented success transformed it into a locally significant transit system, the shape of which...
was likened to that of an old-fashioned key. That same year, Smith decided it was high time for his entrepreneurial enterprise to adopt a corporate identity, fashioning it into the Key System Railway Company. Smith’s legacy lasted over a half century, providing hundreds of millions of trips to people in the East Bay until its untimely demise as a result of changing public preferences and the agenda of National City Lines in 1960.

The turn-of-the-century introduction of Key System electric streetcars defined the next 50 years of rail transit history on what is now Telegraph Avenue. While some have speculated that the oval-shaped area in front of Sather Gate, as the terminus of the Telegraph Avenue streetcar line, had at one time housed a rail turntable, this was never actually the case. Prior to the completion of Sather Gate in 1909, the Telegraph Avenue railway did terminate with a roundabout-intersection at Allston Way; at the time of Sather Gate’s completion, however, the Telegraph Avenue track in front of the university already had been altered in preparation for the installation of pavement for automobile traffic. Indeed, following the university’s decision to ban auto traffic from passing through Sather Gate, the intersection became an automobile turnaround. Never has a rail turntable existed there, despite its apparent resemblance to the famed San Francisco cable car turntables at Market and Powell streets and Hyde and Beach streets.

In reality, as Telegraph approached Bancroft, the track on Telegraph diverged into two paths, one to the west side of Bancroft Way and the other to the east, an accommodation necessitated by the width of Telegraph, which was too narrow to contain two sets of track and automobile traffic lanes. In the stretch of Telegraph approaching the university, Key System cars were only ever seen traveling north; cars returning southward toward Oakland, or cars continuing north toward Richmond, turned either east or west at Bancroft, and from that point on were able to access other tracks on Dana, College, Shattuck, and even Durant Avenue easily. Most of these tracks lie buried underneath the pavement of these streets to this day, since abandoning steel rails in the ground is far less expensive than removing them.

In fact, the refusal of many cities in the United States to remove streetcar tracks from their roads is nothing short of ironic. Critical city and interurban transit networks like the Red Car System, the Key System, and several others not only in California, but throughout the United States, helped America to grow from an isolationist, quietly industrializing nation into the thriving world power
it is today. Sadly, most cities in America that once hosted these efficient and beloved networks have abandoned them, convincing themselves of the “superiority” of buses, in part by refusing to even acknowledge the accomplishments made possible by the American streetcar.

Many thousands of streetcars in the United States were destroyed from the 1920s forward, and many thousands more were stored and left to rot following America’s near complete disassociation with city rail transit in the late 1950s. Places like San Francisco were the exception; its residents in particular have always taken pride in its history, and did not stand idly by as their unique and irreplaceable transit systems were slowly threatened by planning and construction of the new California freeway system. Thanks to their efforts, San Francisco retains its historic transit character, perhaps not in the same capacity as during the Golden Age of the American Streetcar, but enough so to remind people of the streetcar’s importance to and continuing effect upon American culture.

There’s a certain magic to streetcars that buses and cars simply do not possess — a charm, a dignity, and a thoughtfulness to their design that is singularly American in nature. Malicious companies such as General Motors and Standard Oil of California fought against common sense of the time in an indecent manner, brainwashing millions into decommissioning transit systems that today would have provided invaluable service to their communities, would have helped to protect the environment, and would have been treasured for their historic character.

Although the interests of the few triumphed over the greater good in this case, the contribution of the streetcar to American urban development, especially in California, was not negated in any way. The many small American communities that developed into metropolises, like the Greater Los Angeles and the San Francisco Bay areas, were the direct product of streetcars and the freedom they offered from enslavement to the automobile that most residents of these regions face today to reach their homes. These interconnected communities, Berkeley among them, were often centered around rail transit, and without completely repaving and re-gridding their cities, the sites of these former lines of transportation remain evident, whether viewed within a grid, or even from the sidewalk. Smaller cities could often afford to physically dismantle what was in most cases a mere handful of rail lines passing through them, but such a task was never feasible in the state’s more densely developed urban areas. Just removing the track from cities such as San Francisco, Los Angeles and Oakland would have been more expensive than laying it had been in the first place. Today, the estimated value of re-establishing streetcar transit systems in cities where they previously existed, with inflation factored in, is markedly higher than their original cost.

For example, the total cost for the design and construction of the original San Francisco-Oakland Bay Bridge (both portions), including the implementation of all rail systems and their connections to existing rail systems on both sides of the water, was approximately $80 million, or roughly $1.358 billion in today’s dollars. By comparison, the cost of restoring only the Key System’s service between the Transbay Terminal in San Francisco and the Key terminal in Oakland using the Bay Bridge was estimated in a 1998 study authorized by a ballot initiative to be between $4.6 billion and $8 billion, which translates to approximately $6.6 billion to $11.5 billion today. Unfortunately, it wasn’t until the 1970s that California finally began to understand how much it had lost thanks to the machinations of the auto industry, when the state’s horrendous air
The attractively landscaped median strips that divide so many streets in the cities of California were not the result of some forgotten urban beautification movement; in actuality, most of them are the result of efforts by these cities to quickly and inexpensively cover up elements of rail based transit systems for which these unusually wide streets were specifically designed. The literal cover-up of old transit lines, such as those on Telegraph, Bancroft, Durant, and Shattuck is most often briefly exposed whenever the city of Berkeley widens its sidewalks, repipes its water system, or repaves its thoroughfares, allowing the glimmer of steel rail to shine through. For a fleeting moment, it’s possible to imagine the glory that was.

These remnants of the age of the American streetcar persist, to be discovered by those who have the time and willingness to look for them.

quality prompted federal intervention, leaving the state desperate to find an affordable way to create an urban transit system as green as the one California’s cities had destroyed just 20 years earlier.

Figure 11. A very real advertisement for the Key System, 1943.
Works Cited


The Key System: March of Progress. Hugh Harmon Productions, 1945. Film.


Introduction

Present-day Los Angeles is known for many things but perhaps most notably for its entertainment industry, great weather, and notorious automobile traffic. The latter of these is a fact of life that Angelenos have come to accept, and is reinforced with poor overall rapid transit in the region. How did Los Angeles become the auto-centric metropolis that we see today, and what plans existed to try to incorporate rapid transit into the metropolis? This paper aims to answer these questions and take a critical look at two of the most important rapid-transit proposals throughout the city’s history, and explore why neither of them came to fruition.

Emergence of the City

Los Angeles was incorporated as a city in 1850, and by 1870 had a population of 5,614. In the late 19th century the city saw its first major population boom, due to the burgeoning agricultural industry, supposed health benefits of the southern California climate, and the discovery of oil in 1892. Immigrants flocked to Los Angeles during this time, mainly from the Midwest, drawn to the climate, promise of a new life, and vast tracts of undeveloped land. By the turn of the century, the city’s population was over 100,000 (“A Short History of Los Angeles”). The region’s population continued to grow throughout the early 20th century largely due to the booming oil industry, the city’s population reaching 576,673 by 1920 (“Population”).
Much of this influx of people in the late 19th century was brought to the region by the Santa Fe and Southern Pacific railroad companies. Santa Fe led the way by lowering the price of a ticket from Kansas City to Los Angeles from $125 to $25, and by 1887 down to just a dollar. Southern Pacific soon followed suit and a major real estate boom in the region was born, with new cities springing up almost overnight ("Southern California and Los Angeles").

To support this booming population’s interurban travel needs, local transit systems were developed to provide service to Los Angeles and the budding new cities in the county. Two major rail transit systems emerged to dominate early 20th-century Los Angeles transportation, the Pacific Electric (PE) or “Red Car” system and the Los Angeles Railway (LARY) or “Yellow Car” system. PE was founded in 1901 by railroad executive Henry Huntington and banker Isaias W. Hellman, and the LARY was eventually also purchased by Huntington, who ran both systems’ operations starting in late 1901 (Los Angeles Herald 1901). The PE served a larger geographical area, and was the region’s interurban form of transport, while the LARY served mainly inner-city demands of downtown and its closely surrounding cities. These systems were highly utilized during the first decades of the century. In 1911, city residents averaged one ride per day on the LARY, and the PE was the most extensive streetcar system in the world by track-miles (Bottles 1987).

Nevertheless, the heavy patronage of these systems did not mean that the public was satisfied with them. Huntington was also heavily invested in the lucrative real estate industry, and would often tie his rail and development interests together, effectively creating unfair demand for his transit-connected residential developments over others. In addition to corrupt construction practices, the public often criticized the railways for having poor service. These service issues included unfair priority given to more cost-effective freight services, high costs including the refusal to issue transfers between PE and LARY, and the striking need for crosstown lines in the system (Bottles 1987).

Since Los Angeles began its growth at a time when electric railway technology could spread residents across the countryside, this resulted in vast detached home developments and much lower urban densities than those seen in Eastern cities. Los Angeles County was a meager 231 residents per square mile compared to New York’s combined five-borough density of over 18,000 ("City of New York and Boroughs"). This low density made Angelenos dependent on the streetcar, and therefore very critical of the quality of rail service.

The city of Los Angeles continued to experience incredible population growth and so did the entire county as a whole. In fact, from 1910 to 1920 the population of the county grew at a faster rate than that of the city for the first time in the region’s history. By 1920, there were 576,000 residents of the city of Los Angeles (up 80 percent from 1910) and 936,000 residents in the county (up 85 percent from 1910). This marked an important shift in the region’s growth pattern that continued in larger proportions for subsequent decades and even continues to this day ("Population").

This history of heated conflict between railway corporations and the general public as well as the growth patterns of the region would prove to be crucial factors in shaping the urban form of the Los Angeles area.
The Automobile Arrives

The automobile first started appearing on the streets of Los Angeles at the very beginning of the 20th century. At first a toy for the rich, it started to become an attainable item for middle-class families during the 1910s, largely sparked by the development of Ford’s Model T. The new technology caught on quickly around the country and began to represent individual freedom and the American lifestyle. Los Angeles was especially fond of the car due to the newly realized benefits it provided in navigating the area’s spread-out cities and towns. To the people of Los Angeles, the automobile provided a democratic alternative to the corrupt transit companies of the region and provided much-needed crosstown accessibility.

Support for the car was felt on a national level, and in 1916 the Federal Road Act greatly stimulated road development by providing states with matching funds (“Federal Road Act” 1996). The excitement hit Los Angeles especially early, and by 1915 the city had paved over most all of its main thoroughfares. Ownership rates of automobiles in Los Angeles were remarkably high compared to nearly every other American city at the time. In 1920, 28 percent of the population of Los Angeles owned a car, compared with 3 percent in Chicago and 8 percent nationally. By 1930, a whopping 67 percent of Angelenos owned a car compared to only 19 percent nationally (Bottles 1987).

However, this increasing adoption and dependence on the car in Southern California led to major traffic problems in the downtown area. Traffic for the most part was unregulated and the mixture of moving and parked cars with downtown streetcars suffocated the roads to the detriment of all users. In 1919, the California Railroad Commission released a study at the request of the City Council proposing a ban on parking in the downtown area. The City Council voted unanimously to institute a modified version of the parking ban, which included a small no-parking zone in the city’s core surrounded by a two-hour parking zone to be enforced daily from 11 a.m. to 6:15 p.m. After only a few days with the ban in effect, downtown business organizations rose up in outrage against the ban, claiming it negatively affected their businesses. Only 19 days after the ban had begun, due to downtown business pressure, the City Council amended the ordinance to be a forty-five minute parking ban from 10 a.m. to 4 p.m. This downtown parking conflict was an early example of how powerful organizations could shape transportation-related decisions. It also showed early signs of the city’s affinity for the car. A citizen during this time touted, “It is conceded to be one of the greatest conveniences of modern life, and it is unthinkable to virtually bar it from the business district of the city” (Bottles 1987).

Meanwhile, the population of the Los Angeles region was growing at an unprecedented rate. From 1920 to 1930 the city’s population more than doubled to 1.2 million residents and the county’s population by an even larger rate to 2.2 million residents (“Population”). This growth paired with high car-ownership rates led to a citywide traffic problem. Frequently streets would be congested due to too much demand and inadequate facilities. The City and County Traffic Commission called for action and funded a study called the Major Traffic Street Plan in 1924. The Major Traffic Street Plan’s goal was to develop a comprehensive plan of street widening and right-of-way acquisition in order to upgrade street facilities in a planned manner that would have a degree of uniformity compared with previous street improvement projects (“Major Street Traffic Plan” 1929). This coordination was important for facilitating movement through the city, instead of solely appealing to local business demands on a project by project basis. This plan helped create
order to some of the region’s traffic and facilitate flow reasonably well for a time, but the induced demand caused by improved facilities and the rising population and car ownership ensured that the region’s traffic problems were still not solved.

**Kelker, De Leuw and Co and the Union Station Controversy**

By the mid-to-late-1920s, it was clear that the Major Traffic Street Plan alone was not going to solve the region’s transportation problems. In 1924, the City Council hired Kelker, De Leuw & Co., a leading transportation firm from Chicago, to head up a Comprehensive Rapid Transit Plan for the city. The plan proposed a rapid rail system that included 153 miles of track, upgraded cars, and elevated rails in the downtown area at a projected cost of $133 million (“1925 Comprehensive Rapid Transit Plan”). It suggested a city tax as a possible source of capital funding for the proposed plan, though the authors admitted the low density of the area would make a self-sustaining rail system hard to operate without further subsidy.

When the study was completed in 1925, it was greeted with warm reception by the City Council and other agencies, and talks began immediately about implementation. However, a lingering controversy about creating a consolidated Union Station for the city’s three main railroad companies (Southern Pacific, Union Pacific, and Santa Fe) resurfaced among the new transit discourse. The railroad companies were not interested in building the Union Station due to opening competition among themselves and other lines. They were so opposed to the Union Station that they petitioned the Interstate Commerce Commission and eventually all the way up to the U.S. Supreme Court, which ruled that forcing them to build the station would be unconstitutional (Bottles 1987). The Union Station proposal did not go away though, and became a symbol for the public to finally demand reform from the railroad monopolies. Certain public interest groups put pressure on their political representatives to act. The City Council continued to push the railroad companies to build the Union Station, but instead they came back with an alternative proposal.

Southern Pacific (which now owned PE’s streetcar system) and Union Pacific decided to propose a joint alternative plan. Incorporating the Kelker, De Leuw idea of elevated railways through downtown, they proposed sharing sections of track between the two companies and running interurban lines from downtown to their terminals instead of building the Union Station. The elevateds would allow PE to remove many of its interurban cars from the street, thereby reducing the traffic caused by the at-grade streetcars. The plan also would grant 40-year franchises to the two companies in return for fronting the capital expenditure needed to build their proposed system (Bottles 1987). The general public was not pleased with their proposal, citing that it was yet another tactic to get around serving the public good. Various business and community groups were split however. The Downtown Business Men’s Association liked the idea, and saw it as a mechanism for keeping business revenue in the downtown core. Property owners were not pleased with the plans for elevated rails however, citing the terrible results other cities like Chicago had experienced with elevateds. The *Los Angeles Times* sent reporters to Chicago and New York to observe elevateds in those cities. One reporter came back and wrote, “an elevate is a many-legged and roaring steel serpent and should be shunned by all cities for the machination of the devil it is” (Bottles 1987). They claimed that in addition to being unsightly and noisy, they drove property values down. The railroads were well aware of the concern...
over elevateds but escaping the Union Station wasn’t worth spending two to four times more for a subway system in their opinion.

Proposition 8 to build Union Station was eventually put on the ballot in 1926, and the measure passed by a majority 61 to 39 percent (Bottles 1987). Though the public “won” the battle for the Union Station, the station wasn’t actually completed until the latter part of the next decade and it did little to actually solve the region’s transportation problems. In addition, the Kelker, De Leuw study was tainted after the railroads had used it as a support for their unpopular elevateds proposal, and the study was largely ignored after the Union Station vote passed. At this time the city’s transit problems still were not solved, but the Major Traffic Street plan kept on rolling.

The Union Station controversy marked the beginnings for the dynamic of the transit conflict in Los Angeles. Downtown business groups sought exclusive, grade-separated networks radiating from the downtown core to impose their economic ties on the rapidly growing other areas of the region. Investors involved in residential development in certain outlying regions also supported the downtown transit programs, but business interests and their political representatives in the outlying areas opposed the downtown transit programs. These business groups viewed downtown transit proposals as an effort to colonize their outlying cities, and instead favored transport projects that supported their own autonomous growth (Adler 1991). This divide between interest groups continued throughout the years and served as the key storyline in the battle for transit in Los Angeles.

**Rail Rapid Transit Now!**

By the late 1930s it was clearer than ever that streetwidening plans alone were not going to solve the city’s congestion problems. Planners, government officials, and the public therefore turned to limited access expressways to solve congestion problems. These roads greatly consolidated access streets and limited signalized interruptions to promote unimpeded traffic flow along the corridor. The Ramona Boulevard Parkway, running from the San Gabriel Valley to downtown Los Angeles was one of L.A.’s first expressways, and the famous Arroyo Seco Parkway was constructed in 1940 and considered to be a feat of modern engineering. The $6 million, 6.8-mile three-lane road followed “nature’s river route” between downtown and Pasadena, and was the first real glimpse at what would later become ubiquitously known in Los Angeles as the freeway (“L.A.’s First Freeways”).

Despite public excitement about these new freeways, the Second World War in the early 1940s put a pause on domestic transportation facility efforts. Due to less driving as a result of rubber and gas rations as part of the war effort, the PE recorded their highest annual ridership ever in 1944 of 109 million passengers (“Pacific Electric Railway 1901-1965”). While the increase in ridership helped the streetcars remain relevant in an increasingly auto-oriented society, it also accelerated the depletion of their already antiquated and worn system. The Great Depression throughout the 1930s had hit the traction companies hard, and most of them had delayed any maintenance efforts in order to stay above water. By the time the war effort came around, the PE and LARY were forced to even further delay any sort of equipment or track updates.
By the time the war had ended in 1945, city officials were quick to get back to the drawing board about how to solve the region’s congestion problems. The need for a coordinated modern transportation system was glaring due to the deplorable conditions of the interurbans and the ever-mounting automobile traffic on city streets. The Los Angeles Transportation Engineering Board (TEB) had been working on a freeway system proposal for a number of years at this point, and the California Chamber of Commerce and other business groups advocated a major postwar highway-building program. In late 1945, Los Angeles Mayor Fletcher Bowron secured funding for a traffic study of the region, which placed special attention on transit and the newly emerging freeway system (Adler 1991). When completed, the 1945 De Leuw, Cather & Co. study agreed with the TEB’s freeway recommendations but postulated that the incredible population growth of the region was likely to continue and therefore required more than just a bus transit system to serve that demand. The firm recommended that rail rapid transit lines be placed in the median of proposed freeways, that many PE lines be upgraded to rapid transit status, and that a citizen group should be organized immediately to start the careful planning and implementation of the recommendations (De Leuw, Cather & Co. 1945). The city council designated the Chamber of Commerce’s Metropolitan Traffic and Transit Committee (MTTC) as agent. The MTTC was led by Neil Petree, a leading transportation activist who at the time was also involved in a number of other organizations such as the Automobile Club of Southern California and the Downtown Business Men’s Association. Petree was a major proponent in passing the Collier-Burns Highway Act in 1947, a landmark bill that introduced an extra 1.5-cent statewide fuel tax for new highway construction and ushered in a new era of car facility construction (Adler 1991). In addition, the MTTC also supported legislation that would follow the De Leuw Cather study and put rapid rail lines in the medians of these new highways, now slated for construction due to the Collier-Burns Act. Unfortunately, the bill’s gas tax funds were only earmarked for highway projects, and didn’t include funding for rail lines. The MTTC sought legislation through the state Department of Public Works that would approve funds for rail or bus facilities in coordination with freeways. The legislation was greatly amended in the process due to the usual anti-downtown concerns however, and the MTTC’s efforts only ensured bus turn-outs on the initial section of the Hollywood Freeway (Adler 1991).

Though suffering an initial defeat, the MTTC immediately formed the Rapid Transit Action Group (RTAG) in 1948. Comprising state, county, and city officials, and transportation experts, RTAG’s goal was to draft up a plan for creating a transit district in Los Angeles.

RTAG’s message to the public was to support securing rail right-of-way in the medians of the proposed freeways, as was proposed in the De Leuw Cather study. They claimed that this was the modern way to build a rail rapid transit system and emphasized that “the freeways are being built now, the rail system must be built at the same time” (Rapid Transit Action Group 1948). Their main argument besides the urgency was that this would greatly reduce the cost compared to any future system that would have to acquire its own right-of-way.

The plan cost an estimated $310 million and suggested rapid rail lines along eight major routes and planned freeways, as well as a subway system in the downtown area. The report even suggested developing bus rapid transit lines to serve crosstown and connector routes. This was one of the first
appearances of the term bus rapid transit in the form of separated bus-only lanes. The report suggested that bonds be issued and controlled by the subsequently formed transit district. The authors claimed that this would be the only way to finance the capital costs of a project of this magnitude, since highway gas tax funds were out of the question. Unlike many of their predecessor studies however, RTAG claimed that the system would not require an operating subsidy (Rapid Transit Action Group 1948).

Due to its magnitude and impending nature, the Hollywood Freeway came to be the major make-or-break project that represented the transit activists’ push to implement a rapid rail system. The Hollywood freeway would serve the region’s travel demand between the San Fernando Valley and downtown through the Cahuenga Pass. RTAG in cooperation with the State Division of Highways was able to stall important contracts of the Hollywood Freeway for a brief period until July 1949 to allow speculation for rail transit right-of-way to occur (Adler 1991).

Support came from the usual downtown business activists, but also came strongly from residents in the San Fernando Valley and Hollywood areas. Representatives of the San Fernando Valley Chamber of Commerce claimed that “If we are deprived of a system of rail lines in the Hollywood Freeway, our section of the City of Los Angeles will suffer immeasurable damage.” They voiced similar concerns that if rails didn’t go into the freeways now a rail system would likely never be built. Opposition came from other cities that weren’t interested in building any more association with downtown than they had to. Mayors and representatives from Inglewood, El Segundo, and other southwestern cities called the proposal “a plan to funnel everyone into downtown Los Angeles” (Adler 1991). Similar concerns were voiced by representatives of other areas of the region including Glendale, South Gate, and Long Beach. People residing in those places didn’t want to support downtown plans but rather favored transportation options that would tie the neighboring smaller cities closer together.

The state legislature was not in session 1948 when this heated debate was taking place, meaning issuing a transit district in that year would call for a special session. Transit activists pushed for a vote by the Los Angeles County delegation to call a special session for this issue. This failed at the county delegation by one vote, meaning the rail district proposal would have to wait until regular state legislature went back into session in 1949. Some community groups, notably ones from the San Fernando Valley, were not pleased with the failed petition. They secured resolution from the City Council, who called upon City Engineer Lloyd Aldrich to conduct further study of the two transportation approaches (Adler 1991). Aldrich found that the most cost-effective solution would be not to delay building the Hollywood Freeway in order to wait for rail right-of-way contracts. Besides, he argued, rail could always be installed later at a cost that he projected not to be as high as RTAG initially imagined. The RTAG seemed satisfied with Aldrich’s findings, yet Valley activists were still adamant that rail be accounted for.

RTAG’s district-forming bill finally went before the City Council in April 1949, when the state Assembly was back in session. The bill was denied by a vote of 8-6 in the City Council, much of which was due to RTAG leader Petree’s suggestions to the council that if they didn’t support the rail procurement the issue would subside. After all, the state wouldn’t support a measure that the city didn’t want. This was a crushing defeat for the transit activists, and the Hollywood Freeway continued being constructed without right-of-way for rail. The outlying cities opposed to rail ultimately got their way regarding
the transit issue, but downtown activists didn’t lose out entirely as the freeways proved a viable option for them to provide arteries to their section of the city.

Though there was greater controversy surrounding rail proposals, that didn’t mean that there was a lack of controversy over some of the proposed highways. The East-West Bypass, a proposed ring-radial section of freeway on the southern end of the downtown area was also met by great opposition from the anti-downtown lobby. After much argument, the bypass was never constructed. This result emphasized that it wasn’t necessarily just rail projects that the region was wary of, but any project that attempted to force reliance on the downtown core.

The same divide that developed in the early 1920s between downtown interest groups, outlying residential interest groups, and outlying business powers was the main proponent of RTAG’s failure to secure rail right-of-ways in the proposed freeways. Ultimately, anti-downtown cities favored ideals of their own autonomous growth, and there was enough consensus among these outlying areas to defeat downtown interests and residential interests that favored rail.

During the 1950s the region saw the completed construction of many freeways thanks to the gas tax and federal highway program. This included the Hollywood Freeway from downtown to the San Fernando Valley (1954), the Harbor Freeway from downtown toward Long Beach (1958), and various others. Many structures followed in the next couple decades, almost none of which secured any sort of rail right-of-way as part of their construction (“L.A.’s First Freeways”).

**Subsequent Transit Proposals**

Though RTAG’s failed proposal was dealt at arguably the most crucial time in the region’s mass transportation facility development, that didn’t mean that the transit activists gave up. There were many proposals and groups after the late 1940s that aimed to bring modern mass transit to the region.

The Los Angeles Metropolitan Transit Authority (LAMTA) was created in 1951 to facilitate transit studies as a late response to RTAG’s proposal for a rapid transit district, but the LAMTA wasn’t given very much actual decision-making power. Their original mandate included a feasibility study of a monorail line between Long Beach and Panorama City via downtown Los Angeles. The MTA’s full monorail plan in 1961 included eight corridors in total and a backbone line that would run from El Monte to Culver City via downtown. The idea was unpopular among residents for similar reasons to previous transit proposals, and the lack of experience of almost any domestic operator led the construction and operating details of the project to be suspect. The plan never came to fruition and the idea died out later that year (“Past Visions of L.A.’s Transportation Future”).

In 1964, the Southern California Rapid Transit District (SCRTD) was created as the successor to the underpowered LAMTA. They had the power to issue bonds and propose taxation through voter consensus for transit projects. They had a couple successes, namely the El Monte Busway and securing federal funding for the Metro Red Line. However, the SCRTD brought three major mass rapid transit plans before the voters that were all subsequently rejected. The pattern of a lack of public desire for mass transit continued, even with a transit
district that wielded actual authority ("Past Visions of L.A.’s Transportation Future").

**Epilogue**

When looking back at the results of failed rapid transit proposals and the incredible adoption of the car as primary means of transport by Angelenos, much of these results can be attributed to timing alone. The technology of the streetcar during the city’s initial growth allowed residents to spread out across the region in a pattern that had never been seen before in other U.S. cities of the time. Ironically, the low residential density that the streetcars enabled at the turn of the 20th century laid the foundational groundwork for opposition to further transit plans later in the century. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region's population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish. By the time any major rail rapid transit proposals surfaced, starting with the Kelker, De Leuw study in the mid-1920s, the region’s population was already so spread out that consensus for developing a rapid rail system was too tough to accomplish.

In the post-war era of the late 1940s, the groundwork was already well established for the divide between downtown and anti-downtown interest groups. This period proved pivotal in the development of Los Angeles’ modern transportation landscape and once again rapid rail plans were struck down in favor of a more universally agreed upon freeway system. Again, considering the low population density of the region, this result was no surprise. By 1950, the city’s 1.9 million population was dwarfed by the county’s 4.2 million residents ("Population"). Therefore it’s clear why the outlying areas’ interests won over downtown’s interests; they simply had more people and in turn more political support.

In this sense, it wasn’t that most Angelenos were madly in love with the automobile and wouldn’t ever consider rail as an alternative. Car traffic has continually been a problem for the area since the beginning of the population boom in the early 20th century. The automobile and its supporting facilities continually came out triumphant in Los Angeles due to the universal consensus they were able to foster. They appealed to the majority of people in one form or another and raised fewer big concerns when compared with similar transit proposals. With this in mind, it wasn’t that the political leaders of the area had no foresight of the detrimental effects relying solely on automobile transportation might have, it was the strong lack of public consensus around transit that made car facilities an easier choice for the region’s residents.

As for what happened to the existing transit in Los Angeles, in 1953 PE was bought by GM subsidiary Metropolitan Coach Lines, who transferred many of the PE’s dying rail routes to bus lines. The existing lines were taken into public ownership in 1958 and the streetcar service ultimately ended in 1961 (Jaffe 2013). In Bradford Snell’s famed American Ground Transport presented to the Senate in 1974 he made the simplified argument that GM’s subsidiaries had deliberately bought up and destroyed electric rail transit in Los Angeles and other U.S. cities and replaced them with buses. In reality the worn-down streetcar systems and public favor of the automobile led to the system’s demise. Though GM and its subsidiaries did exhibit other forms of bad business practices, this sweeping generalization that they killed electric trolleys simply isn’t true (Adler 1991).
The lack of consensus around transit systems throughout the latter half of the 20th century and continual support for the automobile drove the region’s development patterns for a number of decades. Not until Proposition C passed in 1990 issuing a half-cent sales tax, a good portion of which earmarked for transit improvements, was it clear that opinions toward transit in Los Angeles had begun to shift (“Proposition C”). Proposition C was the first real push for transit in the region since the beginning of the previous century.

The region is currently making great strides toward transit, with five major Metro lines under construction in 2015 in part due to Proposition C funding (“New ‘Under Construction’ Map for Metro Rail Debuts” 2013). There is no doubt however, that the city’s past development and decisions regarding transportation have permanently altered the Southern California landscape and lifestyle. Positive public perceptions toward transit in the area will take time to develop due to the automobile culture that is so deeply engrained in the Los Angeles region.
References


Abstract

Since the 1950s, there has been little to no increase in transit usage in many parts of the United States. Boarnet argues that despite the increase in transit funding since the 1990s, transit ridership has increased only modestly. The changes in transit ridership can therefore be attributed to many different factors that may not be related to funding or improvement in transit. These factors are divided into two categories: external factors which I describe as factors that transit agencies have no control over, and internal factors, i.e., factors that can be influenced by public transit agencies. External factors include population growth, income, poverty level, availability of vehicles, and gas prices, while internal factors include transit funding, transit timing, advancement in transit technology, etc. (Taylor, Hass et al. 2002). This paper looks at the trends in public transit ridership in the City and County of San Francisco by focusing on external factors that influence transit ridership of workers in the county. In particular I look at the American Community Survey (ACS) data between 2005 and 2013 (years that ACS data is available). I use literature to determine these external factors and their expected impact, then compare this to transit ridership in San Francisco. This brief history can be used to inform the transportation decisions that will be made by the county officials.
Introduction

Transit agencies are seeking new ways of increasing ridership by analyzing what factors can most influence ridership. According to the survey results by the Transit Cooperative Research Program Research Results Digest, a survey of transit agency managers on what influences transit ridership, transit agency managers view external factors as major influencers of their transit ridership. They mention population growth, the economy, and traffic congestion as major factors influencing ridership (Taylor, Hass et al. 2002).

From the San Francisco ACS data, the number of workers in the county who used public transit slightly fluctuated between 2005 and 2013. Figure 1 shows the number of workers in the county that took public transit to work. Based on this information, I compare the trends in transit ridership to factors that may impact the number of workers using public transit in the county to determine the trends and correlations.

External Indicator 1: Population

The population of San Francisco increased between 2005 and 2013, consequently increasing the population density in the county. According to Armbruster, population density positively influences transit ridership. In the past decade, while population increased in the county, there was a general increase in number of workers who used public transit (Armbruster, 2010). Figure 2 shows the impact of population density on number of workers taking public transit. Between 2005 and 2013, there is a strong correlation between increase in population density and transit ridership in the county.

As San Francisco continues to attract people due to its vibrant technology industry, transit agencies should give emphasis as to how this increase in population is going to impact ridership in the county.
External Factor 2: Income

In San Francisco, a correlation existed between median income and transit ridership between 2005 and 2013. Figure 3 shows the correlation. The median income is based on 2013 inflation-adjusted dollars. The positive correlation between transit ridership and median income may be due to the fact that an increase in median income may mean more people are going to work hence an increase in transit ridership.

Looking specifically at different earning groups, in 2005, 38 percent of San Francisco County residents who took public transit to work earned below $25,000 a year, 28 percent earned between $25,000 and $49,999, 16 percent earned between $50,000 and $74,999 while 18 percent earned over $75,000. This pattern showed that the lower income groups were more likely to use public transit to work. However, looking at the trend between 2005 and 2013, the share of low-income workers taking public transit has decreased from 38 percent in 2005 to 29 percent in 2013. On the other hand, the percentage of workers taking public transit who are in the high-income bracket has steadily grown over the decade from 18 percent to 32 percent. In fact, this income bracket makes up the highest share of public transit riders. Figure 4 shows a graph of the trends in income and transit ridership.

A reason for the decrease in transit ridership of low-income earners may be due to suburbanization of jobs to areas with poor transit services, which forces low income groups to find alternative ways of getting to jobs other than public transit. In addition, as living costs in the Bay Area increase, low-income earners need more than one job, which often requires reliance on a car to travel between jobs. In addition, even though the transit fares have mildly changed, rents have substantially soared in the area, which may have impacted transportation habits in the county as people try to find ways to save money.

External Factor 3: Vehicle Availability

Between 2005 and 2013, there was no correlation between vehicle availability and the number of workers who took public transit to work in San Francisco. This is contrary to the anticipated result: that as vehicle availability increases, transit ridership decreases. This suggests that people may own vehicles but do not use them for commute to work and may instead be using their vehicles for leisure. Figure 5 shows the correlation between vehicle availability and number of workers who use public transit.
A probable cause for the lack of correlation is the high cost of parking in the San Francisco, which discourages people driving to work. According to Parry, policies that have people pay for externalities in driving would discourage more and increase transit ridership (Parry et al., 2007). In addition, traffic congestion may encourage drivers to not drive to work.

External Factor 4: Gas Prices

Another external factor that influences public transit ridership is gas prices. Looking at the average gas prices in California between 2005 and 2013 and using 2013 inflation-adjusted dollars, there was low correlation between transit ridership by workers and the cost of gas. Figure 8 below shows the correlation between gas price and number of workers using transit. This result is contrary to the expected result where increase in gas prices would correlate to increase in public transit ridership.

Conclusion

While the anticipated impacts of external factors on transit ridership are generally known, it is important that their impact be evaluated on a case by case basis to ensure that transit agencies have the correct information when evaluating how to increase ridership. Such information and data can be used to plan the future of transit in California. Table 1 below shows a summary of anticipated impacts of the external factors and their actual results.
<table>
<thead>
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<th>External Factor</th>
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<td>An increase in population leads to increase in transit ridership</td>
<td>A positive correlation exists between population and transit ridership of workers</td>
</tr>
<tr>
<td>Income</td>
<td>Increase in median income leads to increase in public transit ridership</td>
<td>A positive correlation exists between median income and transit ridership of workers</td>
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<td>There is almost no correlation between vehicle ownership and transit ridership of workers</td>
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<tr>
<td>Gas Prices</td>
<td>Increase in gas prices leads to increase in public transit ridership</td>
<td>There is very low correlation between gas prices and public transit ridership by workers</td>
</tr>
</tbody>
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3. Boarnet, M. (2012). The declining role of the automobile and the re-emergence of place in urban transportation: The past will be prologue.

Introduction

Like many other metropolitan areas, San Diego had an extensive rail transportation network at the turn of the 20th century. Yet San Diego became the first major California city to switch to a bus-only transit fleet, in 1949. As time went on, both San Diego and its neighbor Tijuana saw explosive population growth, and in the 1970s a combination of strong leadership and a stroke of luck led to San Diego constructing the first post-WWII light rail system in the United States. The light rail system’s original segment went from Centre City San Diego to the international border at San Ysidro, and received national and international attention for bucking the trends of most rail projects by being delivered on time, under budget, and with no federal funds. This paper explores how the San Diego trolley came to be, its strengths and shortcomings, and its legacy.

Early San Diego Transit

San Diego’s first public transit started in 1886 with the San Diego Street Car Company’s horse-drawn open streetcars (Metropolitan Transit System, 2015). The San Diego Street Car Company would ultimately have five lines in downtown, and travel at a top speed of five miles per hour. The transition toward electric railways was somewhat volatile. On November 19, 1887, the San Diego Electric Rapid Transit Railway debuted the first electric streetcar on the West Coast, but weeks later the service was dismantled and moved (Holle, 1990; Metropolitan Transit System, 2015). The service restarted on December
31, 1887 on Fourth Street, but eventually failed in 1889, leaving San Diego with only steam- and horse-powered transit lines.

The real estate mogul John D. Spreckels would ultimately be the person responsible for creating a flourishing electric rail transit system in San Diego. Upon purchasing the Hotel del Coronado, Spreckels also acquired one-third ownership of the San Diego Street Car Company horse-drawn system (Holle, 1990). In November of 1891, Spreckels incorporated the San Diego Electric Railway Company, and in January of 1892 purchased the San Diego Street Car Company, converting the entire system to electric vehicles. Like many railway entrepreneurs in this time period, he constructed the streetcar network to serve his real estate holdings. As he said in 1892, “I made those larger investments to protect the investments I had already made. It was just plain business sense. The city would not grow without an adequate street car facility. If San Diego did not grow, then my big investments would not pay” (Metropolitan Transit System, 2015).

Even in these early years, rail connections to Tijuana were important. A brochure for tourists was created by the Hotel del Coronado around the time of the 1915 San Diego Panama-California Exposition (Hotel del Coronado Printing Department, 1915). The brochure features a map of the region with illustrations of key sites and red lines indicating the extensive San Diego Electric Railway and San Diego & Southeastern Railway lines. While San Ysidro, the last town on the border, was represented by faded crosshatches and its name faintly written, Tijuana is featured prominently and is one of the eight destinations on the map to receive an illustration. The brochure suggests 12 different rail itineraries, including one to Sweetwater Dam and Tijuana, where the traveler will have “ample time” to see the boundary monument, various sights and “curio stores,” and “partake of a genuine Spanish dinner” all while making it back to San Diego in the afternoon.

The Southern California newspapers from the early decades of the century reported religiously on the results from the horse races in Tijuana. On occasion, there were even special trains that ran directly across the border to the racetrack in Tijuana. In 1916, two special trains were arranged from San Francisco to head to the races in Tijuana with several hundred passengers (Purner, 1916). A 1922 Los Angeles Times article reported that “Angelenos will jaunt to Tijuana” on a special train, and that it was probable that such trains could be run every Sunday and holiday for the thousands of Los Angeles sports enthusiasts making regular trips to Tijuana for sporting events (“Angelenos Will Jaunt to Tijuana,” 1922).

Electric streetcars and rail transportation flourished in San Diego at the turn of the century, but competitors also started to emerge. The first known jitney ride was in nearby Los Angeles on July 1, 1914; by the time of the San Diego Panama-California Exposition of 1915, jitneys (large automobiles following similar routes to the streetcars and charging the same nickel fare) were also common on the streets of San Diego (Eckert & Hilton, 1972; Holle, 1990). Over 1915 to 1916, newspapers reported that the Electric Railway lost out on as many as eight million nickel fares to the jitneys (Holle, 1990). Eventually, the threat of the jitneys would recede as San Diego passed strict regulations about the routes of jitneys, and the jitneys faced an injunction (Eckert & Hilton, 1972). However, as the jitneys lost ground, the bus came to the foreground.

San Diego’s first transit bus went into service in 1922 between National City and Chula Vista (Holle, 1990). Over the following three decades, San Diego’s population boomed, but development began to be shaped around the increasingly popular
automobile. Between 1920 and 1950, the population of California increased by a factor of three, but automobile registrations increased by a factor of eight, with this trend even more pronounced in cities (Jenkins, 1951). As development sprawled away from the radial streetcar lines and streetcar ridership plummeted, buses became more cost-effective for transit companies to operate. In 1924, San Diego’s route 8 became the first streetcar route to be converted to a bus line (Holle, 1990). For a time, the streetcars were able to survive alongside buses. The Presidents Conference Car (PCC) streetcar represented a technological improvement, making streetcars lighter-weight, faster, and more streamlined, and San Diego was one of the early cities to receive PCCs. World War II fuel rationing and a booming economy in military-oriented San Diego also led to a boom in transportation and a reliance on the electric streetcar, but after the war there was a mass return to the automobile and the electric railway quickly faded away.

Three streetcar routes were converted to buses in 1946, and by the end of 1947 only three streetcar routes were still in operation (Holle, 1990; Metropolitan Transit System, 2015). In 1948, the San Diego Electric Railway and San Diego & Coronado Ferry Company were sold to Jesse L. Haugh, and the new owner quickly changed the name of the transit company to San Diego Transit System and applied with the state Public Utility Commission to switch to an all-bus fleet (Holle, 1990). On April 23, 1949, the city held a parade to say goodbye to its streetcars and to welcome a procession of modern GM buses, and on April 24, 1949 San Diego became the first major California city to switch to an all-bus fleet (Metropolitan Transit System, 2015).

Post-World War II Transportation Planning

A few years after moving to an all-bus transit system, the City of San Diego retained a consultant to survey and report on the quality of the region’s transit system. The consultant found that “by far the greater proportion of transit traffic consists of essential riding. Casual and pleasure riding have almost disappeared,” posing the greatest challenge for the viability of profitable mass transit (Jenkins, 1951). Although dealt a difficult hand, the San Diego Transit System worked relatively well as a transit company. The consultant lauded the management structure of the agency and the “unusually high feeling of friendliness between the passengers and the drivers,” and noted that key performance indicators such as on time performance were “not out of proportion to what is normally expected in a transit operation of this character” (Jenkins, 1951). Maintenance was excellent and the “entire fleet is in a good state of repair.” Yet in 1945 the transit system was serving an average of more than 385,000 passengers per day, while by 1951 this figure was only 140,000, and on a downward trend (Holle, 1990; Jenkins, 1951).

By 1963, Haugh declared that San Diego Transit System would go bankrupt within the next two years, and called for a public takeover of the system (Holle, 1990). In 1966, voters approved the city’s purchase of the transit system as well as a property tax assessment to support its operations (Metropolitan Transit System, 2015).

In this time period, it was becoming clear that a better public transportation system was becoming increasingly necessary. Some outlandish
ideas floated around, such as the proposal to City Council by one engineer to build a monorail between San Diego and Tijuana that would link the two cities in eight minutes at up to 250 miles per hour (“Monorail System to Tie Border Cities Proposed,” 1964).

A more grounded regional transportation planning process began in 1966, with the creation of the Comprehensive Planning Organization (CPO) (Holle, 1990). The CPO joined San Diego County, its 13 incorporated cities, the San Diego Unified Port District, and State Division of Highways together to study transportation regionally. In 1967, the CPO undertook its first study explicitly aimed at conceptualizing a mass transit plan. The 1967 TRIP Study (“Transportation Requirements and Implementation Program”) noted that San Diego had become very auto-oriented, and that “the defects of this arrangement now affect the very few, but as population and transportation demand increases, the very climate, beauty and style of life which now draw people here will be threatened” (San Diego County Transportation Requirements and Implementation Program, 1967). The report outlined a work program to iteratively create an improved regional transportation system, bringing together the most cutting edge systems analysis techniques for long-range planning with a unique partnership of industry (the Ford Motor Company and its Philco-Ford subsidiary), a nonprofit think-tank (the Organization for Social and Technological Innovation), and local government.

The TRIP Study’s work plan took a particularly engineering-oriented lens to solving the region’s transportation problems, specifying various regional growth, transportation demand, and transportation system models to be used. At one point, the report suggests specifying a large number of “classifications of users ... nearly homogeneous with respect to transportation needs” and sampling from those classifications among the general population; the resulting data would be used to model the overall population’s receptivity to different transportation alternatives more precisely than traditional surveys. In hindsight, the report seems to have too much faith in the precision of systems analysis methods and the ease of modeling all aspects of a region’s development and transportation system. It also exhibits a key blind spot present in many of the region’s planning documents. In discussing the employment, demographic, and household data to be used, the report says it will look at the region “comprehensively” by using Census Tract level data, thereby excluding any analysis of the binational San Diego-Tijuana region as a whole.

One thoughtful outside voice was a 1974 report by Donald Appleyard and Kevin Lynch, professors of urban planning. Similarly to the TRIP Study, Appleyard and Lynch’s report noted that “the city’s magnificent site, for which its citizens have such strong affection, is still intact, but may be losing its best qualities” (Appleyard & Lynch, 1974). They examined the various assets that contribute to San Diegans’ quality of life, and made suggestions on how those assets might be preserved through measures such as habitat restoration and preservation, careful consideration of neighborhood development, and renewal of the urban center. A fixed rail transit system presents to them an opportunity for stations that can act as “community foci” and reinforce existing centers to direct growth toward already urbanized areas and slow the region’s outward expansion.

In stark contrast to the 1967 TRIP Study, Appleyard and Lynch point out that Tijuana is “an integral part of the San Diego landscape,” and call for strong joint action and collaboration between the two cities. Appleyard and Lynch point out that the two cities are already inextricably linked: among
Tijuana residents they spoke to, almost all visit Chula Vista more than once per month, with many also frequently visiting downtown and Balboa Park. And yet in this binational region, “all official maps go blank at the border. ... Even the special Border Area Plan of 1966 shows nothing across the line!” They call for a “truly regional institution” that would be “competent to analyze and to plan for the international region as a whole.” Consistent with their intent that a fixed rail transit system support infill development, they note that the greatest priority rail corridor should be between Mission Bay (north of downtown) and Tijuana.

Academics weren’t the only ones calling for a rail transportation system. A survey on mass transit was commissioned in 1974 to gauge the public’s views (Economic Behavior Analysts, Inc., 1974). The November 1974 survey demonstrated that “a majority of San Diego County voters recognize the need for development of a mass transit system.” However, most respondents supported a system that they envisioned someone else riding; when interviewees were shown a map of a preliminary plan for a mass transit system, 69 percent said that such a system was needed; when asked how often they would commute on the system, 8 percent said seldom and 71 percent said never. Similar responses were given for trips for shopping purposes. The survey also found that 96 percent of households contacted had at least one automobile, and 65 percent had two or more, whereas only 11 percent had been a passenger on a public bus in the previous 30 days. While most respondents were not interested in using a transit system, they supported its creation for similar reasons as those alluded to by Appleyard and Lynch. Most respondents thought that development of a mass transit system would improve pollution and smog, and the majority also believed that the energy crisis would only get worse in coming years.

The San Diego Trolley, From Concept to Construction

In this context, a key figure was able to mobilize the region to build the country’s first light rail system in decades. Transportation was always state Senator James R. Mills’s primary interest, and during his time as president pro tempore of California State Senate he twice led political bike rides across California to campaign on behalf of state propositions (Samuel, LeBerge, Bancroft Library, Regional Oral History Office, & State Government Oral History Program [Calif.], 1992).

Senator Mills was responsible for legislation that made the San Diego Trolley (and other subsequent transit systems in California) possible. Mills was one of three state senators behind the Transportation Development Act (TDA) of 1971 (California Department of Transportation, 2013). The TDA created a Local Transportation Fund (LTF) based on a quarter-cent of the statewide general sales tax and a State Transit Assistance fund (STA) from the statewide sales tax on diesel fuel. Both the LTF and STA were significant new funding sources at a time of decreasing federal support. Mills introduced Senate Bill 101 in 1974, which was signed into law in August of 1975, and created the Metropolitan Transit Development Board (MTDB) as well as allowed the new board to levy a one-cent gas tax and use state and federal funds to plan and build mass transit within its boundaries (Holle, 1990). Political insiders say that the bill would not have passed if not for Mills’s influence (Samuel et al., 1992). Also in 1974, state Proposition 5 (the reason for Mills’s second cross-California political bike ride) passed, creating a constitutional amendment allowing for diversion of 25 percent of gas tax and highway user funds for transit. In the same election, Proposition A passed in San Diego County, amending the county charter to apply Proposition 5 money to local transit.
The MTDB opened for business and hit the ground running on January 1, 1976, with just five years to plan and implement a mass transit system or lose its state gas tax money back to the State Highway Account (Holle, 1990; Metropolitan Transit Development Board, 1978).

With money available and time ticking, the region began planning in earnest for a fixed guideway system. The region’s CPO had continued to study regional mass transit since its 1967 TRIP Study, and by the mid-1970s the region had created a vision for a regional mass transit network. The 1975 regional transportation plan established a proposed fixed guideway network of 59.3 miles, to cost $1.7 billion dollars, with routes to downtown from Hillcrest in the north and Chula Vista in the south as the backbones of the network (Holle, 1990; Metropolitan Transit Development Board, 1978).

Yet this grand vision could not be implemented all at once. Indeed, the text of SB 101, the bill that created the MTDB, and all of MTDB’s planning documents reiterate the need for a transportation planning and design process that is “pragmatic, low cost, and incremental in nature,” with a focus on reliable technologies that are already readily available and corridors with existing transportation right-of-way to minimize construction costs (Metropolitan Transit Development Board, 1978). The MTDB further articulated in December 1976, at the outset of the fixed guideway planning process, that the corridor should extend a long distance and offer high-speed operation, have low capital costs, be primarily at-grade with an exclusive right-of-way, and have low operating costs that could be substantially covered through fares (Metropolitan Transit Development Board, 1978).

Guided by these principles the region began a corridor selection process. MTDB identified corridor alignments, mostly along railroad and freeway right-of-ways, and set a 45-mile corridor as a guideway study limit. The MTDB then examined 20-mile corridors within that for preliminary engineering limits, with six different candidate segments. The 16-mile corridor from Centre City San Diego to San Ysidro’s international border crossing quickly emerged as the preferred alignment. It was chosen for the possibility of acquiring the San Diego & Arizona Eastern (SD&AE) right-of-way, significant existing and potential transit patronage (the San Diego Transit Corporation #32 bus running between Centre City and San Ysidro had the second highest ridership in the system and the lowest net cost per revenue passenger), location entirely within the corridors identified by the 1975 Regional Transportation Plan, and highest degree of agreement with the MTDB’s December 1976 corridor policies (Metropolitan Transit Development Board, 1978). The international border crossing to Tijuana at San Ysidro had become an increasingly important destination by the mid-1970s, and was projected to continue to grow in importance. From 1956 to 1976, annual border crossings increased from 14 million to 39 million, and on a typical weekday in 1977 there were 106,600 trips across the border (Metropolitan Transit Development Board, 1978). By 1995, border crossings were projected to increase well over 50 percent, to between 60 and 73 million crossings per year, or at least 178,000 crossings per weekday. A 1977 survey of those crossing the border found that in San Diego County, 6.8 percent used transit to connect to the border crossing, and 72 percent of origins or destinations were along the Interstate 5 corridor between the border and Centre City San Diego (Metropolitan Transit Development Board, 1978).

Another study of the trolley years later offered further justification for this trolley’s alignment (which was ultimately chosen) (United States, SANDAG, & Technology Sharing Program,
In 1980, of the region’s 8.3 million daily person-trips, 1.2 million (14 percent) occurred in the trolley corridor, and the transit (bus) mode share within the corridor was 3.6 percent, twice as high as the region overall. The border crossing itself was very significant in the regional transportation network, with 52,000 daily crossings, of which about 39 percent were by San Diego County residents and about 31 percent by residents of Tijuana. Among those crossing the border, about 12 percent used transit for at least a portion of their trip on the U.S. side of the border.

The MTDB studied various technologies for the new transit system to be built. The lowest operating subsidy per passenger was found to occur for a light rail system alongside existing levels of bus service, and the alternatives that featured fixed guideways generally had higher revenue-cost ratios than bus-only alternatives due to the higher projected capacity and ridership. A light rail project would require only six cents per passenger of operating subsidy, while bus service with the same headways would require 19 cents of operating subsidy per passenger due to the reduced capacity and increased running times for buses (Metropolitan Transit Development Board, 1978). In October 1977, the MTDB adopted light rail as the technology for the new transit system (Bechtel Incorporated, 1978).

At this point, the rail project received a stroke of luck. In 1976, severe floods destroyed significant portions of the SD&AE’s Desert Line, and in August 1977 Southern Pacific (SP), the SD&AE’s parent company, filed with the Interstate Commerce Commission to abandon the line (Holle, 1990; Young, 1980). The Interstate Commerce Commission ultimately rejected SP’s application a year later, and MTDB member Maureen O’Connor and Chairwoman Judith Bauer were able to successfully negotiate a windfall deal in October 1978 to acquire the railroad for only $18.1 million, including storm damage repairs, despite SP’s assertion that the railroad was worth $80 million. Without the luck of the timing of the storm damage and the tenacious negotiation by O’Connor and Bauer, the project would not have likely been completed. While the County Board of Supervisors had unanimously approved the light rail project in June 1978, the San Diego City Council was concerned about financing the project in the wake of newly passed Proposition 13, which severely reduced local property tax revenues, and Mayor Pete Wilson was concerned about how light rail would integrate with bus transit (Holle, 1990; Smollar, 1978b). City Council initially rejected the light rail project with a 5-4 vote in July 1978. MTDB persisted in negotiating with SP, and the deal to acquire the railroad for only $18.1 million convinced the mayor to change his vote. After a meeting that lasted nearly eight hours, City Council approved the light rail project on October 25, 1978 (Holle, 1990). The council approval was the last significant hurdle for the project, and the first construction on the line started just months later in January 1979 (Larwin, 1989).

While the trolley managed to secure support from necessary government agencies, there were plenty of naysayers along the way. Residents of San Ysidro, the border community at the end of the light rail line, complained that the rail line would “not be for locals here” but would rather serve “people from Tijuana” and downtown San Diego (Montemayor, 1979c). Many in San Ysidro, only recently annexed to San Diego, felt that “the city does with us what they want, and whatever San Ysidro gets it has to fight for,” and the project was seen by some as an investment that would help Mexican shoppers bypass the commercial strip on San Ysidro Boulevard to get to larger retail centers further north. Yet even in these other communities, there were opponents to the light rail project. One rail critic argued that cities such as Chula Vista and National City would be better served
by express buses than by the trolley, and called into doubt the MTDB studies, saying they were biased toward rail because the MTDB was created by Mills’s legislation (Smollar, 1978a). Some business owners downtown were concerned that the planned transit mall would drive away customers because of the closure to auto traffic. The most common critique among rail critics was that the light rail project would not serve the region as a whole, with San Diego Transit Corporation’s chairman Marc Sandstrom noting that adding a guideway would require cutting back existing bus service or finding new subsidies. The light rail project was a “detoured priority” that served political egos and would use $86 million of funding that some argued might have been better used for essential bus service, at a time when local funding was scarcer than ever after Proposition 13 passed (“Editorial: Transit Realities,” 1979; Goff, 1978; Hubbard, 1979). One article called light rail an “expensive remedy for middle class commuters” and claimed that the cost of a trolley system could instead be used to provide comparable bus service with deluxe buses for 540 years (Brodsly, 1981).

Another less critical point of contention was the name of the San Diego Trolley itself. The nickname “Tijuana Trolley” was first used in Sacramento as a pejorative nickname for State Senator Mills’s pet project by his opponents (Trillin, 1981). Thomas Larwin, General Manager of MTDB, said that while the “Tijuana Trolley” nickname may have begun as an insult, he no longer viewed it as one since the line “does go to the border and is not dissimilar to a trolley,” so if it is easy to remember “we’ve achieved a big objective,” though he and others shared a concern that San Diegans understand the trolley served other South Bay destinations, and that the system have a name that can cover future extensions (Smollar, 1979, 1980a). Yet many rail supporters “winced at each reference” to the “Tijuana Trolley” in early city council hearings, and Senator Mills was extremely upset that any name at all involving the word “Trolley” was being used to describe the system instead of “light rail” (Smollar, 1979). Other members of the MTDB agreed with Mills that the “trolley” moniker was “not really dignified” (Smollar, 1980b). Mills wrote in one letter that “the term trolley has always and is still used to belittle the mode of transportation. ... Certainly the name of this new system should not be one that would evoke memories of Toonerville” (Smollar, 1980b). When one critic wrote in an editorial that “a trolley is a trolley is a trolley,” Mills retorted with another editorial noting the dictionary definitions for “trolley,” including the definition of a tea cart, and quipping that “there will not be any trolleys on the system, unless they plan to put little old English ladies with tea carts on the cars to provide the cup that cheers but does not inebriate the passengers” (Goff, 1980; Mills, 1980). In the end, the official name of “San Diego Trolley” was adopted in July 1980 and upheld later that year in December, at a meeting where MTDB Chairwoman Maureen O’Connor stated of the official name that “the only place it’s not accepted is in this room” (Smollar, 1980b, 1980c). Chairwoman O’Connor also reportedly said, “When we grow up and become real fancy and get federal funds, we can call it ‘metro’” (Trillin, 1981).

Yet even before the trolley opened, it caused a stir throughout the transportation industry. As soon as the first trolley tracks were laid in January 1980, MTDB was already conducting guided tours of the construction site three times per week for political and transportation officials and reporters from around the world (Schneider, 1980). In October 1980, nine months before the trolley opened, the Chicago Tribune reported that this “amateur effort” was impressing the pros (Young, 1980). They were interested to see how a seemingly provincial newcomer to the rail industry had “managed to build its new trolley line without a dollar of the federal
aid on which the big Eastern systems have become totally dependent.” An official from Washington, D.C., commented that this could fundamentally change the mass transit industry, noting that “We have so many new transit lines mired in red tape, cost overruns, and long delays because of federal regulations that we forgot how things were done before Washington got into the act. It has taken a bunch of rank amateurs to open our eyes.” In another article, state Senator Mills echoed the advantages to the San Diego Trolley project of bypassing federal funding sources: “By the time they’ve waltzed you around for six or seven years in alternative studies, they’ve probably contributed less to the cost of your project than inflation has eaten up” (Peirce, 1980). The byline of that article bragged that the project would break with tradition, with “No Noise, No Pollution, No U.S. Funds,” and noted that such a large project opening on schedule and under budget was “almost unheard-of.” San Diego’s approach of using readily available right-of-way, state and local funding, and ready-made technology had already fundamentally challenged the prevailing assumptions about how rail corridors needed to be developed and funded, and inspired other cities to follow suit. San Diego had also chosen to use a proof-of-payment fare system for the new trolley line, noting that about 15 percent of the Chicago Transit Authority’s budget was tied up in fare collection, and an effective proof-of-payment system could greatly reduce system costs (Young, 1980).

Meanwhile, in downtown, ten office high-rises were under construction, and a “flurry” of industrial and business development was happening around the trolley line in the South Bay. The Brittania Business Center office park near the future Palomar Street station received a variance from minimum parking requirements, arguing that many workers would take the trolley to work; the developer of the nearby Big Sky Industrial Park also cited the trolley as an important factor in its location choice, and another business park, Southrail Business Park, was planned that even alluded to the trolley line in its name (Ray, 1981a). At the end of the line in San Ysidro, the El Toreador Motel was investing in a $500,000 face lift, with the manager saying, “Now, when the trolley comes, we hope to be ‘in’ again” (Ray, 1981a).

On July 19, 1981, San Diego started a week of festivities to celebrate the new light rail line, and the trolley made its inaugural run, just 30 months after construction and 54 months after project planning began (Larwin, 1989; Ray, 1981b). The Governor of Baja California, Roberto de la Madrid, was present at the festivities, and San Diego Mayor Pete Wilson told the crowds that the trolley line was expected to be extended into Baja California (Ray, 1981b). Conspicuously absent from the opening festivities was state Senator Mills, who was still too upset about the system’s “trolley” name to attend (Samuel et al., 1992). The trolley festivities included actors in turn-of-the-century costumes, and the civic celebrations around the return of the trolley were part of a broader celebration of the city’s historical heritage. One article from a few months after the trolley’s opening noted, “Like the trolley’s impressive comeback, the original business district in San Diego has been given new life too. Sixteen square blocks from Broadway to Harbor Drive have been designated a National Historic District and are undergoing restoration in century-old style” (Grimm & Grimm, 1982).
The trolley’s detractors were quickly discredited by a flurry of positive press in both local and national news. A few months after the trolley opened, one official stated: “Everything’s working well. We don’t have any big problems. Just a lot of small headaches” (Ray, 1982a). The biggest surprise initially was the stunning success of the San Diego Trolley’s proof-of-payment fare policy, designed to dramatically reduce fare collection costs and boarding delay. While critics had hypothesized that the policy would result in high rates of fare evasion (Goff, 1981), shortly after opening, the system reported fare evasion rates of only 0.2 percent (Ray, 1982a). The region had been able to launch a regional transit pass program on July 1, a few weeks before the trolley’s opening, which helped present the trolley as part of a unified system with coordinated fares (Lerner-Lam, 1982). Many were also fond of the bright red light rail vehicles themselves. One downtown San Diego retiree remarked in the New York Times that she loved the “old fashioned” trolley (Lindsey, 1981).

SANDAG and the federal Urban Mass Transportation Administration completed a report to assess the trolley’s performance after the first three years of trolley operations (United States et al., 1985). The report recognized that the new trolley had an overall speed of 24 miles per hour from end to end, and completed its journey 30 minutes quicker than the Route 32 bus it replaced. Over its first three financial years, the trolley line had farebox recovery ratios of 74-81 percent, much higher than the 30-50 percent goals from the trolley line’s planning process (Metropolitan Transit Development Board, 1978; United States et al., 1985). This impressive farebox recovery was possible because of high ridership. Over the first three years of the trolley, system transit ridership increased by more than 20 percent in the South Bay corridor (including both buses and the Trolley), even while system ridership decreased 18 percent outside the Trolley service area. Ridership increased even more dramatically on the trolley itself, increasing 63 percent from October 1981 to February 1984. While the seven stations in Centre City combined accounted for about 40 percent of boardings and alightings, by far the highest ridership station was the San Ysidro Station at the International Border, single-handedly accounting for 19 percent (6,833) of boardings and alightings in February 1984. The second highest station was the opposite terminus of the trolley line, Santa Fe Depot, with 10 percent (3,434) of alightings and boardings.

The Tijuana Connection

The overwhelming importance of the San Ysidro Station at the border with Mexico suggests that access to and from the crossing to Tijuana is one of the most important accessibility improvements offered by the new light rail line. Yet from the planning documents, it seems almost a coincidence that the trolley happened to stop a few hundred feet from Mexico.

If we ask the simple question, “Does Mexico exist?,” the answer from the San Diego region’s first plan explicitly aimed at conceptualizing a mass transit system, the 1967 TRIP Study, seems to be “no.” The TRIP Study prided itself on taking a cutting-edge systems analysis approach to solving the region’s transportation problems, but in defining the region it chose to comprehensively examine the entire region by using Census tract-level data for San Diego County, thereby ignoring any data on the Tijuana portion of the binational region. Subsequent regional transportation planning documents similarly ignored Tijuana and its importance to regional transportation and travel demand. As Appleyard and Lynch noted, even the 1966 Border Area Plan showed nothing on its maps across the line of the border (Appleyard & Lynch, 1974). Subsequent regional transportation planning documents similarly glossed over anything
south of the border. The Comprehensive Planning Organization’s regional transportation plans from the 1970s listed the members of the planning process, indicating the County and its thirteen incorporated cities as voting members, and Caltrans as an advisory member; the City of Tijuana was included as an honorary member, but Tijuana’s inclusion in the planning process seems to have been token for the most part (Comprehensive Planning Organization, James, De Leuw, Cather & Co., & R.H. Pratt & Co., 1975). In most sections of the various drafts of the Regional Transportation Plan’s Environmental Impact Reports, “region” and “San Diego County” are synonymous. Analyses of air transportation were one notable exception. With one major airport in San Diego and one in Tijuana, it was impossible to ignore an entire half of both the market and opportunity sites for sorely needed increases in airport capacity. For a brief time, an airport straddling the border at Otay Mesa was considered, and in the 1974 Draft EIR there is even a rare example of a map that does not go blank at the border (Comprehensive Planning Organization, 1974). A noise contour map is drawn for a possible airport straddling the border, with contours shown on both sides of the border. However, analysis on both sides of the border is a necessity here – sound waves are impacted by topography, not political boundaries. In the following documents and reports for the regional transportation plan, however, all maps included once again went blank below the border (Comprehensive Planning Organization et al., 1975; Comprehensive Planning Organization, 1975).

For the planning of the light rail project itself, a 1978 study noted a list of codes and standards considered in the engineering around the vehicles and rail for the trolley line (Bechtel Incorporated, 1978). Among those considered were standards of Caltrans, California PUC, California Occupational Safety and Health Administration, American Railway Engineering Association, and Southern Pacific. Compatibility with a future Mexican extension of the system, while sometimes contemplated in the press and public meetings, was not explicitly considered. The final report for the light rail project started by recognizing population growth on both sides of the border as constituting a metropolitan region, making it the sixth largest urban area in the 1970 U.S. Census if Tijuana were included with San Diego (Metropolitan Transit Development Board, 1978). The report gave more consideration to Tijuana than previous regional plans, noting that there, 70 percent of trips across the border had a trip end in close proximity to the I-5 corridor that the trolley alignment would follow. In contrast to previous plans, the report also acknowledged the close relationship between San Diego and Tijuana, noting the cooperation between the two cities on channelization of the Tijuana River, Tijuana’s use of water from the Otay Reservoir in the United States, and cooperative highway and sewage infrastructure projects that were then being discussed. With regards to transportation, the report noted that nearly 26,000 Mexican residents and 20,000 American residents crossed the border each day. Much of this travel was a manifestation of the cities’ closely linked economies: Tijuana residents purchased two-thirds of their appliances and manufactured goods and half their clothing and footwear in San Diego, spending between $210 million and $380 million per year, while Americans spent about $660 million per year in Tijuana at the time. Yet elsewhere in the report, the level of detail and analysis drops off precipitously at the international border. A list of major employment and activity centers in the South Bay corridor includes specific employers and shopping malls, and then in a sudden shift of scale, “Tijuana, Mexico.”

The sometimes simplistic and other times entirely absent analysis of issues extending south of the border would be more innocuous if the two
cities weren’t in fact so intensely interlinked and dependent upon each other. In fact, the numbers about Mexican citizens’ spending in San Diego were likely only included in the light rail project’s final report because the Mexican peso’s recent devaluation had forced San Diego to become aware of it. The 1976 devaluation of the peso was felt acutely by San Diego businesses, described by some as a “tidal wave,” with some merchants temporarily losing as much as 60 percent of their retail business (Becklund, 1978; Montemayor, 1979a, 1979b). Just a few years after the devaluation, one San Diego Chamber of Commerce official somewhat crudely said, “It is on the lips of every businessman in town. The Mexican customer: How can I get a piece of the action? Some are just starting to realize the Mexicans’ buying potential, and the demand for information far exceeds what is available” (Montemayor, 1979b). While it was apparent that Mexican shoppers constituted approximately 95 percent of retail business in the San Ysidro shopping area by the border, market research demonstrated that Mexican spending that had previously been perceived as “minimal” away from the border was anything but. More than 40 percent of the population of Tijuana came into San Diego on a weekly basis, and areas closer to the border received 40 to 80 percent of their business from Mexican shoppers, and even in Centre City and upscale Mission Valley estimates ranged between 10 and 30 percent. The Executive Vice President said in 1979 that there had been “a dramatic awakening by businessmen on what role Tijuana plays. They are starting to realize that Tijuana is one of the fastest-growing cities in not only Mexico, but the world” (Montemayor, 1979b). A state planner in Tijuana said that “Tijuana is a part of the United States whether you like it or not,” and described the two cities as being “as close together as a kitchen and a dining room. If we were to suffer an earthquake here, we’d go to San Diego to buy Band-Aids” (Becklund, 1978).

Yet it is not just shopping that linked the two cities. In 1978, there were 10,400 green-card workers residing in Tijuana and working in San Diego, a number that had decreased over the previous decades but would rise to 50,000 by the late 1980s (Becklund, 1978; Montemayor, 1979a; Rohter, 1987). A study conducted in 1992 found that 80 percent of traffic at the border was by “very frequent crossers” crossing more than 20 times per month, and another 16 percent by “frequent crossers” making 4-19 trips per month (Bae, 2005). A newspaper article focusing on the impact of Mexican shoppers also observed that aside from an intensely interwoven shopping and maquiladora economy, “Tijuana and San Diego share the same air basin, the same coastline, and a river that insists on flowing across the international line whenever there is any water in it” (Becklund, 1978).

The reluctance of formal planning processes to fully recognize the importance of Tijuana as an integral part of the region caused significant blind spots. The 1975 regional transportation plan suggested that a “first stage or core element” of a fixed guideway system should run from the downtown area to Chula Vista, with subsequent extensions to La Mesa, El Cajon, and the international border (Comprehensive Planning Organization, 1975). The SD&AE right-of-way already extended all the way to the international border, yet the regional plan put the international border crossing at a level of secondary significance when the future station at that site would ultimately be by far the highest ridership station. Fortunately, the light rail project did not limit itself to the guidance from the 1975 regional transportation plan.
Yet the light rail project itself left more to be desired with cross-border engagement and cooperation. The pedestrian gates to cross into Mexico were located on the opposite side of the freeway from the trolley station, requiring a lengthy walk over an unpleasant overpass. The trolley project’s final report indicated that “informal discussions with Mexican officials” had concluded that it would be possible to create a new pedestrian facility closer to the station (Metropolitan Transit Development Board, 1978). Yet a new entrance closer to the trolley station did not open until 2012 (Dibble, 2012).

Meanwhile, an actual extension of the Trolley into Tijuana — or at least an inter-light rail transfer at the border — has at many times been called imminent, but has never materialized. At the inauguration of the trolley in 1981, Mayor Pete Wilson said that the trolley was expected to be extended into Tijuana (Ray, 1981b). A year later at the trolley’s one-year anniversary, Baja California Governor de la Madrid announced that Mexican officials were planning to extend the trolley (Ray, 1982b). In 1988, at a historic joint session of the city councils of San Diego and Tijuana, San Diego officials “revived a long-time wish: the extension of the San Diego Trolley into Tijuana” (McDonnell, 1988). In 1998, Tijuana reportedly was evaluating three international consortia and considering an ambitious schedule to start a trolley service by mid-2000 (Robenhyme & Estrada, 1998). As of 2005, a 7.5-mile light rail line from the border to the Tijuana central business district was planned (Bae, 2005). And in 2014, a new border facility for pedestrians entering Mexico opened, further improved from the new crossing two years prior, with the vision that it would also serve a “future rapid transit system” that has still not materialized (Dibble, 2014). The absence of stronger binational partnerships to build an extension into Tijuana is one very important factor in why such a system still does not exist. Without strong support from north of the border, it is difficult for such a project to succeed. Due to the strong political centralization at the federal level in Mexico, state and local governments have significantly less ability to fund and implement projects compared to the United States. At the time of the trolley project’s planning, San Diego’s budget had about $250 per year to spend per capita, whereas Tijuana had about $1 (Becklund, 1978). In 1988, for a population of 1.5 million Tijuana had a municipal budget of $17 million, while San Diego had a population of about 1 million and a budget of $700 million (McDonnell, 1988). Yet in a 1986 follow-up assessment to Appleyard and Lynch’s study of San Diego’s challenges and opportunities, it was observed that “The recommendation to establish a Mexican connection, particularly for development of a binational metropolitan community to include both San Diego and Tijuana, hardly has gone beyond the discussion stage” (Shirvani & Stepner, 1986).

The Legacy of the San Diego Trolley

The San Diego Trolley was an important milestone in United States transit in the 20th century. It was the first new light rail project in the country in decades, and impressed the transportation industry with being built on time, under budget, and with no federal money.

The trolley expanded transit ridership in San Diego. A 1,500-rider survey conducted two months after the trolley launched asked commuters how they had made the same trip before the trolley; only 56 percent reported they had previously taken a public bus, whereas 24 percent drove an automobile, 6 percent were passengers in an automobile, and 10 percent did not make the trip at all (United States et al., 1985). Compared to the existing north-south trunk routes before the trolley launched, the trolley had significantly higher usage by occasional users and new riders, and fewer no-vehicle households (47
percent of trunk route bus riders in 1980 compared to 31 percent of trolley riders in 1983). Tourists increased from 6 percent of trunk route bus riders in 1980 to 18 percent of trolley riders in 1983, and riders with household income of more than $25,000 increased from 9 percent to 25 percent. Yet the new riders do not seem to have displaced transit-dependent riders. While riders without a driver’s license decreased from 42 percent to 26 percent as a share of riders, in absolute terms they increased slightly from 3,265,000 annual riders to 3,305,000.

While the trolley was remarkably successful at achieving and surpassing its transportation goals, it had a more mixed record on land use. As already noted, a number of developers and firms chose to locate or expand around trolley stops, but, on a system level, land use was not as coordinated as had been called for in the planning process. From 1980 to 1984, only one station area (around Palm City Station) had a general plan amendment to change land use designations to be more compatible with light rail transit (United States et al., 1985). None of the Centre City station areas had general plan amendments. While 1,193 new residential units, 13 new low-rise offices, and five new high-rise offices were given building permits between 1980-84, developer interviews revealed the trolley was not always an important factor. At suburban stations, developers said the trolley was important in their development decisions and was a major part of their marketing efforts, but in Centre City most developers said the trolley was not important in their development decisions. Downtown developers did still say that the trolley helped in marketing their properties though, and appreciated “the colorful and active atmosphere created by the Trolley operations on C Street” (United States et al., 1985). A merchant survey in 1984 found that 20 percent indicated the trolley was an important factor in them choosing to remain at that location, but overall fewer than 40 percent of merchants felt the trolley had any impact either way.

Aside from the project’s local impact however, the San Diego Trolley also profoundly influenced transit development in the rest of the United States. Even before the San Diego Trolley opened, cities around the country, including Denver, were inspired to seek to build rail projects with only state and local funds to avoid federal red tape (Peirce, 1980), while Buffalo and Portland were quickly inspired to forgo expensive heavy rail systems for modern streetcars (Lindsey, 1981). Many more cities would be inspired to follow suit, and a 1992 article about the streetcar renaissance across the country claimed, “The big red cars of San Diego’s ‘Tijuana Trolley’ have done more to build a new image for the steel-wheel trolley car than any other system in the country” (Scull, 1992).

Over the decades since the trolley opened, the system has expanded both to the north and east of downtown, operating over 53.5 miles of tracks on three full-service lines as well as a limited-service downtown loop (Metropolitan Transit System, 2013). Ridership has increased more than eight-fold over that time, going as high as 225,000 on special event days, and the trolley has served “two Super Bowls, a World Series, a Republican Convention, rock concerts, and Comic-Cons” (Ristine, 2006).

While the San Diego Trolley project was a leader in innovative delivery of a light rail project, it failed to fully embrace its potential role in a binational metropolis. A fortunate set of circumstances pushed the light rail line to serve the downtown-to-border corridor, but the edge of the transit system at San Ysidro is by no means the edge of the binational region. Transportation planning in San Diego, however, has taken steps toward greater consideration across international boundaries. The Border Liaison
Mechanism was founded in 1992 to help coordinate across the border on day-to-day issues, and has evolved over time into an “umbrella institution organizing sectoral working groups and fostering informal cross-border cooperation” (Bae, 2005). The Committee on Binational Regional Opportunities (COBRO) was founded in 1996 and has served as a working group to the SANDAG Borders Committee since 2002, and brings together government, academic, and private sector partners from both sides of the border (SANDAG, 2015). In addition, California and Baja California produced a Border Master Plan in 2008, and an update to the Border Master Plan in 2014, aimed at coordinating planning and delivery of transportation improvements around ports of entry (Caltrans, SIDUE Baja California, & SANDAG Service Bureau, 2014). These are positive moves in the right direction. As mayor of San Diego, former MTDB Chairwoman Maureen O’Connor said in 1988, “I think that would be the most exciting thing that ever happened, to link us up via mass transit” (McDonnell, 1988). Perhaps one day, the San Diego-Tijuana region will have a transportation system as interconnected as its people.


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Chapter 1

By Français: anonyme; une copie d’une peinture de François II Quesnel gravée par Gérard Edelinck en 1691. English: unknown; a copy of the painture of François II Quesnel, which was made for Gérard Edelinck en 1691. Polski: nieznany; kopia obrazu Françoisa II Quesnela wykonanego dla Gérarda Edelincka w 1691. (Own work) [GFDL (http://www.gnu.org/copyleft/fdl.html) or CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons

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Chapter 2
