The Evolution of Transportation Policy in Los Angeles
Images of Past Policies and Future Prospects

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Cities are known by their symbols. Just as the Eiffel Tower defines Paris and the Statue of Liberty symbolizes New York, the freeway is the universal icon by which Los Angeles is described. The freeway network, in addition to being an important transportation system, is considered the world over a symbol of Los Angeles, and what a dramatic metaphor it is for life in a modern complex metropolis. The freeway is a tangible facility that is also a flexible path through a maze. It is a pathway that encourages purposeful interaction between far-flung but interconnected communities; yet it contributes to the sense of placelessness noted by so many critics of this region. An invitation to unfettered motion at high speed in a shiny black limousine or a sexy convertible; and at the same time the source of tedium and frustration that comes from endless delays in traffic jams. Inviting people to experience ocean, mountain, and desert within minutes of one another, it is a major source of the smog that makes them invisible. It is a lifeline by which millions are supplied with their daily sustenance, yet it can be a place of carnage and police chases.

Like the freeway itself, our collective understanding of the evolution of transportation in Los Angeles is filled with confused, partial, and competing images. Informed by snippets of information repeated in the popular media and reinforced by questionable sources like the movie *Roger Rabbit*, millions state with conviction that a perfectly good rail rapid transit system was destroyed by General Motors in a conspiracy to sell cars and that the freeways encouraged and gave rise to a low-density, sprawling single-family region. By purchasing controlling interests in urban railways in many cities, including Los Angeles, General Motors and other large corporations are alleged to have replaced perfectly good streetcar lines with diesel buses, thereby guaranteeing a market for their own products. These generalizations are, of course, partly true, but they are gross oversimplifications. The reality of Los Angeles is difficult to discover beneath the glib platitudes and movieland images; and it is far more complex than any of the popular images. This is also true for the transportation system that helped make this metropolis what it is and what it is always in the process of becoming. Frequently at the center of the region’s bitter political struggles, the transportation network of Los Angeles is both the product of and the means by which we have acted out our images of modernity and by which those with muscle have exercised their political power.

In this chapter, I explore how the transportation network of the Los Angeles region has for over a hundred years consistently reflected these two themes. In each era, major innovations in transportation policy were presented as paragons of “modernity,” packed with metaphors of innovation, technological change, and futurism. At the same time, however, the imagery of modernity has been consistently manipulated by politically powerful interests to suit their goals for economic and spatial domination of the region. Thus the metaphor of modernity has been used to justify a series of transportation plans and programs, few of which have ever been fully implemented. Rather, new proposals favored for reasons of political expediency have replaced their predecessors in a succession of plans put forth as absolutely necessary to promote the progress of the Los Angeles region. And today, though the metaphor of modernity continues to dominate the rhetoric of transportation policy makers, the Los Angeles transportation system actually consists of an accumulation of poorly integrated elements representing different concepts of political expediency, each of which in its day was presented as a symbol of progress and technological achievement.

PUBLIC TRANSIT IN THE EARLY DEVELOPMENT OF LOS ANGELES

After it was first settled in 1781, Los Angeles remained a sleepy and relatively unimportant town until it was linked to a growing national rail network a hundred years later. The census of 1870 showed that Los Angeles had a population of 6,000, but that was before the Southern Pacific completed a line between San Francisco and Los Angeles in 1876 and completed a more direct route between Los Angeles and the East in 1881. People poured in looking for economic opportunity and adventure. In 1885, the Santa Fe offered competition to the Southern Pacific, and a fare war invited even more westward migrants. By 1890, the city’s population exceeded 50,000 and the county’s was more than 100,000.

Railroad construction led to Los Angeles’s growth, and similar technology helped give it form. Between 1870 and 1910 urban transit technology
was advancing rapidly. In eastern cities, entrepreneurs were replacing horse
car lines with cable, steam, and electric traction street railways, and similar
technologies were part of the original development of Los Angeles during
its initial growth spurt. The timing of the growth of Los Angeles resulted
in a significantly different pattern of development than was typical in Bos-
ton, New York, or Philadelphia. Those cities had developed to considerable
size before the advent of streetcars, and because walking was the primary
mode of transportation, they were characterized by areas of extremely high
population density. By connecting the outskirts with the downtown busi-
ness center, the advent of public transit technology enabled those cities to
add new residential suburban communities on the fringes of those already
dense central areas. Real estate developers were the principal stockholders
in the new street railways, and the increased accessibility that those railways
gave to their landholdings made that land much more valuable. Often, the
transit companies stood on shaky foundations, yet they facilitated substan-
tial profits in real estate development.

In Los Angeles real estate development held out similar prospects for
quick and large profits, especially because of the rapid growth the region
was experiencing, just as the new streetcar technologies became available.
But the large core city of walking scale that was well developed in Boston,
New York, Philadelphia, and Chicago did not yet exist in Los Angeles, so
the transit-oriented "suburbs" of Boyle Heights, Burbank, Glendale, and
others sprang up around a much smaller downtown than was the case in
those older eastern cities. Between 1870 and 1910, as the population ex-
ploded from under 5,000 to over 320,000 people, the new cable, steam,
and electric urban and interurban railways made residential development
possible at substantial distances from the urban core and at relatively low
densities that have come to be the characteristic form of Los Angeles.

Despite many financial crises and even bankruptcies among the privately
owned rail lines during the early years of this century, the rapid population
growth and vigorous real estate activity led to the development in Los An-
egles of what most transportation historians refer to as the largest system
of interurban electric lines in the country. The Pacific Electric system, as-
sembled and extended by Henry Huntington from seventy-two separate
companies, by 1923 offered service on its Red Cars over 1,164 miles of
track extending over 100 miles from end to end. Balboa was connected to
San Bernardino and Pasadena to Santa Monica by his interurban network,
and the Los Angeles Railway's Yellow Cars plied an additional 316 miles of
track, mostly providing local service on the streets of Los Angeles. Spencer
Crump observes that "unquestionably it was the electric interurbs which
distributed the population over the countryside during the century's first
decade and patterned Southern California as a horizontal city rather than
one of skyscrapers and slums." By so distributing the population, the trans-

Figure 5.1: Advertisements for land subdivisions in Los Angeles illustrating the prominence of railway ac-
cess in the promotion of real estate.
Figure 5.2. In eastern cities like New York, new transit technology was added to densely developed communities.

Figure 5.3. In Los Angeles the Pacific Electric was used to develop low-density, outlying areas. Highland Park, 1910.
portation system was also participating prominently in the establishment of a spatial distribution of political power and influence that was far more dispersed than was typical in other American cities at the time and that would later bear heavily on the outcome of important political struggles over the shape and form of the transportation system.

THE ARRIVAL OF THE AUTOMOBILE

During the period of expansion and consolidation of the rail transit lines that made low-density residential development possible in Southern California, the automobile was being introduced and improved. At first it was available only to the wealthy, and before 1920 most autos were open to the elements and extremely uncomfortable in rain, snow, and cold weather. Early cars were difficult to operate where there were few paved roads, especially when winter weather turned unpaved roads into quagmires. Not surprisingly, in comparison with eastern cities, Southern California turned early and with enthusiasm to the automobile. The mild, dry climate was ideally suited to driving, and the predominantly low density pattern promoted by the street railways was extremely inviting to automobile ownership and use. Single-family lots provided space for the storage and maintenance of cars which was simply unavailable in dense urban residential quarters in the East, and the dispersion of destinations gave people reason to buy and use cars. Lower densities also made the personal storage and handling of gasoline—very important in the early days of autos—just a little safer than it was in the crowded quarters of eastern cities.

By 1920 the citizens of Los Angeles had one automobile per nine people, by far the highest rate of automobile ownership in any major American city, and growth was accelerating. Between 1910 and 1920 William Mulholland completed the great aqueduct providing a reliable supply of inexpensive water from the Owens Valley, oil production was growing, and voter-approved initiatives provided funding for the development of harbor facilities at San Pedro and Wilmington. During the decade that followed the First World War, Los Angeles grew very rapidly, automobile acquisition peaked, and the orientation of the region toward single-family homes and low densities was reinforced. This had important consequences for regional politics and for the future of the transportation system.

Between 1920 and 1930, the population of the City of Los Angeles grew from 577,000 to 1,240,000; and that of the county grew from 1,238,000 to 2,200,000. This remarkable increase was described by a perhaps overly exuberant historian of the time as "the largest internal migration in the history of the American people." By 1930, although two-thirds of all Americans lived in the states in which they were born, only 20 percent of the residents of Los Angeles had been born in California, which had a larger proportion of middle-aged and older residents than the country as a whole. Median income was high, in part because the growth rate in employed workers substantially exceeded the growth rate in population. The proportion of workers employed in manufacturing declined from 28 percent in 1920 to 20 percent in 1930, and Los Angeles came increasingly to be known as a "white collar town, with employment in real estate, finance, and tourism growing most prominently."

During the first wave of dispersal, between roughly 1880 and 1910, residential suburbs grew up in outlying areas as bedroom communities in response to the provision of interurban and street railways. The larger wave of growth after 1920 was characterized by a decentralization of a great deal of business and commercial activity as well as the continued expansion of suburban residential communities. Between 1906 and the mid-1930s, a Los Angeles law limited building height to 150 feet, with the single exception of the 1928 City Hall high-rise building, and that limitation may have been another factor in the continued dispersion of many land uses. Some believe that the height limitation was due primarily to a fear of earthquake damage, and its enactment had followed fairly quickly on the heels of the great San Francisco earthquake. But a review of newspaper comment from the period also reveals a preference for low-density cities, which are described in terms of images of modernity and contrasted to the high density of New York tenements. Los Angeles would not repeat the "mistakes of the past" and would instead be kept a "city in a garden," and thus a suitable environment for the raising of children and enjoyment of good health.

The public transit operators at first benefited from the dispersed growth of the early twenties. Annual rail passenger boardings increased from 74 million in 1912 to more than 109 million in 1924, an increase of 47 percent in only five years. This was, however, a much smaller rate of growth than took place in automobile ownership and use, and after 1924 rail transit patronage fell steadily as the popularity of the automobile grew ever greater. Between 1919 and 1929, for example, the number of automobiles registered in the county rose from 141,000 to 777,000, a rate of growth that far exceeded population growth, so that on the eve of the Great Depression in 1929 there was already one car per three people in Los Angeles.

Even when the public transit system was at the peak of its annual ridership, a cordon count revealed that in 1924 fully 48 percent of those entering the central business district of Los Angeles came in automobiles, and by 1931 that proportion had risen to 62 percent, a proportion that is essentially equal to the results of a cordon count conducted in 1980. Thus the relative extent of the reliance on automobiles by downtown commuters had not changed significantly for fifty years. Mark S. Foster reported that in 1933 during the twelve hours of daylight some 277,000 cars entered downtown Los Angeles, a dramatically large number when compared with other
American cities. At the time, Chicago's central business district was the destination of 119,000 automobiles per day, Boston's central area received only 66,000, and St. Louis's some 49,000.17

This rapid growth of automobile ownership and use during the early twenties had two important impacts. First, it increased congestion on the streets, especially of the inner city, much more quickly than street widenings and new street openings could accommodate. In the process, it elevated the status of traffic congestion to a major public and political concern. Second, the growth in automobile traffic had a devastating effect on the street railways, which had already been in dire financial straits prior to the twenties. The automobile first cut into streetcar revenues by robbing the transit system of weekend excursion trips to the beaches and mountains. Later, as the country slowly converted from a six-day workweek to a five-day workweek, another one-sixth of the transit work trips were eliminated and replaced largely by Saturday automobile shopping trips and family social excursions. While work trips continued to be made in large numbers on the Pacific Electric and Los Angeles railways, weekend automobile excursions replaced the transit trips to the beach or amusement park, and this reduced the already marginal operating profits to near zero.

Since most of the transit tracks had been laid in the streets, increasing automobile traffic slowed the transit vehicles and caused them to have great difficulty meeting their schedules. More and more riders gave up on them and switched to autos, accelerating the vicious circle of ridership decline and deficit growth. As more and more autos criss-crossed the trolley tracks, serious accidents between trains and autos rapidly grew in number, and the payment of injury and damage claims further weakened the finances of the rail operators. In an effort to meet rising operating costs, the transit operators repeatedly asked for permission to raise fares, and their customers testified that fares should not be raised for dirty vehicles, slow service, and trains that were always late. The Public Utilities Commission repeatedly denied requests for fare increases, and this in turn led to service reductions, which led to even more unhappy travelers who continued to switch to private autos. Thus long before General Motors, Firestone, Mack Truck, and Chevrolet acquired stock in the street railways and converted the trolley cars into bus operations, the competition between the transit lines and the automobile was being won by the latter, and transit operators were obviously losing their ability to stay in business at all. Annual ridership on the Pacific Electric fell from about 109 million in 1924 to 100 million by 1931.

CHOOSING BETWEEN TRAINS AND CARS IN THE TWENTIES

The decline of public transit and the rise of the automobile in the twenties had much to do with images of modernity associated with these different
Figure 5.5. Traffic congestion in downtown Los Angeles. Spring Street, circa 1920.

Figure 5.6. Map shows the major streetcar and interurban transit routes serving Los Angeles in 1925.
transportation modes and also with the balance of political power within the Los Angeles area. There is no doubt that public policy shifted in the twenties toward accommodating the automobile at the expense of public transit, and today many environmentalists and activists retrospectively label the policies of the twenties as mistaken. Nevertheless, these policies must be understood in the context of their era, and it must be understood that those who today label the decisions of the 1920s mistakes are measuring them according to criteria of modernity that prevail today and that are in some cases diametrically opposite those of the twenties.

In the 1920s, despite the fact that much of the population remained dependent on public transit, the transit operators were generally the object of public hostility, derision, and contempt. The transit companies were privately owned by wealthy tycoons who were known for their extravagant lifestyles and magnificent mansions. As their transit holdings became less and less profitable, the condition of the cars deteriorated and trains ran late. Whenever fare increases were sought, ostensibly for the purpose of improving service, upgrading capital equipment, citizens flocked to hearings to decry the audacity of the transit operators. Because service was poor and the vehicles rickety, they were seen as being unworthy of fare increases; they were privately owned monopolies, and fare increases were seen as attempts by millionaires to make more money at the expense of working people. As profits fell and owners cut service and reduced maintenance, hatred of transit management grew in intensity, and this made it virtually impossible for city councils and public utilities commissions to approve even sound business proposals needed to keep the street railways operating.

In contrast, and spurred on by automobile advertising, the private car was counterposed to public transit as the epitome of modernity and stylishness. An automobile provided an individual with freedom of choice, was an object of conspicuous consumption, and could carry four people for the same price as one; something public transit surely could never do. Finally, as Scott Bottles argues, the automobile engendered populist feelings that welled up against the transit operators. Using a private car, in addition to being modern and stylish, was also a way the working man could strike a blow against monopoly capitalism, which was personified by the owners of the transit systems. While Henry Huntington was portrayed as a villain, Henry Ford was seen as a savior, and his profits were to a far lesser extent the object of derision by popular activists. Thus, while today some critics maintain that the demise of the Red Cars was a major public policy mistake that should not have been allowed to happen and that destroyed an otherwise efficient transit network, editorial comment and letters to the editor in every leading newspaper of the period lead to the conclusion that most citizens felt the transit system was anything but efficient. The view of most citizens of the day was that the trains were late, the cars were filthy and stifling in summer, the drivers were always insolent and sometimes drunk, and the owners were tyrants and monopolists. And while today General Motors is portrayed as the corporate giant that destroyed an otherwise efficient public service, at the time these events were actually unfolding, the symbolism associated with expanding auto use at the expense of transit was quite different. Autos were new, exciting, powerful, fast, and increasingly financially accessible. Best of all, they provided an alternative to reliance on the infamous street railways for mobility in the city of Los Angeles.

In the early twenties Los Angeles embraced the growing national movement to establish formal institutions to plan the future of the city and region. In 1920 a city planning commission was established by the City of Los Angeles, and in 1923 the county established its Regional Planning Commission. According to Robert M. Fogelson, the new commissions were dominated by members who favored a dispersed, low-density community in conscious reaction to eastern cities. He states, "From their conception of congested eastern and midwestern metropolises, the planners assumed that the great city was no longer the most pleasant place for living or the most efficient location for working. They proposed, as an alternative, residential dispersal and business decentralization." This view was reinforced by the appointment of real estate agents, bankers, and land developers to the commissions. They directed the staffs of the agencies to concentrate on two principal activities: the rationalization of land subdivision activity and the provision of adequate streets and highways, primarily through negotiated agreements with land developers. This view was consistent with the widely stated notion that Los Angeles, at the time, devoted a far smaller proportion of its land area to streets and highways than any other leading American city and that traffic congestion could best be addressed by increasing the availability of paved streets and boulevards.

The Automobile Club and a voluntary association of civic leaders calling itself the Los Angeles Traffic Commission set about the task of presenting to the public for adoption on behalf of the city a comprehensive auto-orientated street and highway plan for the Los Angeles area. Each member of the commission donated money, and together they retained Frederick Law Olmsted, Harland Bartholomew, and Charles H. Cheremow to produce the "Major Traffic Street Plan for Los Angeles," which was delivered in 1924. The plan provided for the widening, extension, and straightening of many streets and the provision of a network of major streets or boulevards. It proposed the first grade-separated freeway, following the Arroyo Seco from Pasadena to Los Angeles, modeled after the suburban parkways of the New York metropolitan area. The report advocated the separation of different classes of traffic: through traffic from local traffic, streetcars from automobiles, and so forth. Viaducts, tunnels, and other forms of grade separation were proposed in addition to the straightening and widening of
many existing streets. The plan is reflective of an “engineering approach,”
in that it emphasizes efficiency and provides an enormous number of
details by which the street system was to be improved. Design elements
resemble those later incorporated into the freeway network, but the scale of
the proposed highways is more humane than that of the freeway network:
parkways and boulevards seem much more integrated with the communi-
ties of this region than do the freeways that were eventually built.

The plan received widespread support and endorsement from civic and
political leaders, automobile club representatives, suburban land develop-
ers, and others. It was even endorsed by the street railway executives, who
thought that relief of traffic congestion would benefit their operations by
allowing streetcars to operate at faster speeds. The city council of Los An-
geles quickly voted to place the plan on the ballot in November 1924 for
endorsement and also included a bond issue to provide $5 million for its
implementation. A combination of general revenues, bond issues, and local
assessments of affected property owners was perceived to be a fair approach
to the implementation of the plan. Home owners’ groups joined in sup-
porting the ballot propositions, despite some limited opposition that ar-
gued that schools were more important than roads and that the program
was too costly. Both propositions were approved by wide margins, and the
taxes were raised later in the twenties to speed the implementation of the
plan. When the depression hit in 1929, only a modest start had been made
at implementing the plan, but the consensus remained that the street and
highway system was the core of the emerging regional transportation sys-
tem and that it was worthy of continued support and systematic implemen-
tation.

THE RAPID TRANSIT PLAN OF THE TWENTIES

The future of rail transit was to be much more bumpy. While virtually ev-
everyone agreed that the automobile was the key to the future prosperity of
Los Angeles, few believed that rail rapid transit would not also play a critical
role. Support for the highway plan was based in part on the increased level
of transit service it would provide, along with the improved automobile
traffic flow. Yet public sentiment remained very critical of the railway com-
panies, and newspaper articles continued to document the inefficiency and
poor service they provided. While one subway tunnel was under construc-
tion in the early twenties which would permit streetcars to avoid the grow-
ing congestion on surface streets downtown, city charter revisions in 1924
included a provision stating that further rapid transit construction should
await the adoption of a citywide transit plan, and in 1924 the council and
the county board of supervisors agreed to share the cost of hiring the Chi-
cago firm of Kelker, DeLeuw, and Co., to prepare a regional transit plan.

Figure 5-7. Plan for the separation of grades for intersecting streets, 1924, submitted by the firm of Kelker,
DeLeuw.
In 1925 they submitted the Report and Recommendations on a Comprehensive Rapid Transit Plan for the City of Los Angeles.

The proposal called for construction of 26 miles of subways and 85 miles of elevated routes over a ten-year period, plus an extensive network of feeder bus lines and bus routes in outlying areas. The capital cost of the proposal was estimated to be $133.4 million. It recommended that the city levy special assessments at the station sites that would benefit from the increased accessibility and that the city participate in the accumulation of value that would flow from the rail lines by purchasing vacant property near the station sites for eventual development. Finally, and perhaps fatally, the report acknowledged that a fare increase, probably from five to eight cents (a 60 percent increase!) would be needed to cover the costs of the construction.

Most of the support for the proposal came from central city businesses and real estate interests, which had begun to realize that traffic congestion was putting the central city at a disadvantage with respect to the outlying areas and that a radial transit system would give downtown businesses a competitive advantage in recruiting both a workforce and customers. To be sure, representatives of some suburban employment centers also supported rail transit, but, ironically, the suburban residential communities that had grown up in response to the streetcar system were the source of most of the opposition. Why should substantially higher fares and taxes be approved to create noisy systems that cast shadows and create dust? Reports appeared in the local press of depressed property values in the vicinity of elevated railways in New York, Chicago, and Philadelphia, and elevated lines were portrayed repeatedly as “Chinese Walls,” which divide communities and create blight. The automobile and the motor bus were presented as environmentally superior to the rail proposals, a concept that must surely be puzzling to today’s advocates of clean air through vigorous controls on the automobile, but the public’s notion of what constitutes environmental blight has obviously changed considerably over the years.

It was inevitable that the politics of rail transit in Los Angeles came to be tied up with ongoing efforts to force the major railways serving Los Angeles (the Santa Fe, Union Pacific, and Southern Pacific) to abandon their separate downtown terminals and to finance jointly a single or “union” station located near the plaza at which the city was supposedly founded. The railroads preferred to maintain their own individual terminals, in part because a union station would undoubtedly have to be open to competition from additional railroads that could not break into the Los Angeles market because each railroad refused them access to their rights-of-way and terminals. A major political battle ensued which lasted throughout most of the twenties. The Los Angeles Times led the fight for the Union Station at the plaza site, undoubtedly because the Chardners owned land near the site that would increase in value should the terminal be built. Several other newspapers supported the position of the railways. The railway tracks at ground level on the east side of downtown were constraining the growth of the central area and contributing substantially to traffic congestion. These tracks were in practical and symbolic terms a brake on the future development of the central business district.

In an effort to head off growing support for the union station, the railroads finally offered to elevate the tracks approaching their several stations, thereby reducing interference with surface automobile and truck traffic, and they offered to allow the Pacific Electric interurban passenger trains to use the elevated tracks. The opposition depicted elevated tracks as an environmental blight on the city that would forever make it unattractive for capital investment and that would move it backward rather than forward on the path toward becoming “a city in a garden.” And while the railroads had once wielded an enormous amount of political power, the decentralized population they helped to create felt detached from the railroads and the central city and very loyal to a lifestyle of open space and quality residential communities.

In the election of 1926 two ballot propositions finally decided the issue. Asked on the first proposition to approve the concept of a union station, the voters overwhelmingly approved the proposal by a margin of 61 to 39 percent. The second proposition asked whether to locate the union station at the plaza site, and it also passed, though by a smaller margin. The defeat of the railroads’ position was widely interpreted as a defeat for elevated rail transit in Los Angeles, and as the depression arrived the city council could not seriously consider the Kelker-DeLeon plan, nor had it promoted any alternative rail transit plan. The image of the existing rail transit system continued to deteriorate, and the operators gradually, with the permission of the Public Utilities Commission and the concurrence of the city council, replaced expensive, worn-out, and poorly patronized transit routes with diesel motor coach routes.

**COMPETITION BETWEEN BUSES AND TRAINS**

While it is often repeated that General Motors and others conspired to destroy the Pacific Electric, there is ample evidence that motor buses provided serious competition to rail lines for many reasons, and that they did so much earlier. And, given the extent of public hostility toward the operators of the street railways and the widespread displeasure with their services, it is not surprising that the motor bus became a symbol of modernity in contrast with the hated streetcar. Eli Bail points out that the Pacific Electric opened its rail line to San Bernardino in 1914 but that the existence of an
excellent paved road nearby permitted a profitable organized bus competitor that went into service only three months later, offering an alternative that was fast and cheap. Beginning in 1917, the Pacific Electric itself operated bus lines, in some cases buying out competitors, in other cases initiating bus feeder routes to its rail stations, and finally replacing some of its own more expensive rail lines with more flexible and less expensive bus routes. During the twenties and thirties the bus was seen by many commentators as superior to rail lines in many respects. Lawrence R. Vesey and Carl W. Stocks both wrote of the fact that bus operations could be much less expensive than rail and boasted that "de luxe" bus service was considered far more attractive than trolley cars by the riding public. While buses were first used as feeders from residential subdivisions to rail stations, direct bus service eliminated the time-consuming modal transfers, and buses were in many instances able to provide quicker door-to-door service. In the early thirties, buses were repeatedly described as cleaner, quieter, faster, more flexible, and more maneuverable than rail vehicles. A. T. Warner pointed out that when faced with heavy traffic congestion, buses could be rerouted around the traffic jams while trolleys were doomed to be stuck in traffic because they were confined to the rails. Buses were reported to earn higher profits than streetcars for several reasons: their operating costs were lower; their flexibility and speed led to higher utilization; and their speed, quietness, smooth rides, and convenient routing led them to be more popular with commuters. Whether or not they were completely true, stories in transit industry publications described cases in which the introduction of buses recaptured for transit many former trolley users who had forsaken the streetcars for private automobiles. By 1926 the Pacific Electric was serving 15 percent of its passenger miles in buses, and by 1939, one year before the alleged conspiracy involving General Motors and others took place, the Pacific Electric had itself increased bus service and decreased rail service to such an extent that 35 percent of its travelers were served by buses. Throughout the thirties and forties, buses were in the ascendancy, they were considered the wave of the future, and rail transit was slowly declining in terms of use, status, and quality.

A MULTIMODAL TRANSPORTATION PLAN FOR LOS ANGELES

By the late thirties, continuing decline of transit and growth of automobile use, coupled with innovative new regional transportation plans in Chicago and San Francisco, led Los Angeles to undertake another regional transportation planning effort, and its outcome is reflective of the image of regional planning that was current in its day. This plan formed the basis for the first and largest metropolitan freeway system built in the United States.
yet in many important ways the plan was different from the freeway system that was eventually implemented. It is instructive because of both the similarities and the differences between the current system and the system that was planned in the late thirties.

The plan was prepared by Lloyd Aldrich, then chief engineer of the City of Los Angeles, who submitted it on behalf of the city’s Transportation Engineering Board, which he chaired. It incorporated many principles that were included in earlier and similar plans developed for other cities by Miller McClintock, who advocated networks of “limited ways” that were grade separated from the surrounding streets and that permitted operating speeds well in excess of forty miles per hour. The centerpiece of Aldrich’s plan was a regionwide expressway and transit system that linked the downtown area of Los Angeles with many outlying suburbs. The expressways had several functions. Radials focused on the downtown and gave it enhanced access; circumferential routes enabled through traffic to bypass the congested center; and “direct interdistrict” routes recognized the growth of traffic between the many new outlying centers. Expressways, incidentally, were not exactly the scale at which the Los Angeles freeways were eventually built. They were to be partly grade separated rather than completely so; they did permit traffic signals at some intersections, while others were on overpasses and underpasses, and the expressways consisted most typically of four-lane roadways. While a number of parkways built in other cities had emphasized landscaping along the routes, the expressway plan emphasized integration with the existing street and highway system through transitional roads and integration with neighboring residential and commercial facilities, for example, by having exit ramps directly serve the parking areas at activity centers.  

Aldrich’s plan was also explicitly multimodal, in that it provided for a variety of public transit modes as well as high-capacity highways. In the introduction to the report, Aldrich wrote,

As far as mass transportation is concerned, the ultimate solution of the rapid transit problem in a large and densely populated area can be found only in rail rapid transit, and there is no doubt that such a solution will eventually be necessary in portions of the Los Angeles Metropolitan Area. In the intermediate stage, while population densities are still moderate and financing of rail rapid transit facilities difficult, a satisfactory alternative is available, for the provision of express highways and the operation of express buses thereon makes it possible to provide the desired rapid transit simultaneously for both private and public types of transportation.

In keeping with this concept, the plan included provision for bus transfer stations at the intersections of major expressways, and it also provided for grade separation of rail lines in subways at some locations and in medians of the expressways at other locations.

The 1939 expressway plan for Los Angeles was remarkable in many respects. It was a quantum leap beyond the earlier street plan in providing for high-capacity channels of movement, yet it was rather sensitive to the integration of land use with both highways and public transit, treating transportation facilities consciously as elements of urban design. Brian Taylor notes that the plan was assembled by people who were politically astute and sensitive to the needs of many interest groups. He observes that most expressway planners did not want to damage the popularity of their proposals by including private transit, which still suffered from great unpopularity. Yet, recognizing that transit would continue to be an important source of mobility for a large proportion of the population, Aldrich seems to have consciously put together a plan that included something for every constituency: downtown business interests and transit users liked the ring-radial plan, and exclusive transit rights-of-way promised to relieve downtown congestion, benefiting both transit users and auto drivers; the automotive club and its members were impressed by the outlying parkwaylike facilities; land developers in outlying areas noted that the new bypass and interdistrict roads would open up new land to development potential; and city and county officials finally came to like the plan because they believed it would have lower cost and was in many ways more practical than greenbelted parkways, which were popular at the time and under construction in other cities.

Despite its widespread popularity, implementation of the 1939 plan required resources that were not available to Los Angeles in the last years of the Great Depression and continued to be unavailable during the Second World War. The Arroyo Seco Parkway (later known as the Pasadena Freeway) was under construction since 1937, and land acquisition had started for what later became known as the Hollywood Freeway, but Taylor calculated that at the rate of annual highway spending that prevailed in 1939, it would have taken over one hundred years to implement the entire plan, which included some 618 miles of expressways and transit facilities. Slowly, in search of the needed resources, Los Angeles turned to the state and federal governments for funding and started a process that led to the construction of the Los Angeles freeways according to design criteria different from those that were emphasized in the 1939 plan.

LOS ANGELES FREeways PLANS

During the 1930s the federal Bureau of Public Roads, influenced by the high-speed road network that Hitler conceived of for Germany, had begun
to plan for a safe, efficient, and high-speed national network of highways. Intercity highways, however, were designed to meet a completely different set of needs from intracity expressways. Quite naturally, intercity roads paid little or no attention to integration with public transit, and because they were designed to traverse rural terrain, they were designed without much concern for their integration with adjacent land uses. Local traffic congestion was addressed, for example, only insofar as it inhibited the free flow of intercity traffic. The system under consideration, which eventually became the Interstate Highway System, was designed to connect communities at great distances from one another and to get the farmer out of the mud. To facilitate high speeds and safety, the roads were planned to be straight or to employ very gentle curves and to have minimal grades and broad protective shoulders. Early in the evolution of the program it was the plan of the federal authorities to build this system of high-speed roads only to the city boundaries, with internal road improvements to be made primarily in the form of locally planned networks like Aldrich’s plan for Los Angeles. In the urban areas, in all probability, lower design speeds were adequate, uses of traffic signals were appropriate, steeper grades and sharper turns were appropriate to allow the road to blend into the existing urban fabric.

Several influential national planning reports recommended building such a national system of rural and intercity roads but noted that traffic demand was not yet established to such a level as to justify the necessary capital investment. Eventually, to demonstrate that there was a “need” for a national highway system, federal officials began to advocate that what they had previously envisioned as a rural highway system should in addition penetrate metropolitan areas in order to serve the central business districts. It seems clear that the motivation for these urban segments of the national highway system was not really to accommodate intr urban traffic but rather resulted from the recognition that the vast majority of traffic flowed within cities and that inclusion of more heavily traveled routes in a national highway system would help to justify the expenditure of national resources needed to build it. President Franklin D. Roosevelt asked the Bureau of Public Roads to delete the urban portions of the proposed federal system, leaving them to be dealt with by local engineers and planners, but the bureau made its proposals to Congress for a system that included the urban segments, undoubtedly because they felt the national road system could not otherwise be justified.

In 1944, the Roosevelt-appointed Interregional Highway Committee, whose seven members included a number of the most prominent planners and engineers in the country, advocated the building of a system of 99,000 miles of intercity highways, connecting nearly all cities in America having populations over 100,000. Interestingly, their report advocated that uniform design standards be employed in rural areas, yet it specified that about half of the mileage of highways within metropolitan areas should be left to be studied and determined by local planners and elected officials.

Once the routes enter the environs of the city . . . they become a part of the sum total of urban transportation facilities, and as such must bear a proper relation in location and character to other parts of the street system . . . . How near they should come to the center of the area, how they should pass it or pass through it, and by what course they should approach it, are matters for particular planning consideration in each city.56

In sum, the emerging federal plan for a national network of highways provided sufficient leeway for a variety of highway designs and for flexible design standards that would allow urban highways to be treated explicitly as elements of urban design within their varying urban contexts. And the Aldrich plan seemed to provide Los Angeles with a highway concept that accomplished these objectives specifically within the context of that city. Yet the freeway system that emerged in Los Angeles ended up having a character very different from the system advocated by Aldrich, and, predictably, this occurred because of the need to compromise in order to obtain the funding needed to undertake construction.

In the 1940s the Interstate system was adopted by Congress, but because of the national war effort the system was adopted without any federal funding. At the same time, the City of Los Angeles was proceeding at a very slow pace toward implementation of the Aldrich plan. The state became the instrument of implementation of the federal plan, and in California the legislature decided to raise highway user fees (primarily gasoline taxes) in order to implement a statewide highway plan that included intrurban highways in Los Angeles. In doing so, the legislature made the critical decision that the expressway plan would be implemented by the state highway department, thus preempting the authority of the Los Angeles Bureau of Engineering and making the freeways the domain of state engineers and planners, under whose management they remain today. In the 1950s the exigencies of securing funds for the national road system again dominated the determination of urban freeway routes. Contrary to the recommendations of the Interregional Highway Committee, the Bureau of Public Roads, in an effort to secure the votes of urban members of Congress for its national system of interstate highways, published the intended routes for every mile of urban routing included in the system. Second, in order to give the utmost priority to the construction of roads on the Interstate system, the traditional federal highway funding formula, providing for equal sharing of the costs by state and federal governments, was replaced by a funding formula that had the Federal Highway Trust Fund paying 90 percent of the costs and states bearing only 10 percent of the costs of the interstates. When the 1956 Highway Act was passed, it made available an enormous
amount of federal gasoline tax revenue for the construction of the Interstate system, and the availability of nine federal dollars for each state dollar spent was simply irresistible.

Thus when construction of the Los Angeles freeway network went into high gear in the late 1950s, the Aldrich plan, which was sensitive to local conditions and urban design principles, was sacrificed. The routing followed was that of the federal legislation, which in fact bears much similarity to the routing included in the Aldrich plan. Terrain and traffic patterns have caused most highway system proposals for Los Angeles to be broadly similar to one another. More significant to the urban form of Los Angeles is that California state highway engineers and the Bureau of Public Roads adopted uniform freeway design standards that were applied consistently to freeways planned throughout the state. These design standards specified the number and width of lanes, clearances, radii of curves, widths of shoulders, and spacing of on- and off-ramps. The standards were adapted from rural highway practice, serving design speeds of sixty or seventy miles per hour. The urban design principles included in the Aldrich plan were set aside. To thread the proposed expressways more effectively through an already densely built urban fabric, they would have permitted design speeds of fifty miles per hour and would have allowed for sharper curves, occasional use of traffic signals, and narrower and fewer lanes, medians, and shoulders. The system that was built, however, incorporated far less sensitivity to local street networks, far less integration into the urban fabric of the communities through which they passed, and far less accommodation of mass transit. As the Los Angeles freeway system was built, some freeway alignments, such as the Hollywood Freeway, initially included the Pacific Electric right-of-way in the median strip, but as transit patronage fell and auto traffic exceeded the projected volumes, the rail routes were removed to permit enhancement of the highways’ capacity.

Many have observed that the freeways of Los Angeles are terribly destructive of a sense of community, that they cut swatches out of the urban fabric and provide barriers to community cohesion by creating enormous discontinuities throughout the city, especially in inner-city minority communities. It is not clear that the Aldrich plan would have avoided all of the social disruption and alienation that we have come to associate with the construction of the freeway system, but it is clear that the plan had different goals and priorities, which on the surface seem to imply that Los Angeles might be a significantly different place had that plan been fully implemented. It even appears probable that the land acquisition costs of building the regional freeway system might have been lower had the uniform statewide design standards not been adopted, but as is so often the case, the immediate availability of funds was valued over long-term full social costs,
and the financial exigencies of the construction program caused these long-term considerations to be set aside.  

THE LONG STRUGGLE TO BUILD RAIL TRANSIT IN LOS ANGELES

Despite the long, steady decline of public transit patronage and widespread dissatisfaction with existing service, there continued to be a loyal following of supporters who felt that public transit would remain an essential service and that it was in need of renewal and expansion. During World War II, when gasoline was rationed and new autos were unavailable, transit ridership experienced a temporary resurgence of substantial proportions, but after the war, ridership returned to its familiar pattern of steady decline. As the war was ending, the Metropolitan Traffic and Transit Committee of the Los Angeles Chamber of Commerce formed the Rapid Transit Action Group (RTAG), which worked aggressively toward the upgrading of public transit in Los Angeles. In February 1948, after consulting with leading transportation engineers and planners for several years, the group sponsored a meeting to which no less than eight hundred business, civic, and political leaders were invited, at which they unveiled their proposal: Rail Rapid Transit—NOW! The proposal borrowed from the Aldrich plan in providing for rail rapid transit in the median strips of several of the radial freeways being planned to serve downtown, and it also advocated upgrading a number of the remaining Pacific Electric rail lines to the status of true rapid transit. The upgrading would involve the construction of tunnels in the downtown area and the systematic elimination of grade crossings throughout their length.

The report explicitly addressed the importance of constructing rail rapid transit in a diversifying, expanding low-density region. It conveyed the notion that the population would be increasing in coming decades and that ever larger numbers of people would be living in suburban areas and attempting to reach the downtown area. To keep downtown healthy, it would be necessary to invest in high-capacity, high-quality, high-speed transit links to those communities. Unstated, but certainly implied in the report, was the fear that unless a radial system were built serving the central hub, the downtown would suffer in the competition for jobs and for development capital with the rapidly growing suburban communities. They urged that a special unit of government—a transit district—be created to ensure the rapid transit system they were advocating. Sy Adler reports that the proposal met with mixed reactions, gaining strong support from downtown businesses and City Hall, their political allies in the construction and downtown development businesses, and the newspapers based in the downtown area. There was also, however, clear opposition, primarily from property owners, real estate developers, and community leaders in outlying communities that had already established significant levels of offices and retail in their communities. Commercial interests in Long Beach, Santa Monica, Pasadena, and elsewhere stated that the plan provided relief for downtown taxpayers at the expense of their communities. These groups were upset with the radial orientation of the rail system, which, like a substantial portion of the freeway network, centered on the downtown area of the City of Los Angeles.

They were equally concerned that the creation of a transit district would result in a unit of government with special powers that would be dominated by downtown representatives. Owners of property in the Wilshire District also opposed the proposals, arguing that it was "socialistic" to create a public transit district, when transit had always been a private industry. They argued that rail rapid transit was in decline in New York and Philadelphia, cities with far higher population densities, so it could certainly never be successful in Los Angeles.

Interestingly, the proposal to form a new transit district and to upgrade transit operations was also opposed by the Los Angeles Transit Lines (LATL; formerly the Los Angeles Railway) and the Southern Pacific, which had acquired the Pacific Electric from Henry Huntington because it gave them important trackage for their freight operations. Starved for capital, the LATL was attempting to sell its rights-of-way, buildings, and tracks to the city in order to obtain needed cash and was offering to operate those lines for a fee once they were owned by the public. They feared that a new transit district would compete with them for patronage and public funding. The Southern Pacific was finding freight operations more profitable than passenger service, and it favored a strategy of converting passenger operations to buses, which would interfere less with their potential to move profitable freight trains on their tracks. They feared that the rail rapid transit plan would make it less likely that they could implement their freight strategy. When faced with this opposition, the RTAG decided to advocate rail transit and creation of a transit district but to insist that one proposal was not a requirement for the other and that other transit plans could also be studied.

After intense debate, in 1948 the Los Angeles City Council voted by a narrow margin of 8 to 6 against the creation of a special district to overhaul transit, the power of the outlying areas having prevailed over the central city interests. The L.A. Chamber of Commerce, smarting from its defeat, devoted its energies to attempting to ensure that the freeway system included many radial routes, which would provide the downtown area with an accessibility advantage similar to that which would have been provided by improved rail transit. A map of the Los Angeles freeway system indicates that they were successful to a large extent. While there are, of course, many
freeways that do not directly serve the central area, downtown is the clear focus of a set of radials that, given its small share of regional employment, provide it with a surprising accessibility advantage in comparison with other centers of economic activity throughout the region. In the late forties and throughout the fifties, the Pacific Electric and LATL repeatedly petitioned the Public Utilities Commission for permission to substitute bus for rail service and to abandon some services entirely, and over time an increasing proportion of their requests was granted.

Between 1950 and 1980, a large number of rail transit proposals were placed on the public agenda by a variety of groups, and in fact the state legislature did create the Los Angeles Metropolitan Transportation Authority in 1932, which in 1964 became the Southern California Rapid Transit District, whose legislative mandate specified that rail rapid transit was to be undertaken and had the authority to levy sales taxes for the purpose of rail system construction if a successful vote of the public could be obtained. After several bond measures failed to achieve the required two-thirds vote of the populace, the legislature amended the requirement so that a simple majority would be needed, yet the sales tax and bond measures that followed this amendment also failed.

In 1976, impatient with these earlier legislative creations for their failure to initiate rail system construction, the state legislature acted again by creating the Los Angeles County Transportation Commission, with a mandate to seek funding through ballot propositions. Between 1948 and 1980, however, at least six different plans that included some form of rail transit were placed before the citizens, and all failed to be enacted. Some died without making it onto the ballot, while others were defeated at the polls. Among the most notable were a proposed monorail that would have run along the Los Angeles River and another that would have connected Van Nuys with Los Angeles International Airport, running above Interstate 405 (the San Diego Freeway). Another distinctive proposal was made vigorously by County Supervisor Baxter Ward. He promoted his proposed system aggressively, under the rubric of the "Sunset Coast Line," which promised many more miles of rail service at lower cost than other proposals by using existing rights-of-way and freeway medians. Ward believed that several earlier proposals had failed because their benefits were limited to so few areas that only a minority of the voters would have anything to gain from the proposals. His proposal, unabashedly configured to attract more votes, would do so by maximizing the miles of rail right-of-way and thus bringing more voters' residences within the rail service area. His Propositions R and T (for "rapid" and "transit") would have provided a half-cent sales tax for capital funding and another half-cent for operating subsidies, but they, like the three other sales tax measures placed on the ballot between 1968 and 1978, were both defeated. So large a proportion of the region's voters lived at low and moderate densities and worked outside the central business district that it was repeatedly proving impossible to muster sufficient support to implement a regional rail system that would primarily benefit central business interests.

In the San Francisco Bay Area, a fragile and sometimes stormy consensus held downtown and suburban interests and construction companies together in support of a regional rail system. When BART trains were already running in the seventies, the central city of Los Angeles simply could not get together as comprehensive and lasting a coalition as was needed to gain local, state, and federal funding for any of the rail proposals. In large part this may be due to the fact that a larger share of regional employment, capital investment in real estate, and political influence reside in the central city of San Francisco, while in Angeles the central city lost ground to the suburbs at a faster pace. Even today, for example, downtown San Francisco provides in excess of 15 percent of its region's jobs, while the central city of Los Angeles provides less than 10 percent of its region's employment opportunities.

Federal support for transit capital investment first became available in 1964, and the availability of federal funds grew throughout the sixties and seventies, with Congress often earmarking the transit capital investment funds for projects in particular cities: Atlanta, Baltimore, Buffalo, and, of course, Washington, D.C. Despite this potentially lucrative source of funding for a rail system and Los Angeles's growth to a position of national leadership and prominence, its many efforts to undertake a rail construction program faltered. Since most of the rail proposals emphasized radial lines serving the downtown area, some felt that there would be no significant downtown a special benefit of accessibility; others focused their energies on the completion of the freeway network; others felt that the low densities of Los Angeles were better served by buses on busways; still others felt that rail would provide benefits, though not sufficient to justify its high costs and too localized to warrant a general sales tax increase. The El Monte Busway was built in the seventies in the median of the San Bernardino Freeway at much lower cost than rail transit would require, and the fact that it was perceived as a success weakened the arguments of the supporters of rail transit. Federal officials, including then U.S. Secretary of Transportation Drew Lewis, visited Los Angeles on several occasions and embarrassed the local business and professional communities by pointing out that the main reason federal funding for rail was not flowing into Los Angeles, as it was into other cities, was the failure of Los Angeles rail proponents and politicians to "get their act together." Eventually, however, several conditions changed which enabled a political consensus to be built.
BUILDING A SUCCESSFUL RAIL TRANSIT STRATEGY

Slowly, through the seventies and eighties, insightful analysis of the earlier failures, changing political conditions, and a complex set of tactics in pursuit of various self-interests led to a strategy that finally emerged as successful in obtaining both local and federal financial support and a broad local consensus to build rail transit in Los Angeles.

As had been the case for freeway construction earlier, a critical ingredient was the potential availability of federal funding at favorable matching ratios, reaching as high as 75 percent at some points in the 1980s. This meant that for each local or state dollar made available for rail construction, potentially as many as three federal dollars could be obtained. Added to this was the irritation that local officials felt when they realized that income taxes paid by Los Angeles area citizens were being used to build subways in other cities, while Los Angeles was not receiving its "fair share" of the national transit construction pie. Even if one preferred busways, it was hard to resist the argument that taxes collected in Los Angeles were being used to provide construction jobs in other cities but that Los Angeles was not getting its share of the resources. This situation gave impetus to renewed efforts to construct a political consensus that would finally lead to the adoption of a plan that could succeed in the political arena.

Second, coupled with the availability of federal funding for public transit was dramatically declining revenue for highway construction. While the state gasoline tax had been raised six times between 1947 and 1965, it was not increased at all between 1969 and 1982. Although increased automobile ownership and use resulted in higher gasoline tax collections during those years, inflation reduced the real value of those collections, and increases in the costs of road construction and maintenance substantially exceeded the general rate of inflation. By the late seventies and early eighties, federal fuel economy standards were resulting in more and more vehicles that traveled over twenty miles per gallon of gasoline consumed, in comparison with earlier vehicles that attained mileage ratings between nine and twelve miles per gallon. This change substantially reduced state and federal gasoline tax revenues, which were all levied on a per-gallon basis. A vehicle that attains a rating of twenty miles per gallon produces as much congestion and roadway wear and tear but only half the gasoline tax revenue per mile of driving as does one rated at ten miles per gallon. Taken together, all of these factors meant that by the late seventies highway construction programs were being starved as miles of new road construction decreased dramatically from year to year. Construction contractors and unions were looking for greener pastures. Naturally, the federal transit capital investment funds did not escape their notice, and slowly groups that had previously been occupied in the provision of new highways began to see reasons to promote transit projects as well.

Third, it is important to note that by the 1970s images of modernity in transportation had changed dramatically throughout American society and especially in Los Angeles. While the bus had once eclipsed the rail car as the epitome of modernity, and the automobile had for sixty years been the ultimate symbol of individuality and material success, rail transit began to have a new and far more favorable public image. Buses were now seen as slow, dirty, crowded, polluting, and crime ridden, while rail transit was becoming symbolic of progress and municipal accomplishment. In addition, growing concern with energy conservation and air pollution gave transit an aura of public spiritedness and environmental conservation. Trains and monorails thus became symbols of technological advancement and environmental sensitivity, and proponents of rail transit investments began to market these images vigorously to the public.

Fourth, regional business and political leadership became far more sophisticated in dealing with the ongoing disagreements over priorities for transportation planning in Southern California. The perception became widespread that failure to reach a consensus on transportation priorities for the region was resulting in a failure to obtain federal funds. This led many participants in transportation policy making to set a higher priority on the goal of reaching a consensus. Slowly, more and more parties to transportation policy making realized that the best way to reach consensus was to broaden the object of that consensus to include within a single plan elements that were critical to different players. While many rail proponents had been favoring a regional system of between five and seven corridors of rail service, they were for tactical reasons willing to support a "consensus" plan that specified one starter line along the Wilshire corridor; clearly committed to following the starter line with other elements of the preferred regional plan. While many preferred express bus rapid transit on freeway "high-occupancy vehicle lanes" and others preferred capital investments in rail, participants in the policy debates decided that consensus was more important than choosing their preferred option; thus a plan was devised which included both rail and bus rapid transit. And to gain the support of the citizens in South Los Angeles and Long Beach, and in clear recognition that the southern sector had powerful political representatives, including, for example, County Supervisor Kenneth Hahn and Congressman Glen Anderson, who chaired the powerful House Public Works and Transportation Committee, all parties were asked to endorse a plan that included a light rail line from downtown Los Angeles through South Central Los Angeles, ending in Long Beach. Since energy conservation and air pollution were rising higher on the public agenda, a transportation demand management or ride-sharing component was also added to the plan.
In the late 1970s, a four-part transportation plan was agreed to by many downtown and outlying area interests: a heavy-rail starter line (the Red Line), a light rail to Long Beach (the Blue Line), express buses on freeway high-occupancy vehicle (HOV) lanes, and transportation demand management or ride-sharing. This plan enabled all transportation policy interests in Los Angeles to tell federal and state funding authorities that indeed a regional consensus finally existed and that a regional program could now be undertaken with state and federal financing along with some local taxation. In 1980, the Los Angeles County Transportation Commission placed on the ballot a proposal called Proposition A, which would provide the local funding necessary to complete the package, especially because federal officials were increasingly demanding larger local shares in funding as a condition for granting federal support. Knowing that voters had previously defeated six separate transportation taxing measures, the framers of the proposition carefully crafted a measure that would, like the consensus plan, appeal to a broad cross section of voters. Proposition A asked voters to approve a half-cent sales tax and promised bus users a three-year rollback of fares from 85 cents to 50 cents. The proposition was also designed to appeal explicitly to those who favored rail transit for Los Angeles. In the booklet presenting the proposition to the voters was a map showing several potential rail corridors for future expenditure of funds. The map featured extremely broad lines so that nearly every neighborhood in the city was shown as being served by or accessible to the rail service. In an effort to obtain the support of local politicians throughout the county, the proposition also provided that some of the proceeds of the tax would be returned to each of the eighty-four cities in the county for use on transportation projects they favored. Carefully crafted to appeal to multiple interests, this proposition was approved by the voters in 1980, and Los Angeles finally was able to mobilize for the construction of a rail transit system.

Over time, as California voters approved a statewide gasoline tax increase in 1990, along with two bond measures to raise capital for transit projects, and as county voters approved in 1990 a doubling of the local transit sales tax, the transit plan has grown to include rail and HOV elements, bus electrification, suburban commuter rail services (Metrolink), and related plans that will collectively cost over $180 billion over the coming thirty years. From being unable to reach consensus on a single rail project prior to 1970, the Los Angeles region has again turned transportation politics on its head and is now pursuing the most vigorous transit capital investment program of any metropolitan area in the country, perhaps in the world. Many critics believe that the program is too ambitious and that it will eventually be truncated just as the freeway network was reduced during its thirty years of construction. Many believe that the rail network will, in the end, do little to alleviate air pollution and traffic congestion in a sprawling, low-density, auto-dependent region, unless land use patterns are changed dramatically to create high-density corridors of residences and businesses along the transit routes. Nevertheless, the dramatic reversal of transportation policy in Los Angeles is an impressive political accomplishment and an instructive lesson in public policy making.

**CRIQUE OF THE CURRENT REGIONAL TRANSPORTATION PROGRAM**

A regional transportation planning policy that emphasizes the construction of a costly rail network, HOV lanes on highways, and the reduction of peak-hour work trips through transportation demand management (TDM) will surely result in the reduction of some trips that would otherwise be made by singly occupied automobiles. But as long as these approaches remain at the center of our regional policy, they will cumulatively have small effects and large costs. Traffic congestion will not increase as much as it would without these measures, but it will not improve nearly as much as it could under alternative policies. More people will use transit, carpools, and vanpools as a result of these programs, but at very high financial costs, and each year the increase in single-occupant auto trips will be far greater than the number of trips captured by these alternative modes. In other words, as these programs increase the numbers of transit riders and ride-sharers in absolute terms, they will still continue to lose ground to the automobile in relative terms. Unfortunately, the small absolute gains for transit and ride-sharing come with an enormous price tag of public subsidy, and it is clear that these programs cannot be cost effective within the current policy environment.

**The Regional Rail Program**

The Blue Line cost nearly a billion dollars of capital investment, and even when the amortization of those capital costs is excluded, the fares paid by its riders cover only 11 percent of the operating costs. This facility now serves slightly more than 50,000 riders per day, and about half of those riders previously made the same trip using the bus. For the former bus users, the prior mode required smaller public subsidies and accommodated their trips in shorter travel times. Overall, local buses in Los Angeles cover close to 40 percent of the costs from fares paid, and some crowded, inner-city routes manage to cover nearly 90 percent of their operating costs through their revenues. Presumably, the purpose of building the rail line was not to attract people from buses but rather to draw them out of automobiles. Thus, the 16,000 or so daily riders who previously made their trips by automobile are the real measure of the contribution of the Blue Line.
This is a tiny fraction of the forty million daily trips made in the Los Angeles Basin, and the total annual subsidy per new daily rail rider is in excess of $20,000.

The new Metrolink suburban commuter rail system is even more dramatic and photogenic, but it is extremely expensive in relation to the benefits it is providing. During the opening week, when rides were completely free and when some travelers were being further encouraged to use the train by free (public subsidized) taxi rides from the stations to their offices in the San Fernando Valley, the daily ridership reached as high as 7,500, or about as many people as are carried by one freeway lane in three hours at a tiny fraction of the public cost. When the “fare-free week” was over, however, ridership quickly dropped off to about 3,000 daily boardings, a few more than the number of people served by one freeway lane in ninety minutes. Of course, the “steady state” ridership remains to be seen. To achieve this level of ridership, taxpayers spent money on refurbishing three railroad rights-of-way, acquiring dozens of attractive bi-level rail cars and locomotives, and building or renovating eighteen rail stations despite the fact that there are roughly 200 daily boardings per station in the system.

There is no doubt that as the Red Line and Green Line are added to the rail system, ridership will increase. But the most optimistic outcome will result in annual ridership of the combined system of rail lines of something less than one year’s increase in the number of automobile commuters in this region, though it will have taken over a decade and more than $10 billion to build.

There are several reasons for this dilemma. First, in a region as extensive as Southern California and characterized by low and moderate population densities, even hundreds of miles of rail right-of-way can provide stations within reasonably comfortable distances (on foot, or by car, bus, or cycle) of only a tiny fraction of the homes of the region’s residents and of the workplaces of only a tiny fraction of the region’s employed workforce. For example, the Blue Line, Red Line, and Metrolink all provide improved access to the Los Angeles Central Business District (CBD), yet downtown jobs represent less than 5 percent of regional employment, and that share is steadily decreasing as suburban “edge cities” capture more and more of the employment in the region. In addition, because of the low-density development pattern of the Los Angeles region, many users of the new rail system must drive to the stations, and this discourages rail system usage: as long as one is in the car and driving, the marginal effort and cost of continuing to the destination are small in comparison with the effort of using a park-and-ride lot and paying to board the train.

Second, the rail rights-of-way in many cases, including the Blue Line and Metrolink, have been chosen because of their availability and not because
they are located in corridors of heavy travel volume. Since they do not all serve the established corridors of traffic flow in the region, they can appeal to only a small segment of the travel market.

Third, even at subsidized prices, it is difficult for these services to compete with the cost of the automobile in a region in which more than 90 percent of workers are provided with free parking at work. For example, the monthly fare on Metrolink between Simi Valley and Union Station, though subsidized, is $175. This is surely significantly less than the total monthly cost of driving between Simi Valley and downtown, but among inner-city workers more than half of the cost of the auto trip is attributable to the monthly cost of parking. Where employers provide for free parking spaces having a market value in excess of $120, few commuters will forgo that benefit in exchange for the opportunity to pay for their own monthly rail ticket. Fortunately, under municipal and state legislation, employers are increasingly being required to offer their employees contributions to transit commuting in lieu of free parking spaces, and for some commuters this might begin to make a difference.

Fourth, many people forgo the train because they need to make use of their automobiles in the course of their daily work. Others couple trips for child care, education, and recreation with their daily work trips.

An unfortunate aspect of the high cost of rail services in relation to the low patronage is the fact that other transit alternatives are being forgone which could be more cost effective in Southern California. While costs for both rail routes and busways vary considerably depending on local conditions, one recent study estimated that the cost of a single mile of heavy rail construction was approximately equal to the cost of 3.2 miles of light rail line, or 13.5 miles of elevated busway. In a region of low density, thirteen miles of busway would certainly provide far more public benefit per dollar of expenditure than one mile of underground subway. The opportunity to expand funds on buses, however, is limited by the extent of the commitments to the rail network.

Similarly, the financial resources expended on the rail network are providing dramatic improvements in expensive transit service for a relatively small number of suburban middle- and upper-income commuters. Alternative uses of the funds, however, could provide a much larger quantity of less expensive service for lower-income inner-city dwellers who are far more dependent on public transit and who use the service regularly. While uncrowded and heavily subsidized suburban trains are being expanded, packed inner-city buses that require far less subsidy are passing up crowds at inner-city bus stops. In an effort to prove that rail transit can be safe, regional transit authorities are expending more per year on the security of the Blue Line than they are on security for the entire regional bus system, despite the fact that ridership surveys indicate that fear of crime is the single most important factor deterring bus ridership.

The current policy incorporates many inequities and is over time making the poor increasingly worse off in relation to the rich. The sales tax that is used to finance a major portion of the program falls disproportionately on the poor. The emphasis on suburban rail service transfers benefit to rich suburbs, results in higher fares on the basic inner-city bus services on which the poor depend, and results in fewer inner-city local bus service expansions, which might provide greater benefits for the transit-dependent population.

The Regional Transportation Demand Management Program

The second dimension of transportation policy that was part of the regional consensus plan was transportation demand management. Southern California is today engaged in a far-reaching experiment in TDM aimed at reducing commuters’ reliance on the single-occupant automobile for the journey to work. So far, the most tangible impacts on commuters have occurred through actions of the South Coast Air Quality Management District (SCAQMD). The severe air quality problem in the Los Angeles area has given rise to the district’s Regulation XV. An important element of the region’s air quality management plan, it requires employers to take responsibility for encouraging workers to consider alternatives to driving to work alone, including public transit, carpooling, vanpooling, walking, telecommuting, and cycling. Regulation XV was adopted by the board of the SCAQMD in October 1987, and its implementation began on 1 July 1988. It requires that public and private employers (firms, government agencies, schools, hospitals, etc.) having one hundred or more workers at any work site complete and file a plan for that site by which they intend to increase the average vehicle ridership (AVR) to a specified level within one year of the SCAQMD’s approval of its plan. AVR is determined by surveying the workforce and is defined roughly as the quotient of the number of employees reporting to work between 6:00 and 10:00 A.M., divided by the number of motor vehicles driven by these employees. Employment sites in the central area of Los Angeles are assigned a target AVR of 1.75, and employers in low-density, outlying areas are expected to aim for a target AVR of 1.3. Intermediate areas, which constitute most of the area and most of the sites covered by the regulation, have AVR targets of 1.5. The SCAQMD anticipates that a regional AVR of 1.5 will be reached by the mid-1990s. The regulation also requires every covered work site to have a trained employee transportation coordinator (ETC), and it requires the employer to implement the plan once it has been approved. The South Coast Air Quality
Management District estimates that there are about 6,200 firms, agencies, and institutions that employ one hundred or more workers at individual sites and are subject to this regulation. Together they employ approximately 3.8 million workers.

The regulation is having a measurable impact on the travel patterns of the affected work sites. For a panel of 1,110 work sites that have completed one full year of implementation, overall average vehicle ridership, as defined by the SCAQMD, has increased from 1.22 to 1.25, a statistically significant increase, with an average increase among all the work sites of 3.4 percent. For a smaller sample of 243 work sites at which the regulation has been implemented for two full years, the AVR continued to rise in the second year to 1.90. Of the 1,110 employment sites included in the full panel, about 69 percent experienced increases in AVR during the first year, with just about 20 percent of the employment sites experiencing increases of more than 10 percent in their AVRs and half of the sample having increases of up to 10 percent. At another 31 percent of the work sites, AVR decreased during the first year of program implementation.

Among the 1,110 employment sites in the full sample, the proportion of workers driving to work alone decreased from 75.7 percent in the first survey to 70.9 percent in the second. Among the smaller sample of 243 work sites for which data are available for two years, the proportion of workers driving alone declined by the end of the second year to 65.4 percent. The largest shift in mode was toward carpooling, and vanpooling also increased significantly. The public transit share and the proportion of workers walking and cycling, however, did not increase significantly. There was great variation in the extent to which employment sites are meeting the goals of Regulation XV, and many firms have done much more poorly than others. In general, the greatest improvement in AVR was found among employers whose initial AVR values were among the lowest, and, interestingly, the size of the workforce at a given site was not statistically associated with the extent of improvement in its AVR.

The purpose of Regulation XV is to reduce auto emissions by reducing peak period travel, which is usually measured in terms of total vehicle miles of travel (VMT). Accurate calculation of VMT reduction would require identification of the particular employees who changed mode and the mode to which each changed. Employee information is not available, and VMT reduction must thus be estimated based on the overall number of trips reduced. Expanding this calculation to the population of companies subject to Regulation XV to generate the regional VMT impact yields an estimate of 1.3 million daily VMT, or a reduction of 0.4 percent of annual VMT. Since work trips constitute roughly a quarter of all trips, and only half of all work trips in the region are taken by employees of work sites having one hundred or more employees, it is not surprising that even the successful outcome of the regulation noted so far has resulted in an extremely small shift away from singly occupied automobiles when viewed in the context of all of the travel taking place in the region.

Very important to the evaluation of Regulation XV is an estimation of the costs it imposes on the regulated work sites. Many critics of expensive regional capital investment programs in rail networks cite transportation demand management as a much more cost-efficient alternative, so cost is an important dimension on which to evaluate the Regulation XV program to date. Unfortunately, it is extremely difficult to come up with authoritative cost estimates in which we can have a great deal of confidence. In a survey of 182 ETCs who were asked to estimate how much their employers were spending on Regulation XV programs, an extremely wide variation in estimates was obtained, probably reflecting the difficulty of properly accounting for costs. However, the mean estimated annual expenditure on implementing Regulation XV was $41 per employee, and the median was $20 per year per employee. The maximum value was $250 per employee per annum, and the standard deviation was $99.

Case studies of five companies were also conducted. The case studies included a detailed examination of Regulation XV costs. These ranged from $12 to $463 per peak employee per year and excluded the costs of any ride-sharing activities that preceded the Regulation XV plan. The accounting firm of Ernst and Young conducted a detailed survey of employment sites subject to the regulation for the purpose of estimating the cost of trip reduction through TDM. Their survey of 5,705 regulated sites concluded that the average reported annual cost of Regulation XV was $105 per regulated employee and that the cost to the regulated community of removing one vehicle trip per day has been around $3,000 per year, or $187.50 per daily trip removed from the road.

On the basis of the best available evidence in Southern California, then, it would appear that efforts to remove automobile trips from the road and to replace them by either rail transit or, through TDM, carpooling, vanpools, or buses as well as trains can produce results that involve modest shifts away from singly occupied automobiles and toward alternative modes. However, in both cases these approaches produce modest numbers of changes in trips, and they result in costs to private employers and public agencies that are disappointingly high per trip shifted. It would seem on the basis of results summarized here that by themselves the strategies of increased investment in rail transportation and transportation demand management cannot provide large shifts in travel patterns at acceptable costs. It is probably not in the public interest to expand programs that have such high public and private costs per unit of benefit, and if the costs of these programs were widely understood by the public, political support for them might quickly erode. Approaches must be sought to either increase the cost-
effectiveness of these approaches or find other ways of accommodating growth in travel in this region that are more cost effective than the policies that are currently being pursued.

ALTERNATIVE TRANSPORTATION POLICIES FOR SOUTHERN CALIFORNIA

Since the two major strategies for controlling traffic congestion and reducing the environmental consequences of widespread automobile dependency are likely to produce only modest successes at high social costs, transportation policy makers must consider alternative strategies that could produce more satisfying results in a more cost-effective manner. In the following sections, I consider policies that discourage growth in the use of the automobile by levying higher charges against it in an effort to come closer to recouping its full social costs through charges paid by drivers. In addition, I consider policies that attempt to reshape urban form so that land use patterns and the spatial distribution of activities will be more compatible with greater reliance on alternative modes of transportation. Finally, I consider the encouragement of entry into the transportation market of a wide range of alternative forms of transit service, including jitneys and cars for hire.

Pricing the Automobile Appropriately

One major reason for the modest shift of travel from the automobile to alternative modes, despite extensive investments in rail systems and despite expanding requirements for transportation demand management, is the fact that the automobile is so heavily subsidized through direct and indirect policies of the national, state, and local governments. The long list of subsidies to the automobile surely includes the exclusion of roads and highways from the local tax rolls, the support of traffic police and medical emergency services by property and sales taxes, and the setting of gasoline taxes and vehicle use fees that do not recoup the economic value of the "externalities" created by the automobile in the form of air pollution, energy resource depletion, and time losses due to congestion. Many workers are provided with additional direct subsidies for the use of automobiles in the form of free or highly subsidized parking spaces at their workplaces, reimbursement of automobile operating expenses when cars are used in the course of work, and the use of employer-owned or leased automobiles for work-related purposes and personal benefit. With the automobile priced so far below its full social cost, we are all encouraged to make greater use of it than we would if its price reflected its true costs to society. And it is extremely difficult to encourage people to use rail transit, buses, carpools, vanpools, or bicycles or to walk as long as the direct and indirect subsidies to the automobile are so high. Transportation policy incorporates enormous inefficiencies by, on one hand, encouraging profligate use of the automobile through numerous subsidies and, on the other, enacting regulations to require use of alternative modes or by attempting to encourage travelers to abandon their automobiles by providing even heavier subsidies to alternative modes. Undoubtedly, if the automobile were charged something closer to its full social cost, greater use of transit and ride-sharing modes would occur, and those modes would require lower levels of direct public subsidy in order to survive.

There are several ways in which public policy could levy more realistic charges against the automobile, but all would be difficult to enact under current political circumstances. Perhaps most obvious would be substantial increases in gasoline taxes. It is well known that European gasoline taxes are much higher than those in the United States and that Europeans continue to drive more fuel-efficient cars and to use transit for a larger share of their trips than do Americans, even though the use of the automobile in Europe is now actually rising at a faster rate than it is in the United States. In some countries, gasoline prices exceed $4 per gallon, with the largest share of the selling price being the fuel tax. Many have advocated higher fuel taxes in the United States for the purpose of both recouping more of the social costs of automobile use and simultaneously encouraging the use of alternative modes. Major objections, of course, are from large users of fuels and from advocates for the poor, who believe that automobile fuel taxes would be regressive. Gasoline consumption is, however, clearly income related, and the regressiveness of higher gasoline taxes must be judged in relation to the very large recent increases in sales taxes (which are also regressive) to support transportation programs.

One of the most intriguing proposals involving gasoline prices would be to shift the burden for paying for part of our automobile insurance to the form of a per-gallon charge at the pump. While allowing automobile users to carry additional insurance beyond this minimum, such a plan would have several benefits. First, it would respond to the problem of uninsured motorists in Southern California, where it has been estimated that approximately 25 percent of automobiles on the road are in violation of the law requiring insurance. Second, such a program would add an element of equity to the system of charging for insurance, which is now based largely on geographic location of residence rather than use of the vehicle. Finally, the insurance premium in the form of a gasoline surcharge, by raising the unit cost of driving rather than treating insurance as a fixed cost, would contribute to the increased attractiveness of alternative modes in relation to the singly occupied automobile. Other policy options by which the social costs of the automobile might be more fully charged to those who benefit from automobile use include revisions to the annual vehicle registration
fee structure. Present vehicle taxes are structured to be roughly proportional to the value of the vehicle. As an alternative it has been proposed, for example, that we rebase annual automobile registration fees so that they would be inversely proportional to their fuel efficiency. Registration charges would be lower for low-emission vehicles and higher for gas guzzlers. Such a fee structure would encourage the purchase of fuel-efficient vehicles and would thus use pricing mechanisms to encourage more socially responsive patterns of ownership and use.

A final policy option involving the cost of motor vehicle use would be the adoption of a system of congestion pricing, sometimes called road user charges. Proposed in one form or another for decades, congestion pricing might provide a way of aligning the charge for automobile use with the social cost of travel. Congestion pricing involves charging drivers more to travel at times and at locations at which congestion is heavy and less to travel at times and locations that are uncrowded. The goal of such charges is to encourage people to avoid traveling at the most congested times and places by using alternative modes (including carpooling), by shifting to less crowded routes, or by deferring travel to a time period at which the roads are less crowded. In theory, the charge for travel can be continually readjusted to eliminate congestion. While the total cost of owning and operating an automobile would appear to increase under a system of congestion pricing, substantial reductions in delay and improvements in travel times certainly have value to individual travelers and would result in far more efficient use of the existing transportation network. In principle, congestion pricing is similar to the form of pricing used by telephone companies to encourage calling in the evenings and on weekends and by airlines to encourage weekend flying.

Congestion pricing has two basic forms: area charges and facility charges. Area charges are today in use in Singapore and Trondheim and are being planned in detail for an increasing number of European and Asian cities to control traffic and increase revenue for transportation programs. A cor- don line or border is set up around a congested area, and during defined periods of heavy congestion admittance to the area is granted only to vehicles paying an entry fee. Facility charges are tolls, more like traditional bridge or highway tolls, which are levied when a traveler uses a particular roadway segment during congested periods. The charges may be levied on a per-trip basis, or recorded electronically in an account for which a bill is sent weekly or monthly.

Some objections to congestion pricing arise over the administrative complexity of collecting the fees and the potential invasion of privacy that comes with certain systems of billing travelers for their charges. These problems have recently been substantially minimized by new communications technology. Automatic vehicle identification and debit card systems have been combined to provide convenient and efficient charging without violating the privacy of the driver.

More serious objections to congestion pricing deal with the impacts of such charges on the poor. Certainly, under normal circumstances, richer people will have a larger number of options available to them than the poor, and richer people will generally be less sensitive to tolls than poorer people. While this is true, there are approaches to congestion pricing that can mitigate potential negative impacts on the poor. Congestion tolls would generate large amounts of revenue (a recent Southern California case study suggests annual fee revenue of $5 billion) that could be used in part to offset losses to the poor. For example, if the revenues from the congestion tolls were used to fund improvements in public transit, the poor, who use transit in much larger numbers than the rich, would benefit directly from such a policy. In addition, it is possible to structure the congestion prices so that there is a life-line rate available, just as there is for telephone service. Finally, income tax credits could be granted to poor people for their payments of congestion fees.

There is also concern that if the major response to congestion pricing should be the rerouting of traffic to other areas or facilities, congestion could worsen in those areas even as it is lessened in the areas subject to the charges. In addition, some worry that the levying of a congestion charge in some areas may put them at an economic disadvantage in competition for tenants and customers, while others argue that the alleviation of congestion might well counterbalance the charge in the minds of potential customers and tenants.

Despite the fact that congestion pricing is receiving a growing amount of attention internationally, a great deal of political opposition will have to be overcome before the concept is adopted on a significant scale in California. Citizens will naturally be unsupportive of a system requiring them to pay for the use of roads that were in the first place built using the proceeds of taxes; it would be akin to charging twice for the same service. In addition, citizens do not trust planners who assure them that in exchange for the charges travelers will obtain the benefit of less congested highways.

Because of widespread skepticism regarding congestion pricing, several demonstration projects that do involve congestion fees will constitute important proving grounds for the concept in Southern California. On Route 91 in Orange County, for example, two lanes are being added to the median by a private corporation. Costs of construction and of operating the facility will be covered by tolls. Current plans call for varying the toll with traffic conditions and vehicle occupancy. Vehicles with three or more occupants will be exempt from the tolls. This will provide an important initial test of commuter acceptance of highway pricing in Southern California. Other demonstration projects are being planned, funded both by Caltrans and by
the federal government under the Intermodal Surface Transportation Efficiency Act (ISTEA).

Influencing Transportation by Policies Affecting Urban Form and Land Use

The urban form of Southern California—large expanses of low- and medium-density residential and commercial activities punctuated by moderate- to high-density activity centers or "edge cities"—is considered by many to be the major cause of our steadily increasing travel volumes and the ultimate source of our traffic congestion, automotive air pollution, and inefficient energy consumption patterns. It is argued, therefore, by many urbanists and environmentalists that policies should be pursued which will lead to the "densification" of the metropolitan area, especially at transportation nodes such as rail transit stations. Higher-density areas, especially of mixed land uses, provide opportunities for people to satisfy their needs by traveling shorter distances and thus result in fewer trips per capita. Quite a few architects and urban designers are attempting to incorporate this principle into plans for new developments, such as the massive Playa Vista project near Los Angeles International Airport. This development is one of several that incorporate the concept of "neotraditional town planning," including higher densities, more diverse mixes of residential and commercial land uses in close proximity to one another, and the provision of higher than typical levels of transit service within the developed areas.

These proposals are extremely interesting, yet their prospect for alleviating traffic congestion remains largely unproven. Among the important reasons for skepticism is the fact that built form changes very slowly over time, so this approach can yield only marginal results in the short term. At least two-thirds of the existing built environment was in place fifty years ago, and even if we were to adopt a strategy of promoting higher densities and mixed uses in many new developments over the coming decades, the effect of these policies would have to be phased in over fifty years or more. In addition, land use is regulated by local governments that zealously resist the centralization of control over land use at the regional level and that treasure the low-density patterns of their own communities. For this approach to have a noticeable impact on urban form and travel behavior, hundreds of local jurisdictions would have to change their land use development regulations, and the existing population would in many instances resist such change because they would perceive these approaches as threatening to the lifestyles they have consciously chosen when they made their residential location decisions.

It is clear that most advocates of densification are located disproportionately in Los Angeles County, which, of course, is already developed to a greater extent than the rest of the region. Some cynics and some realists point out that advocating densification is merely a strategy to ensure that Los Angeles County will capture an increasing share of future growth in comparison with the recent trend of suburban expansion and that the strategy may be motivated by a desire for the fiscal returns from growth rather than from the reduction of traffic congestion. In outlying areas there is no evidence whatsoever that residents or commercial investors prefer moderate- or higher-density development patterns in comparison with those that have recently prevailed.

It is very important to note that while traffic reduction by density increases has become increasingly popular among environmentalists and urban reformers, many scholars have demonstrated that low-density development patterns do not necessarily result in heavier traffic congestion, and there is little empirical evidence that this approach is fundamentally sound. While authors like Peter G. Newman and Jeffrey R. Kenworthy demonstrate that higher-density cities generate fewer trips and lower energy consumption per capita than lower-density cities, they accomplish this by comparing different cities at one point in time rather than by tracking particular cities over many decades. Thus Los Angeles is compared with Hong Kong or New York in order to reach the conclusion that density can make the intended difference, but there is no guarantee that the adoption of such densities in Los Angeles would result in the intended outcome. In fact, most of the high-density cities that are cited as examples were major metropolises long before the coming of the automobile, and over time they are becoming less dense as lower-density suburbs are added at their peripheries and as higher rates of automobile ownership occur in response to rising incomes. Traffic congestion in New York and Hong Kong and other high-density cities is, if anything, increasing more rapidly than congestion in Los Angeles. And, in contrast, scholars who have studied metropolitan areas like Los Angeles over time note that development at the fringe is not increasing trip volumes or trip lengths substantially in lower-density metropolises.

It is possible to reconcile these views, which might seem on the surface to be in disagreement with one another. While it is true that higher-density areas do generate fewer automobile trips per capita or per dwelling unit because their residents can walk, cycle, or use transit to accomplish more of their travel needs, it is obvious that higher-density areas are by definition also characterized by higher populations and larger numbers of dwelling units per unit of area than are lower-density communities. While they may be more "efficient" by generating fewer auto trips and vehicle miles of travel per capita, their higher densities result in a larger number of total trips. Thus while New York has higher population densities than Los Angeles and a greater jobs-housing balance than Los Angeles, and New Yorkers consequently make higher proportions of their trips by walking and using public transit than do Angelenos, the fact that there are more New Yorkers per
not likely to be among the primary justifications for aggressive mixed-use development at the station sites.

A Wider Range of Mass Transportation Choices

If we accept the notion that mass transit consists of a wide range of transportation modes that can function as alternatives to the singly occupied automobile, we can envision many opportunities to increase the efficiency of the local transportation system which are far more cost effective than the policies presently in place. For example, if we consider carpooling, vanpooling, shared ride taxis, jitney services, local buses, and employer-operated buspools as examples of mass transportation modes, in combination these modes can improve mobility substantially within a future transportation system that remains dominated by the automobile.

The most successful transit options will be those that compete most closely with the automobile, and that means that they should be able to connect many low-density communities, provide relatively immediate response times, and overall door-to-door costs and travel times that approximate those of the automobile. As automobile subsidies are reduced, a larger range of such alternative services become economically feasible. In many parts of the world, the private sector is providing a wide range of such options, and they might have a significant role to play in the future of Los Angeles. In Queens, New York, thousands of Caribbean immigrants have started operating vans that take commuters from residential communities to Manhattan workplaces at fares slightly higher than those charged by the urban transit system, and they are doing a booming business. The success in Los Angeles of the airport shuttle vans provides another example of a system that moves large numbers of people and reduces congestion in comparison with the automobile. Rather than requiring heavy capital investments like rail systems, these alternatives require very little public investment. In combination with modern communications technology and the availability of increasing numbers of HOV lanes, such services can offer quick response, lower-cost travel options for the citizens of this region. Furthermore, if barriers to entry into businesses of this type were lowered, and if the automobile were priced at levels closer to its true social costs, such options would occur without major public expenditures and would provide jobs for many more workers in the transportation sector. But when heavy capital investments are made in centralized transportation networks, there is a tendency to retain regulations that eliminate private van services and jitneys from competition with the public system and thereby to protect the integrity of the public system by guaranteeing it monopoly status.

In addition, if heavy investments of capital in rail transit were reduced, it would also make funding more readily available to increase local bus

square mile still yields very high levels of traffic congestion on the streets of that city. Anyone who has visited New York or Hong Kong must be skeptical of proposals to reduce congestion here by increasing densities, because congestion levels in those cities are at least as great as congestion levels here despite the fact that more trips are made by transit and on foot.

Would it be good policy to adopt a program to make Los Angeles more like Hong Kong or New York in the face of congestion levels in those cities and evidence that over time those cities are becoming more like Los Angeles? And would the citizens of Los Angeles support policies to encourage much higher densities here? The answer to these questions is not obvious, but should be left to the land market and to policy choices that are based on more complex sets of issues than traffic congestion alone. It may well be true that many citizens in this region would prefer to live at higher densities in "neotraditional neighborhoods" than do so presently, and this may be the result of land use policies that have restricted higher densities in regions like this one. For that reason we might encourage more diversity in our built form and more experiments like Playa Vista which would provide a wider range of choices for citizens among a greater variety of built environments and which might produce more efficient travel patterns even while increasing traffic volumes beyond their current levels.

In addition, it may be rational and appropriate to encourage higher densities and greater mixes of land uses at locations that are well served by public transit. In fact, as noted above, the ongoing commitment to increasing the extent of the rail network in Los Angeles constitutes a commitment to an extremely high-cost form of urban transportation, which will in all likelihood garner very little patronage in relationship to its capacity and cost. Thus it would seem essential to test areas higher densities at the station sites in order to produce greater patronage and thereby to avoid a financial disaster that could flow from the need for ever-increasing subsidies if we are determined to keep the rail system operating over the coming decades. Rather than needing rail to alleviate traffic congestion due to growth, this region may actually need higher densities at the station sites in order to minimize the costs of the adopted transportation system. But even substantial commitments to greater mixing of land uses and to higher density at the station sites will make only a marginal change in the overall travel patterns of this region for decades to come, and it is difficult to accept policies jointly advocating rail construction and higher density as "the solution" to growing traffic congestion over time. The BART impact studies and several studies of the Washington, D.C. Metro have demonstrated that mixed-use land developments in the vicinity of the station sites have resulted in increased traffic congestion in those areas. We must be careful to acknowledge, therefore, that whatever benefits may flow from increased density, reductions in traffic congestion—especially local reductions—are
services that are today overcrowded and that are given too little attention by public authorities. Transit deficits would be reduced by increasing bus services on heavily traveled inner-city local routes that are the backbone of the transit system, that require the lowest subsidies per passenger served, and that provide essential services for the poor, carless, elderly, and disabled populations. If these improvements were coupled with adaptive improvements to the street network, such as the provision of exclusive bus lanes on more city streets, traffic signal priority for buses, and bus turnouts and off-street loading facilities, higher volumes of bus traffic could be accommodated without a worsening of street traffic congestion.

Finally, if employers were to take some of the money they now invest in subsidies for single-occupant automobiles and redirect it into subsidies for vanpools and company-operated buses, a wider range of transit options would be available for the workforce to choose from.

A ROLE FOR TECHNOLOGICAL IMPROVEMENTS

Many look to technological breakthroughs to enhance the future transportation network, and it is extremely dramatic, large-scale innovation that receives the most attention. Magnetic levitation vehicles and high-speed trains capture the imagination of the press and the citizens, though they hold open the prospect for benefiting only a relatively small number of people. Almost unacknowledged are other technological improvements that have actually contributed much more to the progress of the transportation system. Recent improvements in automobile fuel economy and decreases in automobile emissions have actually been very dramatic and have substantially improved well-being in the Los Angeles region. There is reason to expect technological progress in the coming decade which will continue to improve access to and increase the efficiency of the transportation system.

Communications technology is advancing very rapidly, and we can soon expect travelers to be able to receive a great deal more information on their travel options than is presently available. For example, within a very few years, using telephones or computer terminals, travelers will be able to be informed of the location of the next bus on a certain route and its expected arrival time at a certain point. This technology is already in use in a few test locations in Europe, and it is functioning quite well. In addition, we are very close to having available what transportation officials refer to as a "universal fare medium," a transportation "smart card" that employs microchip technology to allow its holder to pay different fares—depending on mode, trip length, and time of day—using a single device very similar to a credit card.

While not likely to see application in the immediate future, automated vehicle control systems are actively being developed which will enable higher volumes of travel on existing roadways by permitting vehicles to move at higher speeds and at closer spacing than is now possible. Although such technologies are not likely to be applied to general automobile traffic during the coming decade, they will be applied to bus transportation and possibly to HOV lanes in the near future. Technological contributions of these sorts are likely to make marginal but significant contributions to transportation system efficiency and effectiveness in the coming decade and will become increasingly more salient in the early decades of the coming century.

CONCLUSION

The history of transportation policy in Southern California is complex and politically charged. Politics is the art of oversimplification, and very few citizens of this region understand the complexity of its transportation history. Instead, we repeat simple platitudes that are widely agreed on by lay persons and political leaders. Over time, many have argued that an automobile-dominated system or a rail-dominated system is necessary for the future well-being of the region. It has been noted less often that to a great extent the investments made in highways and rail lines have complemented one another in creating the low-density, multicentered region. In many instances, proposals were presented using populist language intended to mobilize citizen support for one proposal by associating a competing concept with monopoly capitalists; in earlier days the villains were the railroads, which perpetuated terrible service, and more recently the villain was General Motors, which destroyed an allegedly wonderful system. In each case, a particular approach to providing transportation in Los Angeles was portrayed as an environmental savior and as a successor to an environmental disaster associated with an earlier age. In each period, a particular transportation plan or technology was presented to the public as the epitome of modernity and inventiveness, though often the favored technology was state of the art. In each period, large-scale plans—some for highway networks and some for rail transit lines—were adopted but never fully implemented because costs rose beyond what had been forecast, because funding was not available for their completion, and because public enthusiasm for the whole system declined after part of it was built. Often, this decline in public enthusiasm resulted from the fact that system plans promoted in different periods of time were vastly oversold as panaceas for traffic congestion, while the negative social and environmental impacts of each plan or proposal were hardly mentioned until they were experienced by many unsuspecting citizens.

Today, Los Angeles has embarked on an enormous capital investment in a regional rail system, which is envisioned over the coming decades to have
many corridors and extensions. There is also currently a strong commitment to transportation demand management, the effort to encourage behavioral shifts away from the use of singly occupied automobiles. The historical review in this essay provides a very good guide to the likely future of these recent policies. It is already clear that the capital investment needed to complete the current plan will be much higher than the estimates that have been presented to the public. As several transit routes go into operation, I believe they will carry fewer passengers than have been forecast and that land use changes hoped for in the vicinity of the station sites will occur far slower than the proponents of the system anticipate. Similarly, public opposition to transportation demand management on the basis of its limited results at fairly high cost is already building. Traffic congestion on the freeways will hardly be affected by the presence of the rail system and the modest successes of TDM, since even optimistic forecasts indicate that the rail system will carry only a tiny fraction of the region’s trips and that TDM will serve a reasonably small clientele. As more communities are disrupted by subway construction, the public will undoubtedly tire of the promises of environmental benefits and congestion relief. As costs rise to complete the system, later elements of the proposed rail network will be deleted, as were many of the elements of the proposed freeway network of Los Angeles. Similarly, TDM benefits are already showing slow compared to their costs and their restrictions on individual freedom of choice. Looking back at the 1960s from the perspective of 2050 or so, we will describe this era as being quite like the period of rail construction in the period 1910-1920 or the highway building of the 1950s: it was a period of action and change, but the plans were not fully implemented for lack of funding, because the political consensus that resulted in their implementation was transitory and because the concept of modernity in urban transportation was a shallow notion based on fad and fashion, which changed during the implementation of the current plan.

Melvin M. Webber argues eloquently that increased mobility by citizens of Los Angeles is not a social, environmental, or economic problem. Indeed, people should have the opportunity to travel more than they do now, rather than less. Mobility means access to opportunities for employment, health care, recreation, and social interaction, and the goal of transportation policy should continue to be to increase those opportunities rather than to restrict them. The challenge before us is to find ways of increasing mobility while avoiding its negative consequences—congestion, air pollution, and the inefficient use of energy. The complexity of the urban area, of individual decision making about residential and work location and travel, and of American politics makes it difficult to conceive of a single policy or technology that can promise an immediate increase in mobility while decreasing the negative impacts of the transportation system.

Automobile users must be assessed the social costs they are imposing on the urban system. Policies that achieve this will have a positive effect on the local economy and quality of life. In the presence of appropriate accounting for the social costs of the automobile, a wide variety of transportation alternatives are both feasible and efficient; in the absence of that policy, the construction of high-capacity systems having high capital costs is inadequate to counter the effects of deep and varied subsidies supporting ever-increasing automobile ownership and use. It is doubtful that any single policy aimed at recasting urban form in service of transportation policies can have a salient effect on the future of the region, but a wider variety of urban forms can respond to appropriate social pricing of the automobile to increase future choices of living environments as well as of travel modes.

NOTES

5. Spencer Crump, Ride the Big Red Cars: How Trains Helped Build Southern California (Corona del Mar, Calif.: Trans-Angeio Books, 1961), 96.
10. Crump, Ride the Big Red Cars, 253.
11. Mark S. Foster, "The Decentralization of Los Angeles During the 1920s" (Ph.D. dissertation, University of Southern California, 1971), 143.
12. Ibid.


21. Transportation Engineering Board, City of Los Angeles, A Transit Program for the Los Angeles Metropolitan Area, 7 December 1939.

22. Ibid., vi.


33. Ibid.


